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### INTERNAL VERSUS EXTERNAL CONVERTIBILITY AND DEVELOPING-COUNTRY FINANCIAL CRISES: LESSONS FROM THE ARGENTINE BANK BAILOUT OF THE 1930s

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Country Financial Crises: Lessons from the Argentine  
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### **ABSTRACT**

Argentina's money and banking system was hit hard by the Great Depression. The banking sector was awash with bad assets that built up in the 1920's. Gold convertibility was suspended in December 1929, even *before* the crisis seriously damaged the core economies. Commonly, these events are seen as being driven by external real shocks associated with the World Depression, despite the puzzle of the timing. We argue for an alternative, or complementary, explanation of the crisis that focuses on the inside-outside money relationship in a system of fractional-reserve banking and gold-standard rules. This internal explanation for the crisis involves no timing puzzle. The tension between internal and external convertibility can be felt when banks fall into bad times, and an internal drain can feed an external drain. Such was the case after financial fragility appeared in the 1914-27 suspension. Resumption in 1928 was probably unsustainable due to the problems of the financial system, and a dynamic model illustrates the point well. The resolution of the crisis required lender-of-last-resort actions by the state, discharged at first by the state bank issuing rediscounts to private banks. When the state bank became insolvent, the currency board started bailing out the system using high-powered money. Thus came about the demise of the currency board and the creation of a central bank in 1935, an institution that had no pretense of a nominal-anchor commitment device and no ceiling on lender-of-last-resort actions-innovations with painful long-run consequences for inflation performance and financial-sector health. As one of its first substantive actions, the central bank engineered a bailout of the banking system at a massive social cost. The parallels with recent developing-country crises are remarkable, and the implications for the institutional design of monetary and banking systems are considered.

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## 1. Crises—Internal and External

In the wake of recent developing-country macroeconomic-financial crises, one of the more pressing questions confronting researchers and policymakers has been to discover what kind of money and banking regime might be optimal for a small open economy.<sup>1</sup> The problem is of course acute in the context of a fixed exchange-rate regime, a system usually motivated by a desire to dampen external price volatility or discipline domestic monetary and fiscal policy in the wake of hyperinflationary experience. Such regimes can take a variety of forms, such as a discretionary central bank adhering to a peg or a more rigid institution such as a currency board with hard rules designed to “tie the hands.” Whatever the form, the key dilemma of the money-banking nexus is never far away: how can goals of external convertibility (a fixed exchange rate) and internal convertibility (a working fractional-reserve banking system) be simultaneously met?<sup>2</sup>

As is well known, problems in both macroeconomic and financial areas can strike together, the so-called “twin crises” (Kaminsky and Reinhart 1999), and the exact causal relationship between the two remains an area for research. Recent events powerfully demonstrated this type of dynamic in an era of globalization, and the combination of pegged rates and weak banking systems is now seen as a major cause of the Asian crises of 1997–98. However, noting the contrast to the fragile exchange-rate regimes that just collapsed, some observers now advocate one type of institutional innovation that seemed to weather all of the recent storms. The Hong Kong Currency Board and the Argentine Convertibility Plan apparently coped well with a dismal international financial situation and are under study as possible models for more robust designs in other countries. Can these schemes be a basis for a monetary and financial design that will function well in this kind of global economic environment? We think a combination of theory and history can provide some answers.

From a historical perspective we note that the late-nineteenth and early-twentieth century experience of the periphery has much in common with the current situation. Emerging markets on

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<sup>1</sup> In the Asian crises of 1997–98 considerable difficulty was caused by a weak financial sector in general, and, specifically, the large number of insolvent banks that had been propped up for many years in an environment of lax regulation and supervision. At the time of crisis, the size of bad assets in the financial sector threatened either to destroy the entire superstructure for intermediation, or else require substantial subsidies to cover the large gaps between true assets and liabilities. In countries like Korea and Indonesia, a very large clean up of the banking sector was precipitated, requiring considerable real resources. For a discussion of the recent crises and the relationship between banking sector weaknesses and macroeconomic crisis, see Eichengreen (1999), Roubini (n.d.b), and World Bank (1999).

<sup>2</sup> These problems are, more generally, part of a broader set of constraints facing policymakers in an open macroeconomy, namely, the *trilemma* (Obstfeld and Taylor 1998). Under the trilemma, countries can aspire to only two out of three goals from the list of activist monetary policy, capital mobility, and fixed-exchange rates. The idea dates back to the original Mundell-Fleming theory, and as an analytic device, it applies well to nineteenth and twentieth century experience (Eichengreen 1996).

the periphery were joining the ever-expanding markets of the core, there was widespread use of a fixed exchange-rate system, and fledgling banking systems were learning how to function in this new environment. In our study of Argentine history we find that the present types of problems have earlier ancestors in the turbulent interwar economy. More importantly, we find that the Argentine institutional structure in money and banking changed considerably in the first decades of the twentieth century, as did its vulnerability.

World War One marked a major turning point in Argentina's respect for maintaining a credible and disciplined money-banking regime. There was general success before 1914. The system functioned smoothly and adhered to rules designed to protect a high reputation and maintain credibility under a conservative or quasi-narrow state bank and a rigid currency-board regime. Subsequently the money and banking authorities, supported by policymakers and politicians, chose a different path. The state bank became broader in scope, assumed a lender-of-last-resort function it could not sustain without subsidy, and ultimately dragged the currency board into a scheme to bailout the state bank and its ailing dependents, the private banks. Eventually, a central bank was created in 1935 to assume responsibility for cleaning up the mess and to take over all monetary responsibilities from the currency board.<sup>3</sup>

If we are to analyze this historical episode from a theoretical perspective, we need to turn to a set of models that integrate banking and financial crises into models of currency crisis. However, the so-called first- and second-generation models of currency crisis finessed the distinction between inside and outside money and the banking sector was excluded from the analysis.<sup>4</sup> More recently, and motivated in part by the contours of the recent crises, scholars have turned their attention to the problem of the twin crises—that is, the internal and external convertibility problem. This embryonic literature draws on ideas found in some vintage papers in the literature, notably Díaz Alejandro (1985), but the theoretical base is still being developed with close attention to how we can best match the empirical regularities.<sup>5</sup> In that same spirit, we draw on an older and somewhat neglected

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<sup>3</sup> The 1930s are also, famously, considered the major turning point in Argentine economic history, when an outward-oriented, pro-trade, stable-price, liberal economic regime gradually gave way to an inward-looking, protectionist, inflationary, state-led regime (Díaz Alejandro 1970). No small part of the transition was the shift in money and banking policies, and the destruction of institutions that allowed for it. The absorption of the banking-sector into a state-led environment set the stage for a typically Latin American era of financial repression, and the participation of the financial sector, through many forms of control and allocative distortion, in a broader *dirigiste* plan. Such “financial repression” exposed the importance of a healthy system of intermediation for economic development (Gurley and Shaw 1955; Shaw 1973; McKinnon 1973; Fry 1995; Roubini and Sala-i-Martin 1992; De Gregorio and Guidotti 1995).

<sup>4</sup> In early currency-crisis models a fixed exchange rate collapsed when money printing was used to finance a fiscal gap (Krugman 1979). In later models, self-fulfilling crises were also shown to be possible, where external markets punish a good borrower and the withdrawal of capital leads to collapse (Obstfeld 1994; 1997).

<sup>5</sup> For a survey of the issues see Eichengreen (1998). Theoretical work includes papers by Velasco (1987) and Calvo (1996; 1998). A key empirical contribution is the paper by Kaminsky and Reinhart (1999).

model of the money-banking nexus due to Dornbusch and Frenkel (1984), an approach previously applied to an even more distant historical situation.<sup>6</sup>

The Dornbusch-Frenkel theory was developed to illustrate the short-run dynamics of the gold standard regime and the operations of the Bank of England in the crisis of 1847. This elegant model addressed the actions of two quasi-independent parts of the Bank: the Issue Department and the Banking Department. The former was concerned with outside money, the paper note issue and its gold backing; the latter dealt with inside money, and engaged in normal commercial banking operations, yet it also had a special role as the banker to the state, being responsible for handling government debt. The model traces the dynamics of gold backing for the currency (subject to *external drain*) and the backing of banking deposits by reserves (subject to *internal drain*).

This approach is notable for its multiple equilibrium possibilities. There can be a stable “good equilibrium” with high reserve ratios and a high gold stock in a strong banking environment where neither internal nor external drain threaten the system. There can also be an unstable “bad equilibrium” with low reserve ratios and a tendency to banking collapse with full internal—and possibly some external—drain. In the former equilibrium, confidence in the bank runs high, and an interest-rate defense is feasible, but in the latter case confidence is so low that an interest-rate defense is self-defeating and the drain only increases.

We think the applicability of this model to the Argentine situation in the years 1900–35 is clear: the currency board (Caja de Conversión or conversion office) was the analog of the Issue Department, and the quasi-state bank (Banco de la Nación Argentina) functioned just like the Banking Department. The two were linked to the same public-sector balance sheet in the sense that they were both government agencies and, in practice, the conversion office was eventually called on to make rediscounts to the state bank to keep it afloat. That is, the state bank (and possibly some of the big private banks) received *ex post*—and quite possibly expected *ex ante*—implicit state guarantees via a *de facto* banking insurance provision.

What happened in Argentina? A good equilibrium held so long as the state bank did not weaken itself and destroy confidence in the regime. This was the case, we claim, during the convertible regime of 1900–14, but it was not the case during the abortive attempt to reactivate the gold standard in 1928–29. Does the econometric evidence support our interpretation? Fitting the model to the Argentine data seems to suggest so. Does this story fit the facts? The narrative strand of our paper links theory to history by examining the pollution of the money and banking institutions after 1914, a story that corresponds to the change of trajectories in the model’s phase diagram from a path within the stable set to one in the unstable set.

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<sup>6</sup> In a recent important contribution, Miller (1996) refines and expands the Dornbusch-Frenkel model, incorporating a Krugman-style approach to a speculative attack and incorporating forward looking expectations.

What are the implications of our analysis? At one level, there are general implications for the study of the interwar period and the demise of the gold standard. We know a great deal about outside money in this era: much has been written about monetary authorities, the impact of the trilemma, and political-economy issues. Yet we know much less about inside money: the role of the financial sector as a possible source of regime inconsistency is less understood. If the lessons of the Argentine experience can be applied to other countries' histories then we might get a better sense of the conflicts between money and banking regimes in the 1920s and 1930s, and a clearer view of the slender tightrope on which policymakers were poised. This could yield a more nuanced explanation of what many see as a still largely unanswered puzzle: why the gold standard, a system that had functioned so well before 1914, was suddenly “unsafe for use” in the 1920s.<sup>7</sup>

At a narrower level, our work has direct implications for the institutional design of money and banking regimes. Suppose a fixed exchange-rate, or *external convertible*, regime is credible. Our paper suggests that commercial banks can be in a permanently sustainable situation *for sure* only if they specialize in administering the means of payment of the economy—that is, if they become *narrow banks*. Such specialization would leave riskier banking activity to other *uninsured* institutions such as investment houses and merchant banks (Fama 1985). This might be the only design in which one can attain the goals of *both* external and internal convertibility *even under a very bad state of nature*.

Simply put, under the traditional design of a gold-exchange standard (or currency board) and a banking regime you can only “price” outside money—but not banking deposits, the main component of inside money. In the event of a crisis of confidence, such as a Diamond-Dybvig (1983) run on deposits, the system might end up being governed by the dynamics of a bad (unstable) equilibrium from which there is no escape. Such dynamics would destroy internal and external convertibility alike, taking down the institutions of both—the currency board and the banks—with it. To sum up, having a strong and credible currency board may be no defense against a crisis if the banking sector is rotten and a nasty shock occurs. This sentiment has been often expressed in policymaking circles in the wake of the recent crises, especially by those who reject the idea of currency boards as a universal panacea.<sup>8</sup> Still researchers seek more empirical support for the argument, and, given that the debate rages on, we think there is value in having explored the problem here with a more formal, theoretical and empirical treatment.

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<sup>7</sup> Some references works on the interwar period and its long run context are Eichengreen and Sachs (1985); Eichengreen (1992, 1996); Temin (1989). The quoted phrase is Temin's.

<sup>8</sup> For a discussion of recent issues in banking structure to prevent crises, see, for example, the “Economics Focus” discussion of narrow banks and subordinated debt ideas (*The Economist*, June 19, 1999). On the role of currency boards as incomplete insurance against crisis, see, for example Gavin and Hausmann (1998) and Feldstein (1999). For a more trenchant critique of currency boards see Roubini (n.d.a).

## 2. The Argentine Banking Environment and its Evolution

Argentina's monetary system functioned until 1935 without a central bank. The modern conception of a central bank envisages an official bank with the monopoly right to issue money and the capacity to rediscount the financial system's portfolio or commercial obligations in order to act as the system's lender of last resort. A central bank, in its regulatory capacity, is also able to influence the volume of bank-created money in the economy through official policies governing the financial system's reserve requirements.

Argentina's early monetary history is notable for the predominant role of its official banks, institutions founded and patronized by state, at the level of both the federal government and the country's provinces. These banks usually acted as fiscal and financial agents for the corresponding administrations. We must keep this banking structure in mind throughout our study because it played an important role in many episodes of macroeconomic and financial distress. Even before our story begins in the 1880s, this same banking structure had caused great turmoil in the early years of the republic. From 1822 to 1881, an era of free banking comparable to the "wildcat banking" phase of United States history, banks in Argentina were noted for their erratic and ephemeral existence, and exaggerated use of inflationary note issue driven by the provision of cheap credit to finance federal and state administrations.<sup>9</sup>

In 1881 the administration of President Julio Roca (1880–86) established a bimetallic monetary standard. The power to issue paper pesos was granted to numerous existing banks that were supposed to guarantee the convertibility of their notes into gold pesos at all times. This decentralized system for issuing currency was very fragile because there was no comprehensive and transparent monetary regulation. For example, there was no rule that defined the degree of metallic backing that the banks should have on hand to guarantee the convertibility of their notes. The system, initiated in 1883, lasted only until early 1885. By 1887, the promise to reestablish the convertibility of bank notes into gold pesos at par had been abandoned and the government set up a new system of national guaranteed banks authorized to issue paper money guaranteed by metallic backing. In 1890 this abortive experiment provoked the famous financial collapse known as the Baring crisis, which led to the resignation of Argentina's president at the time, Miguel Juárez Celman (1886–90), and the succession of Carlos Pellegrini (1890–92).<sup>10</sup>

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<sup>9</sup> The first private bank to be founded, the Banco de Descuentos (1822), for example, was obliged to offer funds to the Legislature of the Province of Buenos Aires, and was "provincialized" and merged with the (first) Banco Nacional in 1826. This bank, in turn, was dissolved in 1836 during the Rosas administration in order to create the Casa de Moneda (the Mint) which was then dissolved in 1852 so that the Bank of the Province of Buenos Aires could be created in 1854. In 1872, the (second) Banco Nacional was founded as a mixed entity operating until 1891. In 1892 this bank was refunded as the (third) Banco de la Nación as a state-owned commercial bank. See della Paolera and Ortíz (1995).

<sup>10</sup> For more discussion of this period see della Paolera (1988).

After the catastrophic crisis in 1890–91 the government took great care in designing a new regime to replace the fragile decentralized system of the past. It was hoped that a new money and banking regime would usher in an era of stability sufficient to permit Argentina to rejoin the gold standard. Two institutions were central to the plan and both sit at the core of our study. The first was the currency board: for the first time the state centralized the power to issue money within a new conversion office, the Caja de Conversión. The second was the newly reformed state bank: The Banco Nacional was liquidated during the Baring financial crisis in 1891 and was refounded as the Banco de la Nación in 1892.

The two institutions were kept at arms length so as to effectively isolate two functions. The note issue responsibilities, ultimately to be backed by gold and foreign exchange once convertibility was resumed—that is, *outside money* and, eventually *external convertibility*—were to be the sole task of the conversion office. The state and commercial banking activities—that is, *inside money* and the task of *internal convertibility*—were the domain of the Banco de la Nación and the private financial system. It was hoped that this isolation would constitute a more robust and credible regime by keeping inflationary pressures and banking activity out of the purview of the institution that was ultimately responsible for the currency.

The new state bank had multiple roles as the financial agent of the state, a development bank, and as one of the biggest commercial banks. Could it handle all these tasks safely? A new charter was put in place governing bank reserves at the Banco de la Nación so as to limit its rediscounting capacity. Despite being seemingly “too big to fail,” and clearly susceptible to the moral hazard risks that attach to any banking institution with implicit state guarantees, the Banco de la Nación maintained an admirably clean balance sheet in the period of recovery and smooth economic growth from 1892 to 1913. As a fraction of overall banking activity, its use of rediscounts was small even after a relaxation of banking laws in 1904; non-performing loans were few; leverage was not excessive and there appeared to be adequate capital on the balance sheet (Figure 1). The reserve-deposit ratios stayed very high, well over 50% in most years before the war (Figure 2).

The system worked well and a clean separation of the two functions was maintained until the crisis of 1913–14 when an emergency rediscount law was enacted. The dimension of the crisis cannot be overstated: this was by far the biggest recession in Argentine history, and the cumulative loss of output during the trough exceeded such losses in the Baring crisis and the Great Depression. Real activity slumped and the financial sector consequences were dramatic. Private banks came under pressure as depositors withdrew cash. Curiously, exactly the opposite was happening at the Banco de la Nación, where reserve-deposit ratios climbed (Table 2). Clearly, the public perceived the state bank as a “safe haven” for their deposits, perhaps because of its implicit guarantees. With reserve ratios falling to 14% in the private banks, the emergency law permitted some relief as the Banco de la Nación began rediscounts to the private banks to supply them with much-needed cash.



The implications of this new economic environment for the state bank's balance sheet after 1914 were dire. Rediscounting surged as a fraction of all banking activity, non-performing loans started to corrupt the balance sheet in a big way, and the capitalization level of the bank was gradually sinking. We can estimate how much of a difference the rediscount activity made to bank balance sheets by considering a counterfactual experiment. Suppose the Banco de la Nación had not used the emergency powers; then one can recalculate the balance sheets of the Banco de la Nación and the private banks absent the asset swap; that is, with cash reserves equal to the rediscounts added to the Banco de la Nación's portfolio, and with the same cash subtracted from the private banks' portfolios. The impacts are striking when seen in Figure 2. For example, in the 1913–14 crisis, absent the rediscount provision, the private banks would have seen their reserve-deposit ratio fall under 10%, and dangerously close to total illiquidity at zero. The calamitous situation did abate as the Argentine economy recovered after 1914, but further deterioration in balance sheets came about in the 1920s. Even with rediscounts, private banks saw reserve ratios slide from around 25% in 1920 to about 10% in 1930. The counterfactual calculation hints at the shocking implication that, without the actions of the Banco de la Nación, the private banks would have failed under a total collapse of liquidity in the early 1930s. Clearly, the rediscount law as it applied to the Banco de la Nación helped a wounded banking system limp along for many years in the interwar period.

There were other symptoms that indicated how far the Banco de la Nación had deviated from the old "rules of the game." Not only was the Banco de la Nación starting to act as a lender of last resort to the private banking system, but also as a market maker for government paper. For example, after 1914 the bank engaged in large rediscount operations with the Treasury. These had always been subject to a limit of 25% of bank capital per annum, as established in the bank's charter, but after 1914 this constraint was violated in several years as shown in Figure 3.

Beyond the changes at the Banco de la Nación, the 1914 emergency law went still further, opening the door to a more dramatic shift in institutions and a fundamental change in the monetary regime. Under a second provision of the new law, even more flexibility was allowed into the entire money and banking system: just as the Banco de la Nación was authorized to rediscount the commercial obligations of other private banks, at the same time commercial obligations could be rediscounted at the conversion office for cash. In other words, as of 1914, the Banco de la Nación had the ability to act as the lender of last resort for the financial system, and the conversion office had the power to finance such activity with money printing unbacked by gold. In practice, what happened? As we will see later on, the Banco de la Nación immediately began putting its new powers to use, and started to extend rediscounts to other banks. But the conversion office shunned its new prerogative and kept money and gold synchronized on the margin for a long time. The conversion

office's rediscount provision was only put into practice in 1931 to sterilize a severe drain in the balance of payments.<sup>11</sup>

Given this track record, we consider the Argentine case to be quite unlike the smooth evolutionary process that led to the creation of modern central banking institutions in other countries, particularly those of the core. For example, before 1935 there was really no substantive banking law or regulation of any kind in Argentina. For example, there was no comptroller of the currency, as in the United States, to supervise banking institutions, and absolutely no official reserve requirements imposed on the private banks. Such weaknesses had been exposed during the financial crisis of the late 1880s when a loss of confidence in the banks prompted a massive currency substitution by the public. Still, legislators and policymakers took a seemingly relaxed view even after this chilling experience. Admittedly, note issue had been centralized; but in most other respects an overwhelmingly *laissez-faire* attitude to the banking sector persisted.<sup>12</sup>

In this atmosphere, at least until the beginning of the First World War, the idea of a central bank, and more modest plans for regulating and supervising the financial system, were foreign to the thinking of the monetary authorities not to mention the banking community itself.<sup>13</sup> Instead, the money and banking system evolved in an *ad hoc* fashion. Changes were implemented piecemeal through various legislation, notably the emergency law of 1914. The reforms of the 1890s nationalized the currency and instituted a firm nominal anchor, but the question remained then—as it still does today in many developing countries—whether just the act of macroeconomic and monetary stabilization alone can suffice to generate a stable financial environment. Either through choice or neglect, the authorities of the 1892–1914 period appear to have optimistically believed that with the monetary problem solved the banking sector would take care of itself. For several decades, their gamble appeared to pay off.

The 1913–14 crisis was an almost fatal blow for the financial system. Luckily, the Banco de la Nación stood ready to save the day. This is still something of a puzzle. We know the Banco de la Nación did not have an explicit lender-of-last-resort mandate. It was not a true central bank, and was given these kinds of powers in an *ad hoc* fashion. Why was the rediscount law enacted? And why, even then, given its banking objectives, did the Banco de la Nación take on the risks associated with rediscounting to private banks, when the collateral took the form of the low quality assets then sitting on the private banks' balance sheets? This we consider an important political economy question.

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<sup>11</sup> In 1931, it was Raúl Prebisch, then at the Ministry for Finance, who lobbied for the proactive use of rediscounting laws to help insulate the economy from the global deflationary spiral and avert a massive recession. We discuss this episode in della Paolera and Taylor (1999).

<sup>12</sup> There were other institutional gaps. It is frustrating for historians that before 1900 the *Memorias de Hacienda* (Treasury reports) did not systematically include any consolidated monetary and banking statistics.

<sup>13</sup> In 1917, President Yrigoyen, through his Minister of Finance Eleandro Lobo, made a first attempt to establish a central bank and outlined a preliminary project, but the plan did not meet with the approval of Congress.

On one level, the legacy of the First World War in Argentine financial markets was to be seen in the substitution of domestic real resources and institutions for financial resources and intermediation technologies that had previously been—to a very large extent—imported. Prior to 1914, scarcity of savings in Argentina, and an abundance of investment demand, entailed large capital inflows from overseas, principally the London market. These flows were intermediated largely by British commercial and investment banks. The war essentially terminated this flow, and the financial services that came with it. Instead, after 1914, Argentina was left to try to find a domestic substitute for both the foreign savings and the intermediating technology itself. This was a great challenge to a domestic financial system that had barely survived the Baring crisis and was still, by global standards, in a state of arrested development.<sup>14</sup>

The new rediscounting by the state bank provided a bailout to the private banks once, *ex post*, they realized that a bad state of the world had hit. In essence, they obtained, if not free, then highly subsidized banking insurance from a government that had made no such commitment *ex ante*. That such an inconsistent policy choice should have been made says a good deal about the machinations inside the Argentine corridors of power. Rich and powerful interests, including officers and shareholders of the banks, desperately needed cover from the risks they had taken, the loans that had gone bad. Some of those same loans, we also know from confidential records, were loans to the very same officers and shareholders, or to their real or shadow corporations. Such activities give the appearance of corrupt banking operations and probably would not have occurred under a careful system of regulation and supervision.<sup>15</sup> We don't know what it took for the banks to secure this kind of help, but get it they did—in two forms. The Banco de la Nación from 1914 to 1935 did what it could through rediscounts to keep the banks out of an illiquidity crisis. Ultimately, in 1935, in a political solution worked out by the government and its new central bank, the banks got the final bailout they sought to head off an insolvency crisis arising from decades of bad loans—a solution with high social costs that we consider below.

In considering the nature of these rescues, we should also mention the information asymmetries that made the ongoing liquidity provision by the state bank in the 1910s and 1920s a bigger bailout than the simple rediscount figures alone suggest. The private banks were trying to offload risks to the state bank. Ideally, the risks they would offload first would be the bad ones. This would likely be private information for them, unknown to the state bank, a case of adverse selection. That is, there was a “market for lemons” problem in the use of loans as collateral

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<sup>14</sup> On the sources of Argentina's scarce savings before 1914, and the implications for economic retardation once capital inflows ceased, see Taylor (1992). We have previously discussed the fragility of the Argentine financial system in this post-1914 phase; see della Paolera and Taylor (1998).

<sup>15</sup> The source for this information is the confidential reports of the Instituto Mobilizador de Inversiones Bancarias (IMIB), the body appointed in 1935 by the Central Bank to “clean up” the rotten assets of the banking sector. We discuss the activities of the IMIB in a later section.

whereby private banks have an incentive to use as collateral the worst paper they hold.<sup>16</sup> Ultimately, if the rediscounts themselves went bad—as they were declared to be in the 1935 bailout—the bad collateral would end up on the state balance sheet. In this way, we see that the system was evolving toward a central banking idea in a very incoherent manner. In its rediscounting actions the Banco de la Nación was *not* engaged in pure lender-of-last-resort actions, like a true central bank following Bagehot’s principle of lending freely at a penalty rate. Such actions would have left the bad loans with the private banks whilst extending temporary liquidity. Instead, the state bank was offering a much sweeter, and therefore more risky, deal. It allowed the private banks to shed their risks, with *ex-post* (and possibly *ex-ante*) bad paper used as collateral, and lent them cash at only 4.5%—far below even the rate the Banco de la Nación offered its customers on time deposits!

For now, we note that changes in the banking environment in 1913–14, and the interaction between the state and private banks, appeared to mark the birth of a severe moral hazard problem for the money and banking regime in Argentina. During the Baring Crisis many banks had been allowed to fail, even very large banks like the Banco de la Provincia de Buenos Aires. No lender-of-last-resort actions had been taken by the monetary authorities—since no unified monetary authority had then existed. Banking insurance arrived later, in an *ad hoc* manner, and quite possibly through nefarious means. It was later taken up by the central bank after 1935, generating over the decades since a series of financial sector bailouts, paid for out of seignoreage in times of high inflation, and whose real social costs, like that of the 1935 rescue, have been carefully guarded.

### **3. The Dynamics of Internal and External Convertibility: A Model of Fractional Banking and a Gold Standard Regime**

As may already be apparent, there were widening tensions during the 1920s between the goals of external and internal convertibility in the Argentine case. During the suspension Argentina had managed the trilemma by allowing a float of the exchange rate, keeping open the option to move capital and have an activist monetary policy. The activist monetary policy could obviously not emanate from the conversion office, which, as is well known, did not deviate from its mandate to match note issues by gold on the margin (della Paolera and Taylor 1999). Activism was emerging, however, in the new workings of the Banco de la Nación, which now engaged in large rediscount operations—a policy that amounted to setting a lending rate to the other private banks, a nominal target. Upon resumption of the gold standard, however, the conversion office would be aiming to set the exchange rate—potentially a second nominal target, an inconsistency under an open capital market, and a possible source of external drain in a bad state of nature.

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<sup>16</sup> On the “lemons” problem, see Akerlof (1970).

The second inconsistency, and the focus of this section, was the internal problem of drain from the banking system. A fractional reserve system allows agents to convert deposits into cash on demand.<sup>17</sup> The problem is that this is not sustainable in the event of one or more sufficiently bad shocks that create a run, or internal drain. Unlike a central bank, the Banco de la Nación could not bail itself out by issuing itself currency—it could only get itself bailed out by the conversion office, which could, by resort to its emergency rediscount provision, issue currency not backed by gold. This is our view of events in the 1900–14 and 1928–29 gold standard regimes. Agents perceived an implicit unified balance sheet of the two state institutions, the conversion office and the Banco de la Nación. Thus the dynamics of outside and inside money were to be inextricably linked, and the health of each institution depended on the behavior of the other. The way we approach modeling these dynamics is through the dual-equilibrium version of the Dornbusch-Frenkel (1984) model already mentioned.

In the model, the conversion office has a balance sheet that consists of liabilities in the form of circulating notes  $H$  (high-powered money), and assets comprised of gold  $G$  and securities  $S$ . Here,  $H = G + S$ . The Banco de la Nación, the state bank, has a balance sheet with liabilities comprised of banking deposits both private  $D$  and public  $D$ , and assets in the form of note reserves  $R$  (vault cash) and loans  $L$ . Here,  $R + L = D + D$ . The financial model hinges on an appropriate specification of money demand. Consider the broad money stock  $M$ , consisting of currency in the hands of the public plus private deposits at banks. Then, it is easy to verify that,

$$M = \frac{1+c}{c+r\alpha} [G + S] = m(c,r)[G + S]$$

where  $m(c,r) = (1+c)/(c+r)$  is the money multiplier,  $\alpha = (D + D)/D$  is the ratio of total to private deposits,  $r = R/(D + D)$  is the reserve-to-total-deposit ratio of the bank, and  $c = (H - R)/D$  is the currency-to-private-deposit ratio of the (non-bank) public. Clearly,  $\partial m/\partial r < 0$  and we can also assume that  $\partial m/\partial c < 0$ , since  $r = R/D < 1$  in the empirically relevant range.<sup>18</sup>

The currency-to-private-deposit ratio  $c$  desired by the public is now assumed to depend on how banks behave, specifically through the reserve-to-total-deposit ratio  $r$  chosen by the bank. A higher reserve ratio at the bank inspires confidence and leads to a lower demand for currency, so that

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<sup>17</sup> Thus we think it no surprise that Salama (1997) finds a correlation of gold stocks and the Banco de la Nación reserve-deposit ratio. This just describes the process of linked internal and external drains, and in our model we put quite a different interpretation on this phenomenon.

<sup>18</sup> See Friedman and Schwartz (1963) for the derivation. Following Dornbusch and Frenkel (1984), we are ignoring here the role of other private banks. That is, we treat the Banco de la Nación, which already accounted for 50% of the banking sector by the 1930s, as a proxy for the entire system. However, an alternative view would be to integrate the balance sheets of the Banco de la Nación and the private banks and study the dynamics of the entire system. This is justified, if, as actually happened, the private banks have an implicit insurance guarantee from the state bank. We repeated the exercise with this aggregation of all the banks and the results were unchanged.

$$c = c(r), c_r < 0.$$

We can then write broad money  $M$  as

$$M = \tilde{m}(r) = m(c(r), r)[G + S].$$

Note that the relationship of the multiplier to the reserve-to-total-deposit ratio  $r$  is ambiguous:  $\tilde{m}_r < 0$  and  $\tilde{m}_r > 0$  are both possible and we consider this in a moment. Money market equilibrium will generate an equilibrium interest rate, supposing that output  $y$  remains exogenous in the short run:

$$\tilde{m}(r)[G + S] = L(i, y), L_i < 0, L_y > 0.$$

We can solve for the interest rate,

$$i = i(r, G; \dots), i_r < 0.$$

We introduce dynamics as follows. Bank policy is assumed to be driven by a desired reserve-deposit ratio  $r^*(i)$ , where  $r^*$  is a decreasing function of the interest rate  $i$ . Here, better lending opportunities lead the bank to reduce the liquidity of its balance sheet in a prudent way so as to seek profits. Still, the bank is cautious, so the actual adjustment of  $r$  to its target level  $r^*$  is posited to be a partial adjustment process, as the bank updates its portfolio position in light of new information, such that

$$\dot{r} = \nu(r^*(i) - r), \nu < 0,$$

where  $\nu$  is a positive adjustment-speed parameter. Finally, this being a small open economy with a fixed exchange rate, we assume a rate of gold inflow that is driven by deviations of the local interest rate  $i$  from the world rate  $i^*$ . Thus,

$$\dot{G} = G(i - i^*; \dots), G_i > 0.$$

We now have a dynamical system in two variables,  $r$  and  $G$ . To figure out the nature of the dynamics we consider the multiplier again. The money multiplier  $m$  reacts to the reserve-deposit ratio  $r$  in two ways. A rise in the ratio means more use of notes by the bank as reserve, directly lowering the multiplier. It also means more confidence in the bank, lowering the currency deposit ratio  $c(r)$  and increasing the multiplier via  $c$ . If the first effect dominates, then  $\tilde{m}_r < 0$ , and we will show that a stable equilibrium obtains (case one). However, if the second effect dominates an unstable equilibrium obtains, and it is clear why: when  $\tilde{m}_r > 0$  a bank run would lower  $r$ , diminish confidence, raise  $c$  (the flight to cash), and further lower  $m$ , perpetuating the run (case two). Next, we look at the interest rate equation based on money demand. In case one,  $i_r > 0$ , and an increase in the reserve-deposit ratio by the bank tightens the money market, and lures the public back into holding money balances. In case two,  $i_r < 0$ , and such actions do not attract the public to money. That is, under case two, the internal convertibility problem overwhelms the system and the interest-rate defense will fail.

The above dynamics lead to a phase diagram in  $(G, r)$ -space shown in Figure 4. The direction of trajectories is marked in the various regions delineated by the curves  $dr/dt = 0$  and  $dG/dt = 0$ . The intersections of the curves are the two potential kinds of equilibria, labeled E1 and E2. The point E1 corresponds to case one and is a stable node, a “good” equilibrium. The point E2 corresponds to case two and is an unstable saddle point, a “bad” equilibrium. A possible stable saddle path for E2 is shown as  $SS'$  and it is important to note that this curve delineates two regions in the plane: above  $SS'$ , all paths lead to the stable equilibrium, the sink point at E1. Here, the money and banking regime is stable and sustainable in the long run. But below  $SS'$  there is an unstable regime where all paths lead to collapse. Note that this will not generate a crisis in the form of a complete drain of the gold stock—an external convertibility crisis—since the dynamics of  $G$  in the unstable region are such as to take paths away from  $G = 0$ . Rather, it is a region in which the bank collapses—that is, an internal convertibility crisis.<sup>19</sup>

We think this theoretical framework is ideal for the purpose of studying the dynamics of internal and external convertibility in the Argentine case. Moreover, we conceive of the model applying in very different ways in the two periods of convertibility. We have already outlined the major developments in the banking system from 1900 to 1935 in the previous section, and, particularly, the drastic changes at the Banco de la Nación after 1914. Once a very conservative bank with high reserve ratios and a quasi-narrow objective, after 1914 it increasingly became a prop to the private banking system and, as a result, its own balance sheet became polluted by the problems of the wider financial system. Reserve ratios fell and the quality of the balance sheet deteriorated. Following resumption of the gold standard in December 1927, the bank experienced a severe drain unlike anything seen before. How could a system that had once worked so well under the old prewar gold standard now fail so miserably?

Our model supplies an answer. The evidence suggests to us that during the Argentine *Belle Époque* prior to World War One, the money and banking system was operating in the stable zone of the phase diagram, in the vicinity of the stable equilibrium E1, with high confidence in the regime sustained by high reserve ratios. Evidence for this type of stable regime is supplied in Table 3. We have high-frequency (monthly) data on the gold stocks of the conversion office and the reserve and deposit holdings of the bank starting in 1908. To empirically fit the dynamical system we set up a two-equation VAR of the form,

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<sup>19</sup> In case one, both curves are upward sloping; the curve  $dG/dt = 0$  is steeper, since the interest rate is constant on this curve for external equilibrium; on the  $dr/dt = 0$  curve the interest rate is rising to the lower-left to maintain equilibrium at the bank. In case two, both curves are downward sloping;  $dG/dt = 0$  is again steeper, with the interest rate constant; on  $dr/dt = 0$  the interest rate is rising to the upper-left to maintain equilibrium at the bank. By inspection E1 is seen to be stable (consider, for example, any small rectangle around E1 aligned to the axes: it is a Liapunov stable set). E2 is seen to be a saddle point.

$$\log G_t = \sum_{s=1}^p \alpha_s r_{t-s} + \sum_{s=1}^q \beta_s \log G_{t-s} + \varepsilon_t$$

and estimated the model using series from January 1908 to December 1913, the heyday of the classical gold standard. We found some simple dynamics consistent with a stable equilibrium of the type E1, and requiring only a simple lag structure,  $p = q = 1$ .<sup>20</sup> Entries in the matrix  $\alpha_1$  should be negative on the diagonal, and positive off the diagonal and this hypothesis cannot be rejected.<sup>21</sup> Stability would require that  $\alpha_1$  should have a positive determinant and negative trace, conditions that are met. Apparently the dynamics were stable in this period, and the same impression obtains from an inspection of the raw time series in the upper chart of Figure 5, where each series fluctuates but does not explode unidirectionally.<sup>22</sup>

This regime ended in 1914: external shocks and domestic policy choices made gradual, seemingly innocuous, changes in the institutional framework. The gold standard was suspended, albeit with the intention of resuming. The rediscount provisions of the Banco de la Nación and the conversion office introduced some implicit guarantees into the financial system, albeit they were intended as emergency powers. The notion of acting like a central bank became a distinct possibility, at least for the Banco de la Nación, now that some lender-of-last-resort functions were authorized. The creation of these powers did increase the scope for moral hazard. To its credit, the conversion office kept its emergency powers largely in reserve. It was not so at the Banco de la Nación, where rediscounting grew steadily after 1914, as a narrow banking orientation gave way to expanding commercial activities.

Had the institutional framework not changed after 1914—had the gold standard rules endured at the conversion office and had the bank followed its high-reputation rules—then, of course, the system would have been locked into the stable dynamics for the long run. However, suspension of the prevailing institutions in 1914 caused the system to be buffeted by new political and economic pressures, allowing it to follow a new path without reference to the above dynamical system whose operation had been halted for a time. The system moved ever further from the stable equilibrium E1. The pollution of the balance sheet of the Banco de la Nación from 1914 to 1927 is represented in Figure 4 by the line E1-P. Outside money was in good health, gold stocks in the conversion office held firm or even rose, and  $G$  did not drop. At the same time, inside money fell

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<sup>20</sup> Preliminary lag choices were made using the Schwarz criterion on univariate series. Final lag selection was made in the VAR using a step-down procedure to eliminate insignificant lags of each variable. One lag of each level variable was required, plus one lag of  $G$  in the  $G$  equation. See Table 1. To filter out the long run expansion of the gold stock,  $\log G$  was subject to preliminary detrending.

<sup>21</sup> One off-diagonal term has the wrong sign but is not significant.

<sup>22</sup> Unit root tests suggest that both series are stationary in this sample period. We used the more powerful GLS variant method of the Dickey-Fuller test as introduced by Elliott, Rothenberg, and Stock (1996); the exact test we used is the DF-GLS<sub>it</sub> test of Elliott (forthcoming). For the series  $r$  (demeaned) and  $\log G$  (detrended) the test statistics were  $-2.42$  (with a 10% critical value of  $-2.46$ ), and  $-2.68$  (critical value  $-2.41$ ), respectively.



into very poor health as the reserve ratio  $r$  declined sharply. Thus, we argue, the system arrived at a point like P by the late 1920s. The system could “safely” cross into the unstable region of the phase diagram during the years of suspension, since the dynamics of the model were held in check and the tensions kept at bay.

Yet the institutional pollution of the banking sector, whilst not a cause for serious concern in the relatively controlled environment of 1914–27, could potentially unleash a dramatic crisis once the full open-economy gold-standard dynamics were set in motion again. Resumption had always been the authorities’ intent along the way, despite their tolerance for the dangerous inconsistencies emerging between inside and outside money in the interim. The dynamical system set to work again during the brief 1928–29 resumption, but this time, we conjecture, from new initial conditions at a point like P, with movement along a path like PP'. How would the system behave in this new region according to theory? Initially, but not for long, the banking system might appear healthy with a slight increase in reserve ratios ( $r$  rising), even as gold losses set in ( $G$  falling). Yet, eventually, an internal drain would inevitably arise (to the left of the  $dr/dt = 0$  curve). The system would head towards collapse on the horizontal axis at P', unless the dynamics were terminated by some form of institutional change. Either there could be a suspension of internal convertibility such as a bank closure, failure, or “holiday”; or, there could be a suspension of external convertibility, as actually happened when Argentina left the gold standard for good in December 1929. We have insufficient monthly data to estimate a VAR for this brief period, so we cannot subject the system to the same kinds of tests we did in Table 3 for the pre-1914 regime.<sup>23</sup> However, unit root tests on the series confirm an explosive path for  $r$  and  $\log G$  in this period, and a cursory inspection of the time series in the lower chart of Figure 5 illustrates a trajectory much like the putative path PP' shown in the phase diagram.

To sum up, during the *Belle Époque* era before 1914, a credible currency board and a quasi-narrow state bank avoided any clash between internal and external convertibility, making the provision of each that much more secure. An external shock, internal economic problems, and new political directions after 1914 allowed for some seemingly innocent tinkering with this supposedly solid institutional design. On the surface, the system that existed in 1928 did look, to all intents and purposes, very much like the one that had worked so well up to 1913. But certain crucial elements had been allowed to change, and the banking sector, including the state bank, had fallen into very poor shape. Agents clearly knew this, and when the gold window opened there commenced a massive internal drain (a run on bank deposits) which fed an equally massive external drain (a run

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<sup>23</sup> We also note that a VAR might be inappropriate in its linear specification for describing a path like PP' that lies so far from the equilibrium E2 where a linear approximation might be valid. So it was no surprise that when we did estimate a VAR it did not fit well: we did find unstable saddle characteristics, but with signs that did not conform exactly to the prescriptions of the partial derivatives of the model.

on gold at the currency board). The drain was halted by the conversion office going off gold after an embarrassingly brief resumption.<sup>24</sup> Outside money was hit hard: gold losses were large, about 40% down relative to trend in two years. Inside money was devastated: the Banco de la Nación was now in the same parlous state as the private banks, with a reserve ratio falling about 20 percentage points toward a feeble 10% level.<sup>25</sup>

Still, there was possibly worse to come, even after this debacle. Though the suspension of 1929 resolved the tensions in the system by halting the prevailing rules of the game so as to end the unstable dynamics, it left a much larger problem to be resolved in the longer run. What could be done with a financial system that was on the verge of ruin? Who would bear the costs of fixing the damage? And how big were those costs going to be?

#### **4. The Downfall of the System: A Central Bank by Default and the Short- and Long-Run Costs of Polluted Institutions**

Ultimately, these tensions inherent in a small open economy brought about radical institutional changes. First, in 1931, came the *de facto* end of the metallic monetary regime. Then, in 1935, came the creation of the central bank to relieve the still dismal private and public financial situation. Yet can we call these *proactive* institutional changes (in particular the creation of the central bank)? Or were they the *reactive* result of a dynamically inconsistent, ill-conceived monetary and financial structure? We have shown that the 1880–1935 period in Argentina provides a clear example of how economic crises—most of the time more than one!—can induce institutional changes in a cascade fashion. However, the cascade, or, as one might say, the “institutional learning by doing process,” ended up polluting the originally well-conceived institutions. Ultimately, a new institution, the central bank, had to be created by default to clean up the mess dynamically engendered by the polluted trio of the Caja de Conversion, the Banco de la Nación, and the private financial system. Unsolved political economy dilemmas (or trilemmas) are the dual of polluted economic institutions in a dynamic context. Thus, as we said before, in a regime where you have incompatible goals in some bad states of nature, it is just a matter of time before well-conceived institutions fall apart under political or discretionary manipulation.

The burden of the cumulative inconsistencies in the financial system after 1914 was borne mainly by the Banco de la Nación. The 1904 changes in its charter allowed the Banco de la Nación to lend up to a maximum of 25% of its capital to the Treasury. This was a radical change from the

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<sup>24</sup> Had the conversion office not suspended, the internal drain could have continued to feed the external drain and this could have precipitated a speculative attack and a collapse of the exchange rate regime. See Miller (1996).

<sup>25</sup> See Figure 4 for these trends. The reserve ratio was disastrously low: for some perspective, we note that, as bad as the run on the banks had been in the 1890–91 Baring crisis, the reserve deposit ratio at the private banks (including the then Banco Nacional) never fell below 22% in 1890–91 (della Paolera 1988, 39).

maximum of 4% allowed in the 1891 Charter and eliminated the tight separation of commercial and developmental banking functions from the government balance sheet. Next, the 1914 rediscounting law enabled the Banco de la Nación to act as a quasi-lender-of-last-resort to the private financial system, marking the end of its quasi-narrow-banking policy of high reserves.

The dynamics shown in Figures 1 to 3 are self-explanatory. The First World War definitively altered the fates of the Banco de la Nación and the financial system. In 1914, the capital and reserves of the Banco de la Nación amounted to 24% of loans, while the sum of rediscounts to private banks and non-performing loans were equivalent to 16% of loans—a difficult, but clearly solvent situation. By 1931, the capitalization fell to 10% of loans; soft rediscounting and non-performing loans amounted to 24% of loans, and increased to an all-time high of 29% by 1934. On top of this potentially insolvent situation, after 1930 the Banco de la Nación had systematically over-lent to the government, with treasury-bill rediscounts exceeding the ceiling of 25% of capital.

The costs of this route were large, and not limited solely to the state bank. As early as 1931, with the Caja de Conversión rediscounting to the Banco de la Nación, and the latter rediscounting to private banks in an exceptionally bad state, the “lemon loans” on state’s balance sheet grew large. Moreover, in an idiosyncratic financial structure that coupled a quasi-lender-of-last-resort with no banking regulation, the risky ventures of at least four of the most important Argentine private banks were grossly exacerbated. This led to the clean-up task assigned in 1935 by the Congress to a specially created institution, the IMIB (Instituto Mobilizador de Inversiones Bancarias).

How did this clean-up operation work? In Table 4 we show first the action by the central bank to revalue gold, a large seignoreage operation that funded the clean up, in addition to supporting other fiscal and monetary tasks. The decision to revalue gold reserves allowed the government to generate an accounting profit of 701 million paper pesos. This was allocated to various uses as follows:

1. to retire some of the Treasury’s floating debt, around 95 million;
2. to augment the banking reserves in the central bank, 216 million; and
3. to supply the IMIB with 390 million pesos to fund the bailout operation.

That is, the IMIB received 55% of the proceeds of the gold revaluation, which in itself represented a 58% increase in the quantity of outside money. How costly was this operation to Argentine households? Such a massive seignoreage tax amounted to about 7% of 1935 gross domestic product.<sup>26</sup>

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<sup>26</sup> The GDP figure for 1935 is 10 billion paper pesos (della Paolera and Ortiz 1995). If one allows that the retirement of some treasury debt with this operation constituted no change in the net wealth of households, the figure falls to 6% of GDP.

How did the IMIB go about its task? The IMIB was created to “buy fixed assets, loans, and other investments immobilized or frozen in the banks, and to make good on them gradually” (Article 1). The IMIB performed three big asset swaps to salvage the financial system:

1. it purchased (at book value) the “lemons” at the Banco de la Nación (the rediscounts to private banks) for 301 million pesos, swapping these for 150 million in cash and 151 million in promissory notes;
2. it purchased from four big ailing banks 385 million pesos in assets, and then gave to a newly-created merged bank (the Banco Espanol Limitado) 193 million of these assets, absorbing the remaining 192 million of bad loans in exchange for 129 million in cash and 63 million in promissory notes; and
3. it did a final bailout operation with the private sector by absorbing 61 million pesos of assets in exchange for cash.

The bank merger arose because IMIB insisted that the four big banks should be broken up according to function. The new merged bank took over their traditional commercial banking operations (and the assets and liabilities associated therewith) and the original four banks were left to undertake only investment banking operations or else quit the system.

It is important to note here that the assets bailed out, a total of 553 million pesos, amounted to 16% of the loans of the entire financial system (including Banco de la Nación), or 32% of the loans of the private banking system. That is, fully one third of the private financial system was rotten, a very large financial crisis by any standard. This upper-bound estimate of the social costs was equal to 5.5% of GDP. A lower-bound estimate of the social costs of the bailout would be the injection of cash to the financial system, amounting to 390 million pesos or 4% of GDP. And, of course, this static real resource cost understates the long-run costs resulting from the destruction of a (once) clean and well-functioning set of institutions.

## **5. Conclusion: Good-Bye Financial Crash, Hello Financial Repression**

A safe, quasi-narrow bank such as the Banco de la Nación, and a Caja de Conversión set up as a currency board to maintain a good reputation, were created to solve the 1890s crisis. It was hoped that, unlike their predecessors, they would never descend to soft-budget constraint activities. But external economic forces and internal political manipulations during the interwar period generated a set of challenges and temptations that disturbed the institutional design and pulled it ever so gradually off the rails until there was no possibility of return.

External discipline could not solve all the problems. The Caja de Conversión was internationally-visible, easily monitored and verified; it was a clear and sound adoption of the rules of the game, a well-behaved and consistent institution in this small open economy. Much less

(internationally and domestically) visible was the financial system and its workings. In the first phase of its existence (1892–1914) the Argentine money and banking regime functioned smoothly, faced few shocks, and was little tampered with by policymakers. In its second phase (1914–34), a series of economic shocks polluted first the private banking system and then, despite a seemingly solid design to prevent bailouts and moral hazard, took down the Banco de la Nación and the conversion office as the illness spread.

The end result was the creation of an institution—the central bank—that could, with the help of opaque and dubious maneuvers by the IMIB, cover up the mess and finally throw in the towel on the idea of external convertibility. Loosening the nominal anchor was to have adverse long-run implications for inflation performance. And having no compelling restraint on the bailouts used to protect internal convertibility, the central bank embraced a lender-of-last-resort function with regard to the private banks that was to invite moral hazard and continuing real resource drains for decades to come.

With banks subject to neither supervision, nor banking laws, nor regulations, and with the mysterious *ad hoc* evolution of the Banco de la Nación, the system got itself on a path toward inconsistent policies. Instead of a classical lender-of-last-resort system, a free insurance or bailout scheme was the end result. This need not have compromised the conversion office and Argentina's commitment to stable macroeconomic policies. But when the 1929 crisis hit, it was so big that the banking system's weakness threatened a disastrous collapse of intermediation absent a rescue, and further real costs. The price was to abolish the conversion office and revalue gold, once and for all losing the notion of parity that had endured since the 1899 resumption.

With the loss of a commitment to a stable external value of the currency and, in the longer run, to a stable price level, the genie—money printing—was yet again out of the bottle. We might consider how Sarmiento or Pellegrini would have viewed these events. Both former Presidents saw Argentina as having an internal tension between progressive sectors of society seeking to create modern institutions with clear rules of the game, and conservative forces seeking to maintain a *status quo* where outcomes usually depended on arbitrary forces and the manipulation of power and influence. Sarmiento's *magnum opus*, *Civilización i barbarie*, was devoted to exactly this issue. The conversion office in some sense epitomized the economic attempt at *civilización*, by playing to clean rules and meeting externally-verifiable standards and monitoring. The more clandestine relationship between private finance and the state, and the capacity of the private banks to obtain successive bailouts from the Banco de la Nación via political means, were more reminiscent of *barbarie*.

In the end, in the sphere of macroeconomic policy at least, the results seem clear. The *Belle Époque* was marked by prosperity in incomes, not in institutions. By accident or, we might say, by lack of design, *barbarie* triumphed.

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Table 1  
Banco de la Nación, Selected Balance Sheet Items 1892–1934

|      | Loans |         |          |           | Banking Reserves |      |       | Liabilities |           | Ratios           |                    |                  |
|------|-------|---------|----------|-----------|------------------|------|-------|-------------|-----------|------------------|--------------------|------------------|
|      | Total | Redisc. | To Govt. | Non-Perf. | Total            | Gold | Paper | Cap-ital    | Dep-osits | Redisc. to Loans | Non-Perf. to Loans | Capital to Loans |
|      |       |         |          |           |                  |      |       |             |           |                  |                    |                  |
| 1892 | 33    | 0       | —        | 0         | 22               | 1    | 21    | 50          | 37        | 0.00             | 0.01               | 1.52             |
| 1893 | 46    | 0       | —        | 1         | 52               | 5    | 47    | 50          | 57        | 0.00             | 0.01               | 1.09             |
| 1894 | 51    | 0       | —        | 1         | 49               | 1    | 47    | 50          | 57        | 0.00             | 0.02               | 0.98             |
| 1895 | 56    | 0       | —        | 1         | 46               | 2    | 44    | 50          | 58        | 0.00             | 0.02               | 0.89             |
| 1896 | 68    | 0       | —        | 1         | 39               | 2    | 37    | 50          | 58        | 0.00             | 0.01               | 0.74             |
| 1897 | 72    | 0       | —        | 1         | 40               | 3    | 37    | 50          | 59        | 0.00             | 0.02               | 0.69             |
| 1898 | 74    | 0       | —        | 1         | 48               | 3    | 45    | 50          | 67        | 0.00             | 0.01               | 0.68             |
| 1899 | 81    | 0       | —        | 1         | 45               | 3    | 43    | 50          | 72        | 0.00             | 0.01               | 0.62             |
| 1900 | 87    | 0       | —        | 1         | 63               | 18   | 44    | 50          | 77        | 0.00             | 0.02               | 0.57             |
| 1901 | 88    | 0       | —        | 2         | 68               | 25   | 43    | 50          | 78        | 0.00             | 0.02               | 0.57             |
| 1902 | 80    | 0       | —        | 2         | 62               | 19   | 43    | 50          | 80        | 0.00             | 0.03               | 0.63             |
| 1903 | 78    | 0       | —        | 2         | 99               | 34   | 66    | 50          | 111       | 0.00             | 0.02               | 0.64             |
| 1904 | 98    | 0       | —        | 1         | 97               | 49   | 47    | 50          | 124       | 0.00             | 0.01               | 0.51             |
| 1905 | 166   | 1       | —        | 1         | 77               | 26   | 51    | 52          | 152       | 0.01             | 0.00               | 0.31             |
| 1906 | 178   | 3       | —        | 1         | 74               | 21   | 52    | 54          | 144       | 0.02             | 0.00               | 0.30             |
| 1907 | 222   | 1       | —        | 1         | 97               | 42   | 55    | 107         | 173       | 0.00             | 0.01               | 0.48             |
| 1908 | 254   | 3       | —        | 2         | 119              | 52   | 68    | 110         | 246       | 0.01             | 0.01               | 0.43             |
| 1909 | 302   | 3       | —        | 2         | 182              | 79   | 103   | 113         | 347       | 0.01             | 0.01               | 0.38             |
| 1910 | 367   | 4       | —        | 3         | 177              | 83   | 94    | 117         | 391       | 0.01             | 0.01               | 0.32             |
| 1911 | 415   | 6       | —        | 5         | 217              | 77   | 139   | 121         | 413       | 0.01             | 0.01               | 0.29             |
| 1912 | 433   | 9       | —        | 9         | 253              | 86   | 168   | 125         | 478       | 0.02             | 0.02               | 0.29             |
| 1913 | 496   | 8       | —        | 14        | 259              | 73   | 186   | 128         | 541       | 0.02             | 0.03               | 0.26             |
| 1914 | 541   | 43      | —        | 41        | 386              | 65   | 321   | 128         | 605       | 0.08             | 0.08               | 0.24             |
| 1915 | 504   | 13      | —        | 57        | 386              | 23   | 362   | 128         | 692       | 0.03             | 0.11               | 0.25             |
| 1916 | 503   | 16      | —        | 59        | 401              | 34   | 367   | 128         | 756       | 0.03             | 0.12               | 0.25             |
| 1917 | 583   | 7       | 72       | 47        | 380              | 84   | 296   | 129         | 871       | 0.01             | 0.08               | 0.22             |
| 1918 | 905   | 5       | 411      | 32        | 398              | 82   | 315   | 132         | 1,195     | 0.01             | 0.04               | 0.15             |
| 1919 | 1,064 | 32      | 361      | 24        | 357              | 89   | 268   | 139         | 1,250     | 0.03             | 0.02               | 0.13             |
| 1920 | 1,162 | 29      | 338      | 18        | 462              | 56   | 406   | 145         | 1,412     | 0.03             | 0.02               | 0.12             |
| 1921 | 1,074 | 38      | 148      | 20        | 463              | 53   | 410   | 150         | 1,310     | 0.04             | 0.02               | 0.14             |
| 1922 | 1,225 | 13      | 151      | 35        | 392              | 53   | 340   | 152         | 1,396     | 0.01             | 0.03               | 0.12             |
| 1923 | 1,369 | 107     | 153      | 49        | 326              | 29   | 296   | 152         | 1,479     | 0.08             | 0.04               | 0.11             |
| 1924 | 1,436 | 122     | 154      | 45        | 283              | 19   | 264   | 153         | 1,503     | 0.08             | 0.03               | 0.11             |
| 1925 | 1,386 | 123     | 85       | 36        | 333              | 35   | 298   | 144         | 1,499     | 0.09             | 0.03               | 0.10             |
| 1926 | 1,398 | 147     | 87       | 73        | 355              | 35   | 320   | 157         | 1,533     | 0.11             | 0.05               | 0.11             |
| 1927 | 1,330 | 106     | 76       | 75        | 482              | 161  | 321   | 158         | 1,621     | 0.08             | 0.06               | 0.12             |
| 1928 | 1,336 | 92      | 70       | 99        | 596              | 318  | 278   | 161         | 1,749     | 0.07             | 0.07               | 0.12             |
| 1929 | 1,557 | 156     | 71       | 92        | 262              | 68   | 193   | 162         | 1,665     | 0.10             | 0.06               | 0.10             |
| 1930 | 1,573 | 152     | 67       | 99        | 228              | 3    | 225   | 163         | 1,657     | 0.10             | 0.06               | 0.10             |
| 1931 | 1,724 | 285     | 94       | 117       | 246              | 2    | 243   | 164         | 1,457     | 0.17             | 0.07               | 0.10             |
| 1932 | 1,687 | 316     | 95       | 158       | 261              | 2    | 259   | 165         | 1,498     | 0.19             | 0.09               | 0.10             |
| 1933 | 1,686 | 293     | 336      | 183       | 256              | 2    | 254   | 165         | 1,578     | 0.17             | 0.11               | 0.10             |
| 1934 | 1,669 | 295     | 349      | 182       | 189              | 0    | 189   | 165         | 1,565     | 0.18             | 0.11               | 0.10             |

Notes: Units are millions of paper pesos, except as indicated. Data is end-of-year. Gold quantities are converted at market rates before 1899, at parity of 2.2727 from 1899. Before 1905, capital is book value.

Sources: della Paolera (1988), Baiocco (1935), Banco de la Nación (n.d.), balance sheets of Banco de la Nación.

Table 2  
 Banco de la Nación Compared to the Rest of the Banking System, Selected Ratios 1892–1934

|      | Banking Reserves to Deposits |             | Loans of Banco de la Nación to Loans of the Entire System | Deposits of Banco de la Nación to Deposits of the Entire System |
|------|------------------------------|-------------|---|---|
|      | Banco de la Nación           | Other Banks |   |   |
| 1892 | 0.60                         | 0.59        | —   | 0.18  |
| 1893 | 0.91                         | 0.58        | —   | 0.23  |
| 1894 | 0.85                         | 0.58        | —   | 0.22  |
| 1895 | 0.80                         | 0.60        | —   | 0.21  |
| 1896 | 0.68                         | 0.56        | —   | 0.20  |
| 1897 | 0.68                         | 0.55        | —   | 0.20  |
| 1898 | 0.72                         | 0.52        | —   | 0.22  |
| 1899 | 0.63                         | 0.48        | —   | 0.21  |
| 1900 | 0.82                         | 0.42        | —   | 0.20  |
| 1901 | 0.88                         | 0.42        | —   | 0.21  |
| 1902 | 0.78                         | 0.47        | —   | 0.20  |
| 1903 | 0.90                         | 0.34        | —   | 0.23  |
| 1904 | 0.78                         | 0.25        | —   | 0.22  |
| 1905 | 0.51                         | 0.31        | —   | 0.22  |
| 1906 | 0.51                         | 0.31        | —   | 0.20  |
| 1907 | 0.56                         | 0.32        | —   | 0.23  |
| 1908 | 0.49                         | 0.36        | 0.30  | 0.28  |
| 1909 | 0.53                         | 0.36        | 0.29  | 0.30  |
| 1910 | 0.45                         | 0.33        | 0.28  | 0.29  |
| 1911 | 0.52                         | 0.28        | 0.28  | 0.30  |
| 1912 | 0.53                         | 0.28        | 0.28  | 0.32  |
| 1913 | 0.48                         | 0.30        | 0.32  | 0.38  |
| 1914 | 0.64                         | 0.14        | 0.44  | 0.51  |
| 1915 | 0.56                         | 0.31        | 0.39  | 0.49  |
| 1916 | 0.53                         | 0.28        | 0.36  | 0.47  |
| 1917 | 0.44                         | 0.28        | 0.36  | 0.46  |
| 1918 | 0.33                         | 0.26        | 0.40  | 0.45  |
| 1919 | 0.29                         | 0.25        | 0.43  | 0.44  |
| 1920 | 0.33                         | 0.26        | 0.41  | 0.43  |
| 1921 | 0.35                         | 0.27        | 0.40  | 0.41  |
| 1922 | 0.28                         | 0.28        | 0.43  | 0.42  |
| 1923 | 0.22                         | 0.25        | 0.44  | 0.45  |
| 1924 | 0.19                         | 0.21        | 0.46  | 0.45  |
| 1925 | 0.22                         | 0.20        | 0.44  | 0.45  |
| 1926 | 0.23                         | 0.13        | 0.43  | 0.45  |
| 1927 | 0.30                         | 0.13        | 0.42  | 0.46  |
| 1928 | 0.34                         | 0.13        | 0.39  | 0.44  |
| 1929 | 0.16                         | 0.10        | 0.42  | 0.43  |
| 1930 | 0.14                         | 0.11        | 0.40  | 0.42  |
| 1931 | 0.17                         | 0.13        | 0.46  | 0.41  |
| 1932 | 0.17                         | 0.19        | 0.49  | 0.42  |
| 1933 | 0.16                         | 0.14        | 0.49  | 0.46  |
| 1934 | 0.12                         | 0.12        | 0.49  | 0.46  |

Notes and Sources: See Table 1. Other banks includes Banco de la Provincia de Buenos Aires, also partly state-owned, and all domestic and foreign private banks.

Table 3  
Dynamics of Internal and External Convertibility, 1908–1913

| <i>(a) VAR estimation</i>                 |                 |                 |
|---|-----------------|-----------------|
| Dependent Variable                        | <i>r</i>        | $\log G$        |
| Observations                              | 60              | 60              |
| R-squared                                 | 0.14            | 0.46            |
| Mean of Dependent Variable                | 0.00            | 0.00            |
| Standard Error of Estimate                | 0.05            | 0.02            |
| Durbin-Watson Statistic                   | 2.20            | 1.77            |
| <i>r</i> ( <i>t</i> - 1)                  | -0.23<br>(0.08) | 0.03<br>(0.04)  |
| $\log G$ ( <i>t</i> - 1)                  | -0.07<br>(0.07) | -0.10<br>(0.03) |
| <i>(b) Covariance Matrix of Residuals</i> |                 |                 |
|   | 0.002           | 0.092           |
|   | 0.000           | 0.000           |
| <i>(c) Stability test</i>                 |                 |                 |
| Determinant                               |                 | 0.03            |
| Trace                                     |                 | -0.33           |

Notes: Lag selection by step-down procedure. Lag of  $\log G$  used in second equation, not shown. Constant terms not shown.  $\log G$  is subject to preliminary detrending. See text.

Source: Baiocco (1935).

Table 4  
The Operations of the Instituto Mobilizador de Inversiones Bancarias

|   | House-<br>holds | Public Sector |      |                 |      | Private Sector    |       |                              |      |             |       |
|---|-----------------|---------------|------|-----------------|------|-------------------|-------|------------------------------|------|-------------|-------|
|   |                 | Treas-<br>ury | BCRA | IMIB            | BNA  | Old Private Banks |       |                              |      | New<br>Bank |       |
|   |                 |               |      |                 |      | Esp.              | Torn. | Hog.                         | A-U  |             | Other |
| <i>(a) Transfers</i>                    |                 |               |      |                 |      |                   |       |                              |      |             |       |
| Financing of the Scheme                 |                 |               |      |                 |      |                   |       |                              |      |             |       |
| Gold revaluation (seignorage)           | -701            | 95            | 216  | 390             |      |                   |       |                              |      |             |       |
| Change in Fiduciary Issue               |                 |               | -216 |                 |      |                   |       |                              |      |             |       |
| Change in Value of Reserve Backing      |                 |               | 216  |                 |      |                   |       |                              |      |             |       |
| IMIB Rescue of Banco de la Nación       |                 |               |      |                 |      |                   |       |                              |      |             |       |
| Private Banks' redisc. from BNA         |                 |               |      |                 | -301 | 142               | 54    | 40                           | 62   |             | 3     |
| Private Banks' bad assets to BNA        |                 |               |      |                 | 301  | -142              | -54   | -40                          | -62  |             | -3    |
| BNA bad assets taken over by IMIB       |                 |               |      | 301             | -301 |                   |       |                              |      |             |       |
| Cash from IMIB to BNA                   |                 |               |      | -150            | 150  |                   |       |                              |      |             |       |
| Promissory note, IMIB to BNA            |                 |               |      | -150            | 150  |                   |       |                              |      |             |       |
| IMIB 1st Bailout of Big 4 Private Banks |                 |               |      |                 |      |                   |       |                              |      |             |       |
| Deposits, Private Banks to IMIB         |                 |               |      | -385            |      | 273               | 29    | 55                           | 27   |             |       |
| Deposits, IMIB to New Bank              |                 |               |      | 385             |      |                   |       |                              |      |             | -385  |
| Assets, Private Banks to IMIB           |                 |               |      | 385             |      | -273              | -29   | -55                          | -27  |             |       |
| Assets, IMIB to New Bank                |                 |               |      | -193            |      |                   |       |                              |      |             | 193   |
| Cash, IMIB to New Bank                  |                 |               |      | -129            |      |                   |       |                              |      |             | 129   |
| Promissory note, IMIB to New Bank       |                 |               |      | -63             |      |                   |       |                              |      |             | 63    |
| IMIB Second Bailout                     |                 |               |      |                 |      |                   |       |                              |      |             |       |
| Cash from IMIB to Old Banks             |                 |               |      | -61             |      |                   | 10    |                              |      |             | 51    |
| Private Banks' Assets to IMIB           |                 |               |      | 61              |      |                   | -10   |                              |      |             | -51   |
| Net                                     | -701            | 95            | 216  | 390             | 0    | 0                 | 0     | 0                            | 0    | 0           | 0     |
| Net, Allowing for Bad Loans             | -701            | 95            | 216  | 0               | 0    |                   | 390   |                              |      |             | 0     |
| <i>(b) Final Balance Sheet of IMIB</i>  |                 |               |      |                 |      |                   |       |                              |      |             |       |
|   |                 | Assets        |      |                 |      | Liabilities       |       |                              |      |             |       |
|   |                 |               |      | Loans           | 553  |                   |       | Promissory Notes             | -213 |             |       |
|   |                 |               |      | Cash in Reserve | 50   |                   |       | "Liability" of IMIB for Cash | -390 |             |       |
|   |                 |               |      |                 | 603  |                   |       |                              | -603 |             |       |

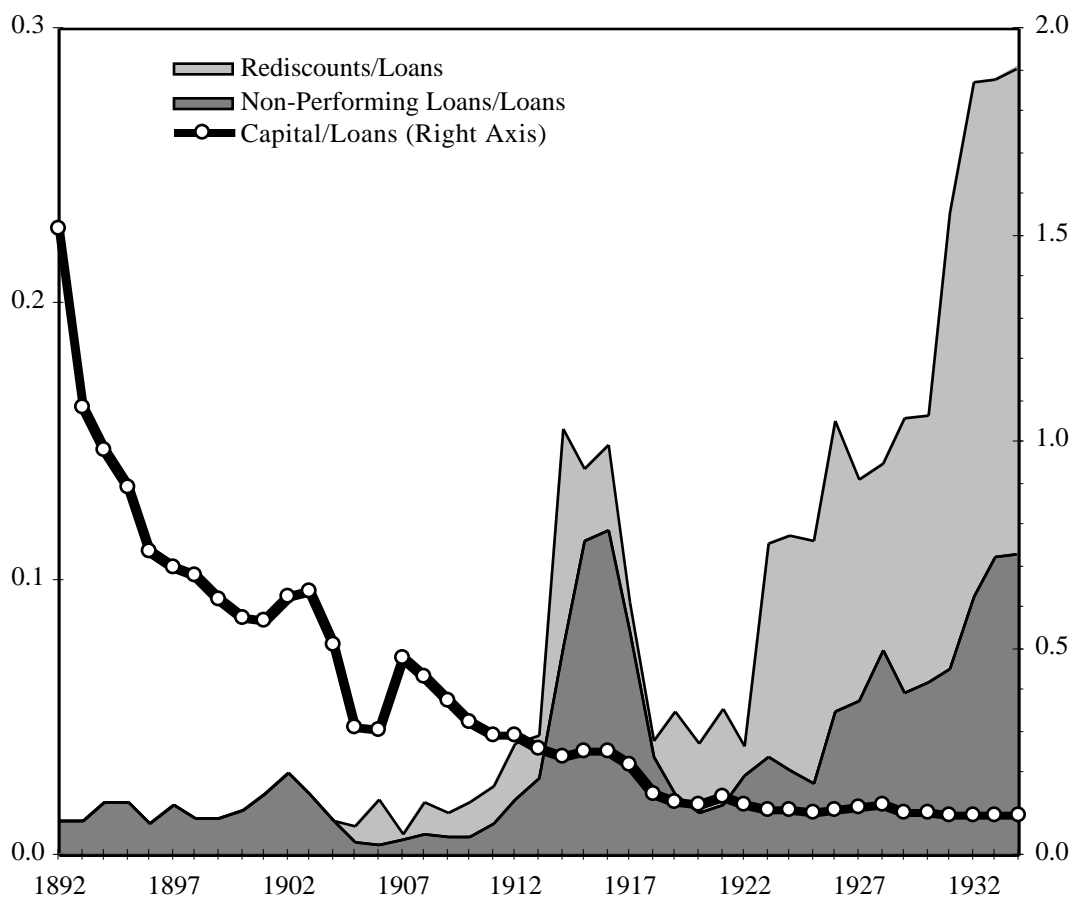
BCRA = Banco Central de la Republica Argentina; IMIB = Instituto Mobilizador de Inversiones Bancarias; BNA = Banco de la Nación Argentina; Esp. = Banco Español y Rio de la Plata; Torn. = Banco Tornquist Co.; Hog. = El Hogar Argentino; A-U = Banco Argentina-Uruguayo.

Notes: See text. Units are millions of paper pesos.

Source: Various confidential reports, Ministerio de Hacienda, Republica Argentina.

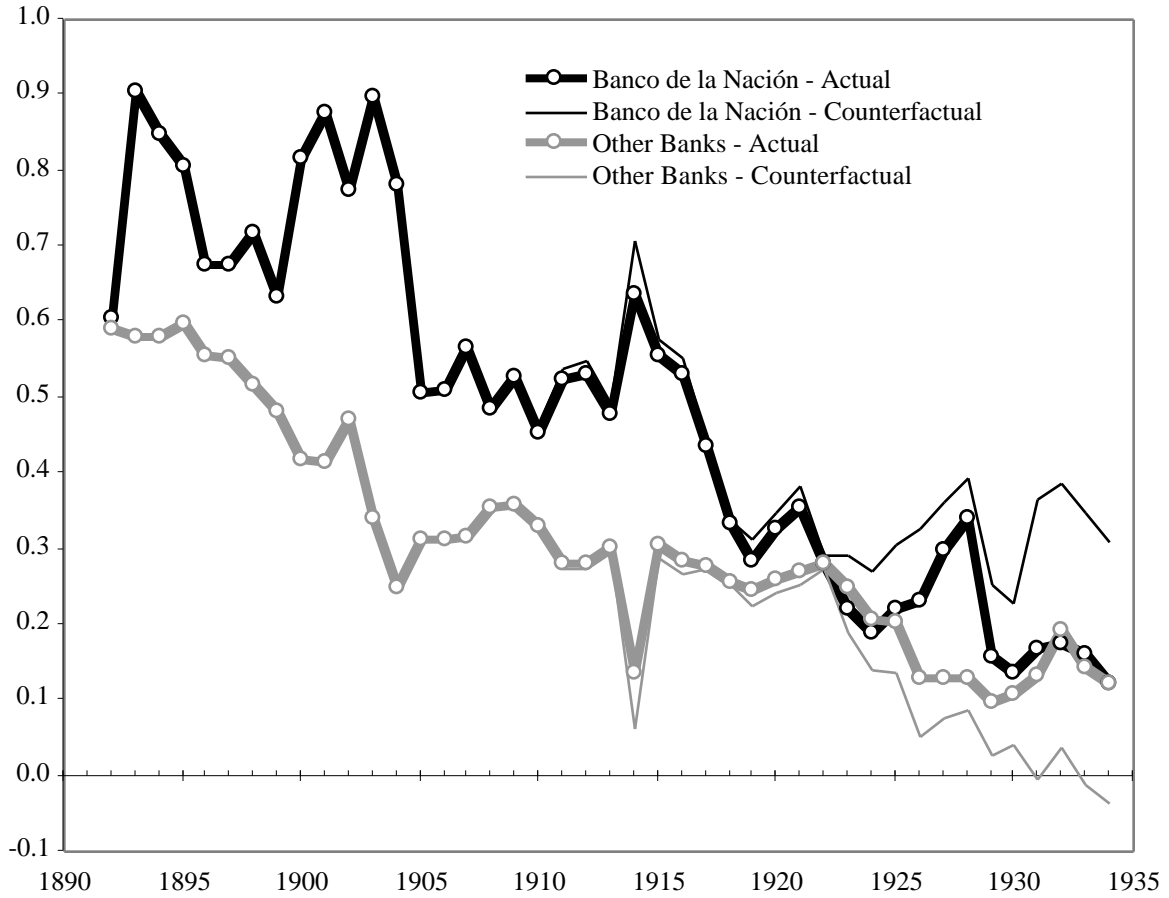
Figure 1

Rediscounts, Non-Performing Loans, and Capital in Relation to Loans at Banco de la Nación



Sources: See Table 1.

Figure 2  
 Reserve-Deposit Ratios for Banco de la Nación and Other Banks:  
 Actual (with) and Counterfactual (without Rediscounts)

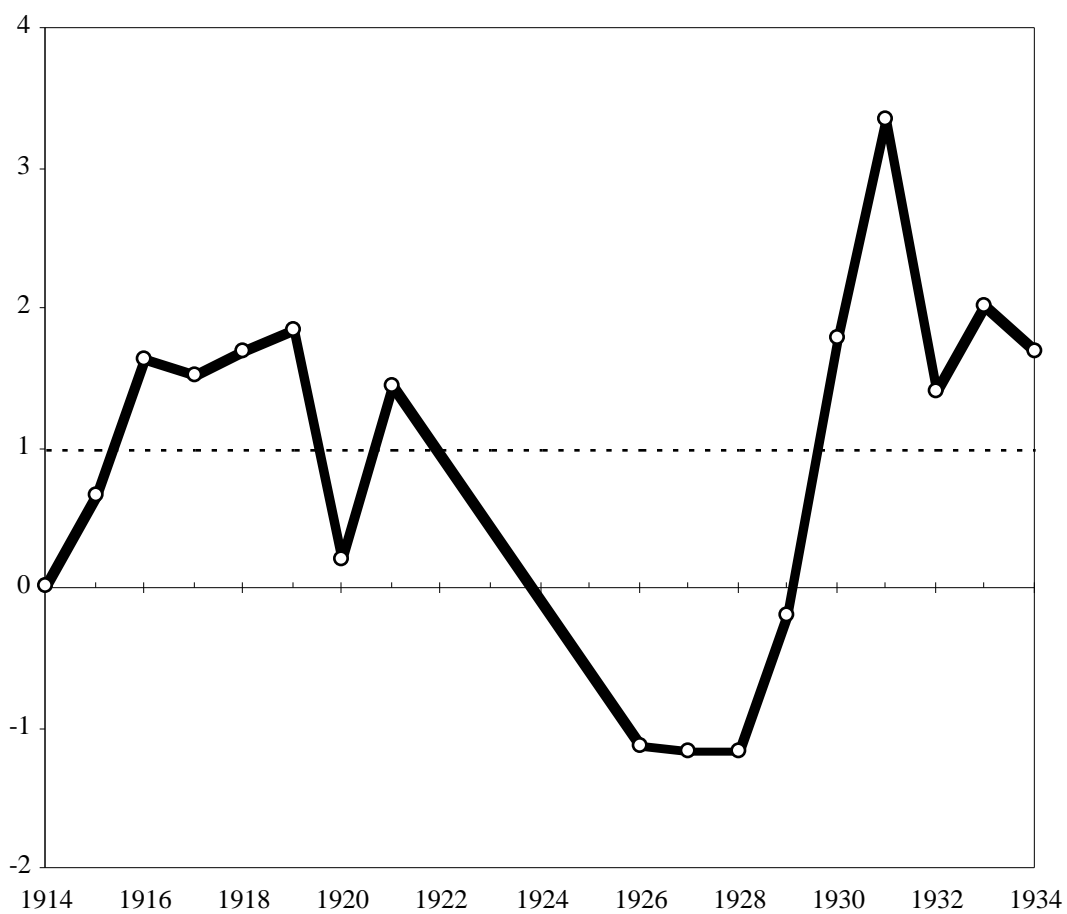


Notes: See text.

Sources: See Table 1.

Figure 3

Net Flow of Rediscounts from Banco de la Nación to Treasury, Ratio versus Legal Limit



Note: The legal limit (1.0 on this scale) was 25% of bank capital.

Source: Banco de la Nación (1941).

Figure 4  
The Phase Diagram for the Dynamic Model

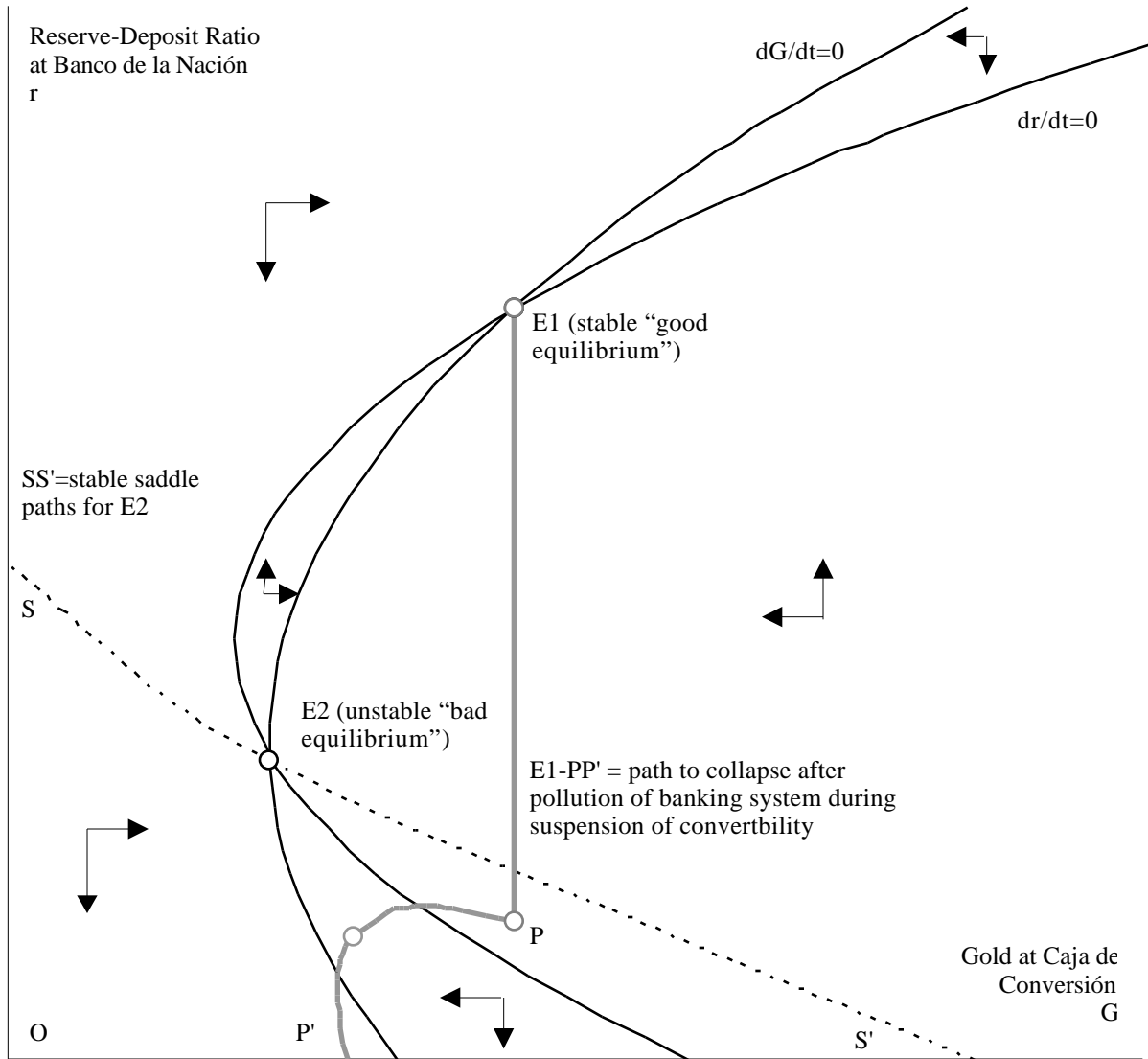
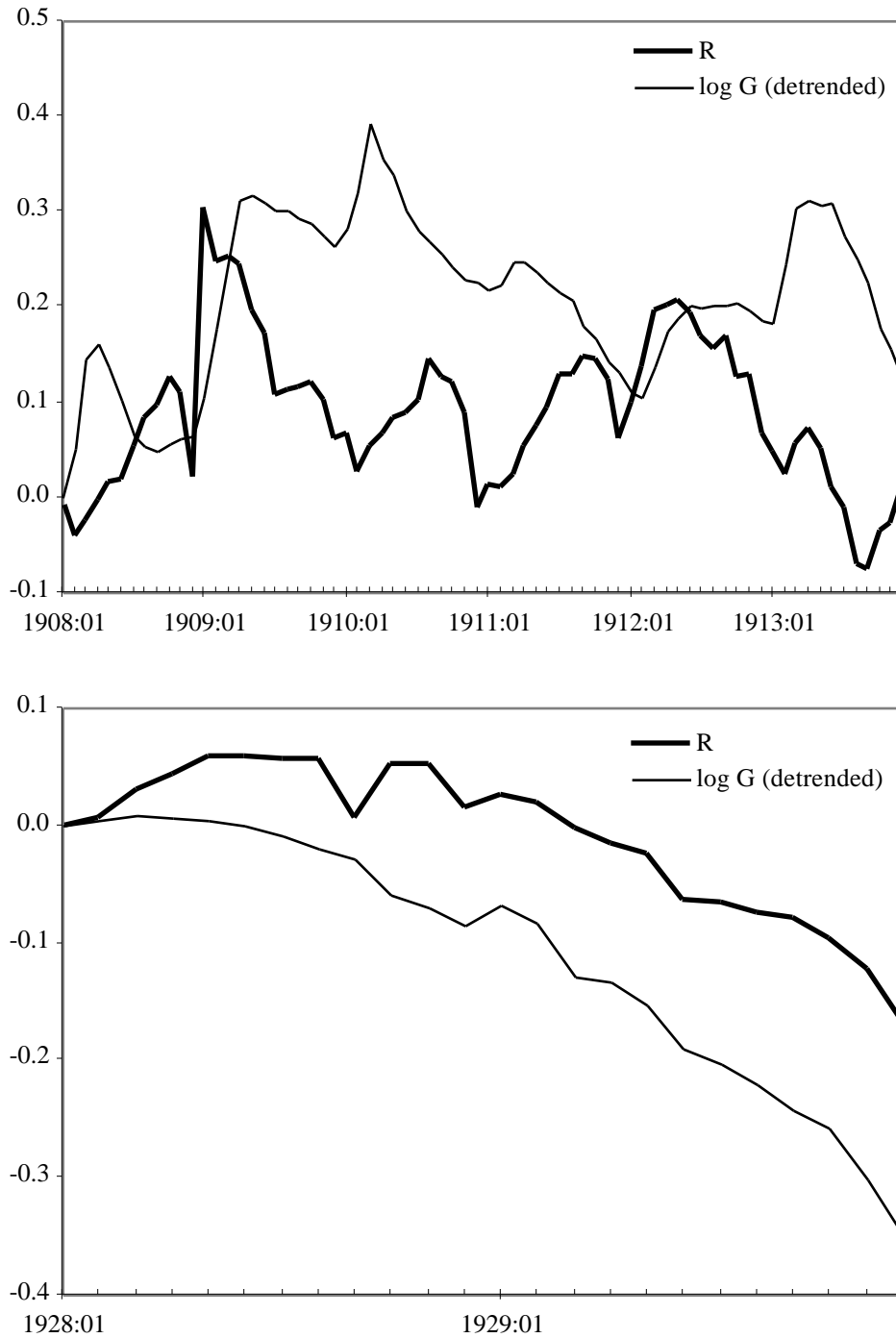




Figure 5  
 Reserve-Deposit Ratio at Banco de la Nación and Gold Stock at Conversion Office  
 in the Two Convertibility Regimes



Notes:  $\log G$  is detrended and both series are renormalized to zero on the left axis for clarity.

Source: Baiocco (1935).

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