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Relaunching the Gold Standard: From Monetary “Anemia” to “Plethora” and the Political Economy of Resumption, 1891–99

As the Baring Crisis swept over the Argentine economy uncertainty over the future course of economic policy grew. The fiscal imbalances were readily apparent but resolving them would depend on finding the political leadership and will to either raise taxes or cut spending. The financial sector continued to be a massive drain on the national coffers, and it was discovered far too late that the incentives of the Law of National Guaranteed Banks would prove unsustainable.

Had support of the banks been terminated a major banking crisis would have ensued. In addition to all this, the continued devaluation of the peso, and the lack of control over the money supply, indicated a need for an overarching monetary reform that could deliver macroeconomic stability and put an end to the decades of inflationary turmoil that had beset the republic since its inception. Clearly, there would have to be some kind of change in economic policies, but at first it was quite unclear what form this would take.

In this chapter we follow the momentous events of the 1890s, a watershed in economic policy. All these challenges were faced and a new institutional structure built that would place the Argentine economy on a firmer footing. Central to this discussion will be a continuing analysis of the conflicts at the fiscal-monetary policy nexus in a small open economy. Policymakers realized the importance of these tensions, and a resolution of the policy trilemma required hard choices.

Ultimately, a new path took shape and, perhaps unexpectedly, it eventually delivered impressive results. The choices were made with a sophisticated consideration of the tradeoffs—inflation and deflation risks, external credit market reputation, and the problem of making a credible commitment. In the end, by aiming to establish a hard convertibility commitment through a currency-board arrangement, the Argentine authorities sought to permanently lock monetary policy in a realm safely outside political control—and then throw away the key.

Tentative Reforms, 1890–91

Dr. Carlos Pellegrini took office as the new president in August 1890 in the midst of a chaotic economic and political situation. On the economic front the domestic financial system was collapsing, the inflation rate was rising to disconcerting levels, and the provincial and national governments were on the point of defaulting on their debt service obligations. On the political front, despite the suppression of the July revolutionary insurrection, there still lurked the threat of another attempted coup d'état.

President Pellegrini sought to temporize and made an important concession to the moderate wing of the Civic Union by appointing two of its most prominent affiliates to crucial positions in the Cabinet. Vicente Fidel López was given the finance ministry and Victorino de la Plaza was to serve as the middle-man for the renegotiation of the external debt.¹ On the positive side for Pellegrini, at least all of the factions in the new political coalition agreed on the diagnosis that the economy was seriously disrupted by inflation and that the public finances were in complete disarray.

On the downside, the agreement stopped there—there was no consensus among congressmen and policymakers on the right course of economic policy to address the fundamental fiscal and monetary problems, to overcome the ongoing banking crisis, and to resolve the foreign debt shambles. A graphic illustration of the political climate was provided by Pellegrini in his speech to the opening session of Congress on May 25, when he remarked that “there is great anarchy in opinion about the means to confront the difficulties in which we are immersed and this anarchy does not surprise me.”²

A clear sense of this state of confusion and uncertainty is an important starting point in our understanding of the stabilization and disinflation experience following the Baring Crisis since these political constraints were to leave their mark in the design of macroeconomic policy in the early 1890s.

Fiscal Reforms

The fiscal inconsistencies of the old regime had been recognized relatively early, but the authorities were slow to act and the problems soon spun out of control. Some timid steps to stabilize the real (gold) value of fiscal revenues (collectible only in paper) had been taken by the Juárez Celman government. When the paper peso started to depreciate the government's revenues from trade taxes declined, because official duties (*aforos*) were levied according to their paper value. In 1889 Congress voted an additional import tax of 15 percent to alleviate

1. Ferns (1973, p. 454). Alonso (2000) writes of the composition of the cabinet that “officially, this was not a coalition government. The appointments were one of the many conciliatory gestures taken by the new government toward the opposition.”

2. Mabragaña (1910).



Cartoon 5.1. *Gloria á los Gobernadores que, en medio de estos horrores, nos dejan sin dos centavos, llenos los Bancos de clavos y miles de acreedores.* (Glory to the governors that, in the middle of these horrors, left us not two cents, left us banks [seats] full of nails and thousands of creditors.)

Notes: President Carlos Pellegrini is the puppet master in control, trying to rescue the banks and provinces. The banks and provinces are depicted as full of nails (*clavos*), a colloquial term for debts. Seat and bank are the same word in Spanish (*banco*)—a play on words.

Source: *Don Quijote*, año 7, no. 2, August 31, 1890.

the fall in revenues. Fiscal revenues rebounded by 16 percent, only then to fall by 30 percent in 1890 (Table 4.2).³ In 1890 a new customs law required that half of all trade duties should be paid in gold pesos and the rest in paper pesos at par.

In January 1891 the government finally made a bold fiscal move and new tax measures were implemented. First, custom duties were to be paid in full with gold pesos or in equivalent paper pesos at the prevailing paper-gold market rate. Second, an ad valorem tax of 4 percent on exports of skins, wool, and meat was

3. See also *Memorias de Hacienda* (1890, p. 119) in “Sources of Revenue” under “Adicional de importación 15 percent”; and Martínez (1898, p. 522) under “Droit additionnel à l’importation.”

Table 5.1. *Key Fiscal Indicators, 1891–99*

| Year | Consumption Tax Yield (Gold) | Fiscal Receipts (Gold) | Fiscal Receipts (Paper) | Fiscal Expenditure (Paper) | Fiscal Deficit (Paper) | Corrected | |
|------|------------------------------------|------------------------------|-------------------------------|----------------------------------|------------------------------|------------------------------|-------------------------------|
| | | | | | | Fiscal Deficit (Paper) | Primary Deficit (Paper) |
| 1891 | 3 | 20 | 76 | 128 | 52 | 52 | 9 |
| 1892 | 4 | 34 | 111 | 128 | 17 | 17 | -16 |
| 1893 | 7 | 39 | 125 | 123 | -2 | -2 | -31 |
| 1894 | 7 | 34 | 122 | 143 | 21 | 4 | -36 |
| 1895 | 8 | 38 | 131 | 166 | 34 | 20 | -17 |
| 1896 | 14 | 44 | 129 | 179 | 50 | 41 | 5 |
| 1897 | 21 | 52 | 150 | 178 | 28 | 16 | -17 |
| 1898 | 21 | 53 | 137 | 206 | 70 | 70 | 39 |
| 1899 | 34 | 73 | 164 | 173 | 9 | 9 | -49 |

Notes and sources: Units are millions of pesos, gold or paper as indicated. See Appendix 1. For the period 1894–97, the corrected service of the debt under the Romero agreement was estimated as follows. A 6 percent rate of interest plus amortization was applied to the outstanding stock of internal debt denominated in paper pesos. A 4.5 percent interest rate was applied on the internal debt denominated in hard currency not including gold bonds related to the Law of National Guaranteed Banks. The external debt service was 1.6 million British pound under the agreement plus 1 million gold pesos in payments on performing external bonds not included in the agreement.

to be imposed temporarily. Third, taxes on consumption were to be introduced, for the first time, at the federal level.⁴

Unfortunately, this effort to address the fiscal problem came a little too late. During 1891, the dramatic real depreciation caused the value of imports to fall by half. Fiscal receipts fell by 31 percent.⁵ Since import duties represented 65 percent of total revenues (Table 4.1), tax receipts in gold pesos were bound to worsen in the short run. Thus, a full adjustment to a balanced budget as a step toward eliminating the inflation tax was clearly infeasible without further reforms. For example, in 1891 a balanced budget would have required a cut in expenditures, net of interest payments, of 62 percent.⁶

Moreover, the budget would continue to worsen because the value, in paper pesos, of external debt service increased with depreciation. A large part of fiscal expenditures were thus indexed to the gold premium. In 1890, debt service amounted to 11.4 million gold pesos, representing 25 percent of expenditures; in 1891, debt service payments were 11.6 million, or 34 percent. Even with approximately the same real debt service payments in gold pesos for those two years and even holding all other expenses constant in paper pesos, the 1891

4. See *Memorias de Hacienda* (1891, pp. 109–19). The report stresses that importers, anticipating that the law would pass, invoiced huge amounts of imports in December and January of 1890. Thereafter and until the end of the year, the custom revenue was nil. The custom duty reforms of 1891 established that duties should be paid in gold or their equivalent in paper pesos and that the schedule of import valuations (*tarifa de avaluos*) was to be established in gold pesos.

5. Value of total imports from Appendix 1.

6. Expenditures net of debt service, was 84 million paper pesos, and the budget deficit was 52. A balanced budget implied a reduction in net expenditures of about 62 percent. See Table 5.1.

level of expenditures would have increased by 11.2 percent due to just the paper peso depreciation alone.⁷ In the event, expenditures increased in 1891 by 10.9 percent because little fiscal adjustment could be accomplished in time.

Monetary Reforms

As regards monetary policy reform, the new administration was eager to end the devaluation of the currency and impose control over the money supply. The plan was to put a stop to the uncontrolled decentralized emission of paper notes by the banks. Instead there would be a centralized authority with a national monopoly over base money issue. To that end, in October 1890 the Executive Power and Congress acted together to settle the currency situation. They created a new institution, the Conversion Office (*Caja de Conversión*), a body that would take the note-issue privilege away from the guaranteed banks and “effect the gradual conversion and amortization of the legal tender currency.”⁸

The ambitions of the new monetary regime extended even further. Article 11 of the Conversion Office charter stated that the government would not only aim for price stability of the paper money but also, it was claimed, the paper peso would revert to convertibility at its par value with respect to gold:

Once the amount of paper notes amortized equals the amount of paper notes issued by the Banco Nacional, or when the market value of the fiduciary currency is at par or near to par, the Board of Directors of the Bureau of Exchange, in agreement with the Executive, shall exchange paper notes for gold, or vice versa, with the aim of fixing the value of the fiduciary currency.⁹

Notwithstanding this announced commitment to revalue the currency and restore the gold anchor, there still remained the obvious question of where the real resources were to be found to finance the plan—and here, of course, the proposals were very unclear. To allow redemption of the paper currency the project contemplated the creation of a Conversion Fund. This fund was supposed to be financed from three sources: first, the metallic reserves of the guaranteed banks—which, unfortunately, were almost exhausted at the moment the law was passed; second, public funds issued to guarantee paper notes; and third, by a vague appeal to “all sums that, by virtue of other legislative acts, might be directed to the conversion of bank paper, specially those arising from economies in the general budget.”¹⁰

Needless to say, even with all these legal and institutional gymnastics to redress the currency situation, the short run economic results in 1890 were just

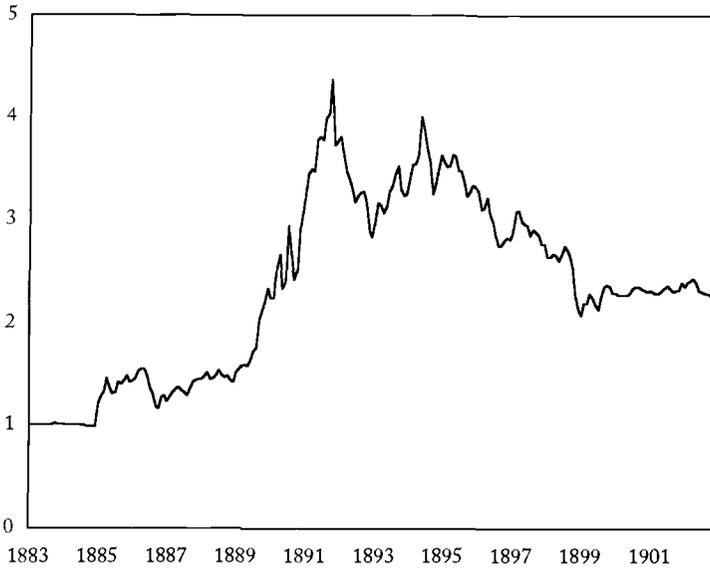
7. Since debt service was almost the same in 1890 and 1891, assuming all else constant, the effect of the depreciation on expenditures is equal to the product of the 1890 debt service share (0.25) and the rate of depreciation (0.448). This equals 0.112.

8. *Caja de Conversión, Ley 2741, 7 de octubre de 1890, Artículo 1.* Sabsay (1975, pp. 615–16).

9. Sabsay (1975, pp. 615–16).

10. Martínez and Lewandowski (1911, p. 343).

Figure 5.1. Paper-Gold Exchange Rate, 1883–1902



Notes: End-of-month data. Units are paper pesos per gold peso.

Source: Alvarez (1929, p. 122).

the opposite of those intended. The continued depreciation of the paper peso shown in Figure 5.1 was the market's response to a government that, by printing money to acquire real resources, turned its back on its own monetary pledge. The markets judged that the fiscal reforms did not square with an institutional reform that called for tight control of the monetary base. Why was this so?

We have found that the path of the exchange rate for the period 1885–99 can be fairly well explained by a structural model (see Appendix 4). The model includes fundamental variables such as the relative money supplies of Argentina and the rest of the world (proxied by the United Kingdom), the relative levels of real output, and the relative innovations in the long-term interest rates. However, when we look at the model's within-sample predictions, although the 1890 and 1892 predicted depreciation rates are very close to the observed rates, for 1891 the prediction of the model is extremely far off the mark. The paper peso rate of depreciation predicted by the fundamentals was only 4.9 percent whereas the observed rate was 37 percent.¹¹

This result shows, first, that the proxy we used for the formation of expectations, the long-term interest rate, is inadequate. Second, it implies that when

11. Recall that the exchange rate model was fitted in first difference form. The predicted 1890 rate of depreciation was 37.4 percent while the observed rate was 36 percent. For 1892 the predicted rate was -11.9 percent and the observed rate was -12.8 percent.

the “news” effect is persistent, as it was in 1891, there can be large movements in the exchange rate that are not well accounted for by the limited set of fundamentals. Though the exchange rate continued to fall the monetary authorities may still have been doing the right things to stop the flight from the paper peso. After all, by the end of 1891, with the help of new foreign capital flows, specifically the Funding Loan which is discussed in a moment, they had succeeded in lowering the rate of growth of the monetary base from 50 percent to about 6.7 percent. Even so, the public did not yet believe in a regime change.¹²

For some evidence on this matter, the monthly quotations from the foreign exchange market shown in Figure 5.1 are a useful indicator of the public’s perceptions of economic policy developments. When the Pellegrini administration took office in August 1890 the gold peso stood at 2.65 paper pesos. By the third quarter of 1891, with gold at 4.21 paper pesos, a return to parity must have looked like a very remote possibility. Negative short-run reaction in the foreign exchange market could have reflected the grave uncertainties at the time reforms were begun. The “news” relevant to the formation of expectations regarding the future policy regime was, for a while, the driving force pushing the market exchange rate well above its fundamental determinants.

12. A simple example illustrates the problem of divergence between economic policy facts and market beliefs, that is to say, a multiple equilibria problem. Assume, for example, a Cagan-type of money demand that is a function of the expected depreciation rate and suppose that purchasing power parity prevails with stable foreign prices in the short run such that, without loss of generality, $p_t^* = \log P_t^* = 0$. Then domestic prices are equal to the exchange rate $p_t = e_t$ and domestic inflation is equal to the rate of depreciation $E_t e_{t+1} - e_t = E_t p_{t+1} - p_t$. Hence, the domestic demand for money can be written as

$$m_t - e_t = -a(E_t e_{t+1} - e_t),$$

where $a > 0$, m_t is the paper money stock at time t , e_t is the exchange rate at time t , and E_t is the expectation operator at time t . Suppose now that the expected evolution of the paper money stock is given by

$$E_t m_{t+1} = E_t m_{t+2} = E_t m_{t+3} = \dots = (1 - \phi)m_t + \phi(m_t + b).$$

Here, the money stock is expected to be fixed from next period onward and is equal to a linear combination of the current paper money stock and a higher stock $b > 0$ with the weights being their respective expected probabilities. Solving recursively for e_t in terms of m_t yields

$$e_t = m_t + \frac{a}{1 + a} \phi b.$$

This expression states that in the short run the exchange rate e_t may differ from its fundamental, the actual money stock m_t , if the probability ϕ assigned to a higher money stock $m_t + b$ in the near future is strongly positive. If the market belief was that, despite all the intended reforms, the inflationary regime would persist for a while, then a higher probability would have been attached to a higher future money stock, and the larger would have been the deviation of the exchange rate from its fundamental. For a discussion of the determination of the exchange rate with an emphasis on the role of “news” see Frenkel (1981) and Dornbusch (1983). The problem of a divergence between economic policy facts and market beliefs concerning the risk of a discrete devaluation is sometimes called *the peso problem*. See also Lizondo (1983).

The External Debt

To take pressure off the foreign exchange market, the government attempted to roll over the service of its external debt. They sought a one-year moratorium in the form of a Funding Loan of four million pounds, but negotiations were interrupted when, in November 1890, Barings bank failed.¹³ Finally, though, their efforts paid off when, on January 23, 1891, the Argentine negotiator Victorino de la Plaza finally signed a much larger contract with a syndicate of merchant banks in a deal coordinated by the Bank of England. The agreement granted the government a 6 percent funding loan of fifteen million pounds to cover the full service of external debt over the following three years.

As might be expected, the external loan was conditional on several provisions, the most severe of these placing clear constraints on the conduct of domestic monetary policy. Admittedly, the Conversion Office had adopted currency contraction as a desired aim of policy to be achieved at some point in time. Article 16 of the Funding Loan agreement was much more explicit, and set a precise redemption timetable: the Conversion Office would have to retire each year, for three consecutive years, fifteen million pesos of bank notes from circulation—cumulatively about 20 percent of monetary base.¹⁴

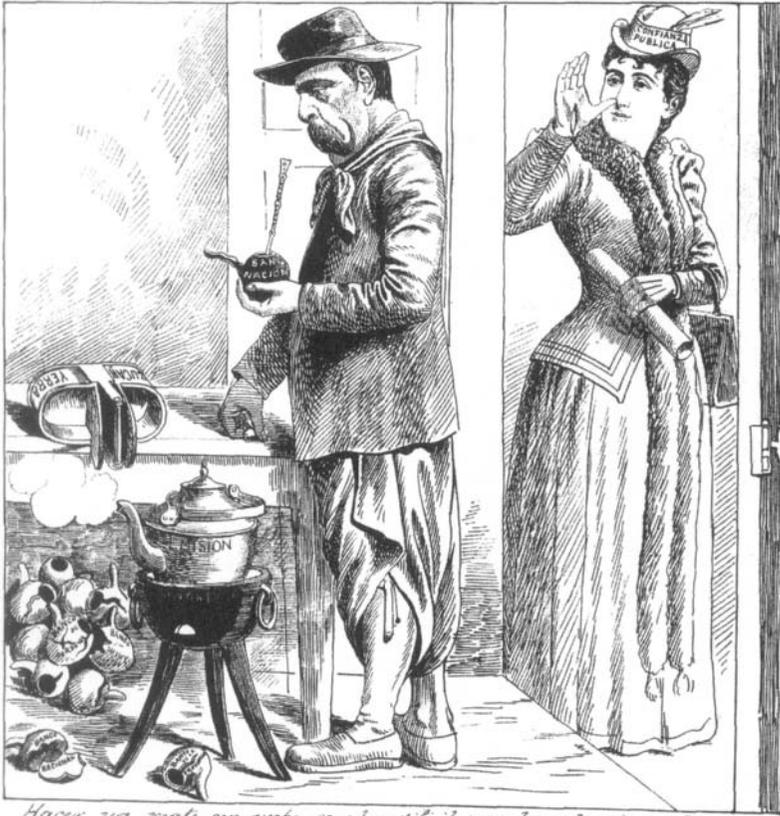
Thus, with a tighter monetary policy in sight, in April 1891 the government decided to suspend the convertibility of deposits into currency at the official banks. The banks were already suffering a severe drain of deposits, and it was announced that substantial reforms in the banking system would be enacted. To that end, in October 1891, Congress created a new bank out of the ruins of the old Banco Nacional called the Banco de la Nación Argentina (BNA), a “semipublic” institution. It was intended that the Banco de la Nación Argentina be established with an initial private capital base of fifty million pesos and shares were to be offered for public subscription.

This plan was derailed when the share issue failed: investors, if there were any at all, regarded the project with deep apprehension and abstained from buying any shares. Ultimately the government “backed” the capital base with fictitious claims that were created by converting the bank into a state institution. To give a flavor of the market climate and the reaction to the project consider the opinion of the correspondent to *The Economist* newspaper in a column published on November 28:

The new Bank of the Argentine Nation will open its doors to the public on the 9th [of December]. Its 50 million of inconvertible notes will rapidly get into circulation, as the provision for issuing them in series of ten millions is merely a blind, and the inevitable economic result of a battle between coin and inconvertible and depreciated paper currency must issue. The imported gold will be driven away faster than it came, and our currency will be in a worse plight than ever.

13. Williams (1920, pp. 117–18).

14. Data from *Memorias de Hacienda* (1891, Anexo 15, pp. 43–60).



Hacer un mate sin yerba, es algo difícil, pero hacerlo chupar: "that is the question."

Cartoon 5.2. *Hacer un mate sin yerba es algo difícil, pero hacerlo chupar: "that is the question."* (To make a mate without herbs is something difficult, but to make it drinkable: that is the question.)
 Notes: This cartoon is a critique of the plan to rescue the Banco de la Nación Argentina. President Carlos Pellegrini holds a mate with the label Banco de la Nación; the lady is public confidence, expressing her lack of faith in the plan. Broken mates lie on the floor. The kettle is labeled *la misión* (the mission to London?) and the stove is labeled the Congress. The container for yerba and sugar lies empty on the table, an allusion to the parlous state of the bank's balance sheet.
 Source: *El mosquito*, año 29, no. 1491, August 16, 1891.

Why was the market afraid of the Banco de la Nación Argentina initiative? There were reasonable fears that the banking project would degenerate into cronyism and political manipulation, as in previous experiences with state banks. But the architects of the plan were not unaware of such fears and took care to make the institutional design more robust. There were a couple of clauses intended to prevent abuse of the bank by the state.

First, in an effort to separate commercial banking functions from government finances, the project put severe limits on the amount of credit that could be extended to the federal treasury. Specifically, rules stated that the Banco de la

Nación “may not lend money to any public power or municipality other than the national government, whose credit with the Bank must not exceed two million pesos” (Article 12). Furthermore, the bank “would not use deposits as funding for public loans” (Article 14).

Second, minimum reserve requirements were imposed on the bank to prevent the money creation associated with excessive credit expansion. Originally, reserves equal to a minimum of 25 percent of total deposits were to be maintained in the vaults of the bank. In June 1892, a new decree established that additional reserves, a “guaranteed fund,” equivalent to 75 percent of private deposits were to be deposited at the Conversion Office.¹⁵

Decisive Reforms, 1892–99

In short, by mid-1891 a package of measures had implemented deep reforms of fiscal and monetary policy. There had been a large tax reform. There was a draconian adjustment in the banking regime centering on the liquidation of the Banco Nacional and the Banco de la Provincia de Buenos Aires. A new independent body had been established to control the monetary base. And, with these reforms afoot, there had been a successful renegotiation of the repayment schedule for the external government debt. We now discuss the short-run response of the Argentine economy to this stabilization attempt.

The tentative reforms of 1890–91 were incapable of cementing in place expectations of a new stable regime. But the beginning of 1892 marked a turning point in the public’s beliefs about the viability of the reform package. The cause of the reversal of expectations was the widespread conviction that Luis Sáenz Peña, an advocate for fiscal retrenchment, would be elected the next president of the Republic for the term from 1892 to 1898:

When in February 1892, it became known that Dr. Sáenz Peña, a highly esteemed member of the Supreme Court, was to be the next President, the premium declined forty points within a month, and there were those who said that the gold premium depended simply on political conditions.... The paper peso would surely appreciate under wise political treatment; public confidence is a powerful factor in a depreciated paper situation, though scarcely sufficient to make a paper peso worth \$0.25 become the equal of \$1 gold without other forces cooperating.¹⁶

Sáenz Peña’s appointment as the new constitutional president of Argentina in October 1892 seemed to calm the nervous expectations of Argentina’s economic agents and bolster the viability of the economic reform package.

The confirmation as finance minister of Juan José Romero, an outspoken defender of convertibility and the gold standard, then produced a further rapid

15. Charter of the Banco de la Nación, from Tornquist (1919, pp. 311–12). Decree of June 1892, from Banco de la Nación Argentina, *Memorias* (1892, p. 3).

16. Williams (1920, p. 141). Here was a clear example of the “news” effect at work.

appreciation in the value of the paper peso on the foreign exchange market. Judged by market sentiment, policy was finally headed in the right direction. Critically, Romero understood that the monetary policy goal, in this case an eventual return to the gold standard, could not be achieved without ensuring coordination and consistency with fiscal policy and without better management of the external debt.¹⁷

The External Debt

Romero disliked the terms of the 1891 Funding Loan, the centerpiece of the de la Plaza–Bank of England agreement. Instead he proposed to the Rothschild Committee, another bank syndicate, that Argentina should pay its external obligations based on its own fiscal capacity and not on new loans from outside financed at high interest rates. Romero feared that Argentina would end up in a Ponzi scheme, that is, an unsustainable schedule for debt payments based on perpetual rollovers where the level of debt explodes in the long run:

If [the government] were to satisfy all the obligations of the internal and external public debt, as well as the sum total of the guarantees, all the revenues of the Nation would scarcely suffice to cover those services alone.... We are paying our debts by creating daily a more burdensome debt for the Nation—a disastrous system which should be put to an end.¹⁸

Thus followed a new round of negotiations, the result of which came to be called the Romero Agreement. Under the new terms, Argentina was granted a more generous rescheduling of its debt service: first, between 1893 and 1898 the government was required to pay half the level of original debt service recognized in the de la Plaza–Bank of England agreement; second, from 1898 it would pay the full level of debt service; and third, from 1901 the government would begin to amortize principal as well. Under this new arrangement the short-run shock to fiscal policy was alleviated and the government would have ample time to anticipate and plan for the increased future payments.

As Romero intended, the plan eliminated the possibility of an explosive debt situation. To show that this was a real possibility, let us consider the government budget constraint and assume that there is an ongoing deficit DEF_t that is entirely bond financed. In this case the change in the stock of debt B_t can be expressed as

$$B_t - B_{t-1} = DEF_t + r_t B_{t-1}, \quad (5.1)$$

17. It is interesting here to note that Romero, an economic conservative, was a member of the Union Cívica party and in December 1889 he had been part of the so-called Revolutionary Junta that plotted the overthrow of President Juárez Celman (Alonso 2000, p. 61).

18. Shepherd (1933, pp. 39–40).

Table 5.2. *The Burdensome Funding Loan Agreement*

| Year | Interest Rate | | Output Growth Rate | Coefficient (1+r)/(1+g) | Debt-Output Ratio (%) |
|------|---------------|------|--------------------|-------------------------|-----------------------|
| | Nominal | Real | | | |
| 1891 | 10.3 | 6.6 | -11.0 | 1.20 | 72 |
| 1892 | 9.9 | 16.2 | 8.6 | 1.07 | 90 |
| 1893 | 8.9 | 10.8 | 5.0 | 1.06 | 91 |

Notes and sources: See text. The interest rate of the Funding Loan is calculated as the stated 6 percent interest rate on the bond, divided by the average price quotation of the bond from *The South American Journal*. The real interest rate is calculated as $(1 + i)/(1 + \pi^*) - 1$, where i is the interest rate and π^* is the world inflation rate proxied by the U.K. Board of Trade price index from Mitchell (1971, p. 476). The rate of output growth is the annual rate of change of the real activity index as in Appendix 1. The coefficient $(1 + r)/(1 + g)$ is as described in the text. The figures for the stock of debt are from Appendix 1.

where

B_t = real debt (in constant pesos);

DEF_t = real primary deficit (in constant pesos);

r_t = real interest rate.

Assume that real output Y_t grows at an exogenous rate g , so that

$$Y_t = (1 + g)Y_{t-1}. \quad (5.2)$$

It is then easy to see that the debt-output ratio has dynamics given by

$$\frac{B_t}{Y_t} = \frac{1 + r}{1 + g} \frac{B_{t-1}}{Y_{t-1}} + \frac{1}{1 + g} \frac{DEF_t}{Y_{t-1}}. \quad (5.3)$$

This first-order difference equation implies that the debt-output ratio B/Y will grow indefinitely in Ponzi fashion so long as the real rate of interest exceeds the real growth rate of the economy.¹⁹

The figures in Table 5.2 indicate that Argentine debt service was rolled over at extremely high real interest rates. The high rates are explained, in part, by the low credit rating of the Argentine government in European capital markets after the crash, and, as a result, the bonds of the Funding Loan could only be floated at heavy discounts in excess of forty percent. In addition, the steady world deflation of the 1891–95 period augmented the real rate of interest still further. With the benefit of hindsight we can now see why Finance Minister Romero felt that the 1891 Funding Loan agreement was a “disastrous system” that needed to be stopped.

Monetary Reforms

When it came to exchange-rate stabilization, Romero favored the idea of letting the market value of the paper peso appreciate, but he opposed any policy of

19. For analysis of debt, deficits and debt restructuring see Blanchard (1983) and Sjaastad (1983).

Table 5.3. *Selected Statistics, 1891–99*

| Year | Money Base | Money Supply | Price Level (1886=100) | Paper-Gold Exchange Rate | Real Output Index | Average of Exports & Imports | Money Velocity | |
|------|------------|--------------|------------------------|--------------------------|-------------------|------------------------------|----------------|-----------|
| | | | | | | | Variant 1 | Variant 2 |
| 1891 | 261 | 417 | 253 | 3.74 | 6,535 | 89 | 3.08 | 100 |
| 1892 | 282 | 387 | 201 | 3.29 | 7,113 | 108 | 2.88 | 115 |
| 1893 | 307 | 415 | 189 | 3.24 | 7,466 | 113 | 2.64 | 110 |
| 1894 | 299 | 419 | 185 | 3.58 | 8,040 | 119 | 2.76 | 127 |
| 1895 | 297 | 435 | 221 | 3.44 | 8,093 | 135 | 3.19 | 133 |
| 1896 | 295 | 437 | 187 | 2.96 | 8,768 | 144 | 2.93 | 122 |
| 1897 | 293 | 440 | 194 | 2.91 | 8,198 | 124 | 2.82 | 103 |
| 1898 | 292 | 443 | 187 | 2.57 | 8,888 | 159 | 2.93 | 115 |
| 1899 | 291 | 463 | 161 | 2.25 | 9,666 | 184 | 2.62 | 112 |

Notes and sources: Money base and money supply in millions of paper pesos. Real output index in millions of 1950 pesos. Exports and imports in millions of gold pesos. Velocity variant 1 is real output multiplied by the paper-gold exchange rate and divided by the money supply. Velocity variant 2 (an index with 1891=100) is the average of exports and imports multiplied by the paper-gold exchange rate and divided by the money supply. All series from Appendix 1.

withdrawing paper pesos from circulation in order to accelerate deflation and push the paper peso toward par. In a November 1892 report prepared for President Sáenz Peña, he declared that

In spite of the quantity of money in circulation, an appreciation in its value is occurring with an unusual speed, and this, without doubt, is an encouraging sign for the country's economic future. But we should not forget that the higher the value of the paper currency in circulation, the greater the amount of gold that will be needed for its eventual convertibility. It seems to me that it is appropriate to mention that the administration of Dr. Pellegrini put forward the idea of restoring convertibility at [a devalued gold premium of] 250 percent. The rate that was suggested by the Pellegrini administration for a future conversion is, I believe, a fair rate and a convenient one for the country, and it seems to me that prudence recommends urgent and serious consideration on this important matter.²⁰

Unfortunately, even with Romero's willingness to consider convertibility at a weaker parity, the plan was not workable because the Conversion Office had no specie reserves and the government was not in a position to negotiate a gold-based loan that could serve as initial backing for the paper peso.

The figures in the first column of Table 5.3 indicate that the monetary base increased by 7.7 percent in 1892 and by 8.9 percent in 1893, but then fell steadily from 1893 to 1899 by an average compounded rate of 0.9 percent per year. The initial increase in the monetary base did not augment liquidity in the money market because the Banco de la Nación's legal reserve requirements, and the private banks' desires to build up reserves after the crash, had an offsetting effect through the money multiplier.

20. Shepherd (1933, pp. 38–39).

Table 5.4. *Monetary Ratios, 1891–99*

| Year | Currency Ratio | Reserve Ratio | Reserve Ratio | | Money Multiplier |
|------|----------------|---------------|--------------------|-------------|------------------|
| | | | Banco de la Nación | Other Banks | |
| 1891 | 0.50 | 0.26 | 0.03 | 0.36 | 1.59 |
| 1892 | 0.49 | 0.47 | 0.58 | 0.45 | 1.37 |
| 1893 | 0.45 | 0.53 | 0.89 | 0.42 | 1.35 |
| 1894 | 0.41 | 0.51 | 0.84 | 0.41 | 1.40 |
| 1895 | 0.38 | 0.48 | 0.79 | 0.40 | 1.47 |
| 1896 | 0.38 | 0.48 | 0.66 | 0.43 | 1.48 |
| 1897 | 0.38 | 0.46 | 0.66 | 0.41 | 1.50 |
| 1898 | 0.36 | 0.47 | 0.70 | 0.40 | 1.52 |
| 1899 | 0.35 | 0.43 | 0.62 | 0.38 | 1.59 |

Notes and sources: See Appendix 1.

Further details of the monetary developments of the 1890s are shown in Table 5.4. The broad money supply increased secularly during 1892–99 by an average annual rate of 2.6 percent, a modest increase in a time of rapid economic growth when compared to the 21.1 percent rate experienced during the 1880s boom years. The velocity index (Table 5.3, column 6) displays a somewhat erratic behavior throughout the deflationary period. The evidence suggests that three distinct patterns can be observed. First, there was a period of profound decline in velocity through 1893 and then, after an upward adjustment in 1894 and 1895, a period of almost constant velocity with a slight declining trend toward the end of the period.

Romero's objectives for stable monetary policy were ultimately achieved. The period 1892–99 was characterized by only the slightest rate of monetary expansion, at least if we omit the monetary expansion used to fund the Banco de la Nación Argentina. Essentially, the monetary policy rule used by the Conversion Office amounted to setting a fixed monetary rule *à la* Friedman.²¹

Fiscal Reforms

On the fiscal side the crucial adjustments were achieved during Romero's tenure, allowing the treasury to post surpluses for four consecutive years from 1892. In reality, given its monetary policy commitment, the government was practically forced to equilibrate the budget after the debacle of 1891–92 and in the face of tightening credit conditions in both the domestic and international markets. With no ability to issue debt issue, and the inflation tax off limits, the deficits had to be eliminated.

The figures in Table 5.1 show that the state of public finances improved markedly from 1892 to 1894. The government moved toward a balanced budget

21. Friedman (1959).

and into surplus. Increased taxation and a sharp improvement in the gold value of fiscal revenues were the important sources of fiscal adjustment, rather than cuts in the level of fiscal expenditures. The healthy state of public finances was weakened in 1895–98 by the impending threat of a border war with Chile. This territorial dispute in southern Patagonia caused a spectacular surge in military expenditures, but by then confidence in capital markets had been restored and, remarkably, the 1895–98 deficits were entirely financed with internal debt and short-term foreign loans, and there was no recourse to the printing press.²²

Recovery with Deflation

Although the postcrash era was a contractionary time for fiscal and monetary policy, the country's economic agents had anticipated both developments, and, far from retarding the economy, the stabilization was accompanied by a remarkably rapid economic recovery. An average annual real rate of growth of nearly 5 percent was achieved in this decade in the years after the crash. This was a very high growth rate for the late nineteenth century by international standards, and it put Argentina on a course to restore its very high rates of long-run growth.²³

In 1892, with expectations stabilized and business activity on the rise, there was an increase in the quantity of money demanded that could only be accommodated by a 21 percent decline in domestic prices and a large appreciation.²⁴ After this big adjustment in 1892, the paper-gold exchange rate fluctuated between 3.2 and 3.6 from 1892 to 1894. From then on it declined at a very rapid pace, a cumulative decline of 37.1 percent in five years from 1894 to 1899. The exchange rate fell from 3.75 paper pesos per gold peso in 1891 to 2.27 in 1899 under a pure float (Figure 5.1).

With a tight monetary base and accelerating economic growth, the income velocity of money could only remain constant or even decline with a protracted deflation in the paper-gold exchange rate and in domestic prices. The real economy recovered and grew even when there was a deflation and an appreciation of the currency. This period of monetary stability was also a time of recovery for the banking sector. The broad money supply expanded by 18 percent due to an increase in the money multiplier, a marked turn around in the process of

22. Defense expenditures rose from 27.8 million paper pesos to 53.8 million in 1895, 63.5 million in 1896, 38.8 million in 1897, and 85.5 million in 1898. See Appendix 1. Short-term foreign loans were advanced by Deutsche Bank of Berlin, Disconto Gescheshaft, and Baring Brothers during 1895–97 in the sum of 24 million gold pesos. See Martínez (1898, pp. 303–11).

23. The 5 percent growth rate compares with a (probably unsustainable) 8.5 percent rate that prevailed in the precrash boom years of the 1880s, and it is only slightly inferior to the rates of growth characteristic of the gold standard years 1900–1913.

24. Friedman and Schwartz (1963) report that European grain crops failed in the summer of 1891 producing a sizeable increase in international crop demand. For Argentina, this represented a chance to increase world market share in crops by a switch in export mix. In 1888, the value share of wheat, corn, and linseed in total exports, was 15 percent; by 1892–93 it was already 31 percent. See Cortés Conde (1979, pp. 90–91).

financial deepening for the official banks after the Baring Crisis had seen a fall of 34 percent in the money multiplier in 1889–91 (Table 5.4).

It is also important to note that the Argentine recovery occurred in the middle of an international recession. In 1892–94 international prices were at their lowest level in the years of the so-called “Great Depression” that characterized large parts of the world economy from 1870 to 1895.²⁵ This global deflation was quickly transmitted to the very open Argentine economy through the market for goods: between 1891 and 1894, for example, while the nominal rate of foreign exchange appreciated 3.1 percent annually, domestic prices fell by a faster annual rate of 9.3 percent.

The international macroeconomic scene changed radically in 1895. An increase in global monetary liquidity resulted from an increase in the world stock of gold. This increase was due to a various factors, among them new discoveries of gold deposits and a series of technological advances in the refining of the precious metal. After 1894, the international inflation had an effect on Argentina: in the subperiod 1894–99 domestic prices declined by only 12.8 percent despite an even greater appreciation of the paper peso by 37.1 percent.

The Political Economy of Deflation

Argentina’s monetary authorities had been successful in fixing the quantity of money and in allowing the value of money to be freely determined by the exchange markets. As a result of this extraordinarily restrictive monetary policy a debate began around 1897 as to whether a return to a convertible monetary regime would be advisable or not. Once again, the conflict over economic policy centered on whether the paper peso should be convertible at its traditional par or at an exchange rate set by the markets. Urban sectors and commercial interests favored a convertibility plan with the old par, while exporters and industrial sectors called for a devalued par.²⁶

What was the distributional impact of the deflation on different interest groups? We constructed various measures shown in Table 5.5. An Argentine export profitability index is measured by the paper-gold exchange rate, multiplied by the ratio of the external price of exports to the rural money wages. Rural money wages are used as a proxy for the export sector’s variable production costs. The figures suggest that the 1892–94 world depression was the main cause of the decline in the profitability index. In the last half of the decade,

25. Although Britain, for example, escaped most of this deflation, peripheral and settler economies suffered greatly. The economic suffering led to political pressure at times for a change in monetary regime. In 1893 a major financial crisis occurred in the United States when expectations arose that the gold standard would be abandoned due to political pressure from silver standard advocates (Friedman and Schwartz 1963, pp. 89–134; Eichengreen 1996; Frieden 1988; 1997).

26. Ford (1962). Such intersectoral conflicts were seen elsewhere. See Eichengreen (1992a; 1992b) and Frieden (1988; 1997).

Table 5.5. *Urban–Rural Welfare Measures and Interest Rates, 1891–99*

| Year | Export | Percent | Percent | Index of Food Prices | Urban Wages | Yield on Internal Bond | Domestic Rate of Inflation |
|------|--------------------------------------|--------------------------------|-----------------------------|----------------------------|------------------------------------|------------------------------|----------------------------------|
| | Profitability Index (1891=100) | Change in Terms of Trade | Change in U.K. Prices | | Deflated by Wholesale Prices | | |
| 1891 | 100 | 19.7 | 3.5 | 100 | 100 | 10.3 | 56 |
| 1892 | 84 | -8.6 | -5.4 | 117 | 129 | 9.2 | -21 |
| 1893 | — | -7.0 | -1.7 | 115 | 121 | 8.7 | -6 |
| 1894 | 77 | -11.1 | -5.9 | 108 | 139 | 8.9 | -2 |
| 1895 | 147 | 52.2 | -3.0 | 98 | 120 | 8.3 | 20 |
| 1896 | 73 | -3.3 | -2.8 | 105 | 164 | 7.7 | -15 |
| 1897 | 76 | 10.0 | 2.2 | 147 | 196 | 7.8 | 4 |
| 1898 | 89 | 12.3 | 3.5 | 201 | 230 | 7.9 | -4 |
| 1899 | 68 | -9.0 | -1.1 | 239 | 263 | 7.9 | -14 |

Notes and sources: All series from Appendix 1 unless otherwise stated. The export profitability index is the implicit international price of exports multiplied by the paper-gold exchange rate divided by the nominal rural wage (the latter from Cortés Conde 1979, p. 228). U.K. Board of Trade price index from Mitchell (1971, p. 476). Nominal urban wages and prices of food from Cortés Conde (1979, pp. 230 and 226). Domestic rate of inflation is the rate of change of the wholesale price index.

the trend of the profitability index is less clear: monetary forces made the peso appreciate, but this was offset by a rise in world agricultural prices.

For the urban sector we show a real wage index consisting of urban wages deflated by a wholesale price index. It is apparent that urban real wages steadily rose after 1895, but real forces that improved labor's marginal productivity may have played an important role in addition to the monetary deflationary forces. A rise in the relative price of labor and a fall in export profitability may just reflect a "normal" pattern of changing economic conditions in this newly settled country. We doubt that a mere change in the nominal exchange-rate regime would have a persistent effect on the equilibrium values of these real variables.

Aside from distributional conflict, the most notable argument against deflation focused on the economy-wide distortions arising in the credit market due to the zero nominal interest rate floor. The argument originates in the work of the little-known Argentine political economist Silvio Gesell (1862–1930). In his two most famous articles entitled "Monetary Anemia" (1898) and "Monetary Plethora" (1909), Gesell identified the problem of the debt-deflation trap, anticipating Irving Fisher's famous work by almost thirty years:

If money gets more expensive, debts increase in exact proportion to the rise in the cost of money. Nominally nothing changes, but materially the debt load increases. With the prospect of having to pay triple what one received, who will dare go into debt to start a new industry in the country?... The increase in the value of money is the common cause for all the country's economic troubles...²⁷

27. See Gesell (1898; 1909). Note the discussion on pp. 20–23. See also Fisher (1933a).

Gesell had the brilliant insight that in a monetary economy there is an essential asymmetry between inflationary and deflationary regimes. In an inflationary economy, nominal interest rates usually incorporate an expected-inflation component. Thus, they can freely adjust upward to reflect expected future changes in the purchasing power of the currency. Conversely, in an economy in which prices are falling the nominal interest rate cannot fully adjust to absorb such expectations since it cannot become negative.

What empirical evidence is available to investigate the Gesell hypothesis? Curiously enough, the behavior of interest rates in this period has received no attention in the previous literature. The nominal interest rate, proxied by the yield of long-term internal bonds, showed a marked downward trend over the period; yet, meanwhile, domestic prices were falling rapidly, resulting in very high real interest rates that were rising in the 1890s (Table 5.5).

In this environment a shift toward more expansionary monetary policies—in the form of resumption at the prevailing market exchange rate—appeared to be a wise course of action. It could have saved the economy from a protracted period of high real interest rates that worked to the detriment of finance, investment, and economic growth. If such was the case, why did the government not embrace such a devaluation to a new parity sooner, rather than waiting until the late 1890s to adopt a definitive convertibility plan at a new parity?

At least two counterfactual policy options could be considered. As we have noted, a first option would have been to adopt convertibility in 1893, accommodating the devaluation with a high exchange rate for the paper peso as Pellegrini and Romero had suggested. However, to have implemented convertibility then, in a scenario of unfavorable expectations and great uncertainty, the government would have needed a very credible commitment. Lacking reserves, they would have required a large foreign loan in specie to provide the necessary backing for the monetary base. It is very hard to imagine that in 1893 the government had the solvency and bargaining capacity to get such a loan in the international market. We have seen that the Funding Loan of 1891 afforded only relatively small sums at high real interest rates. Hence, our pessimistic view of this option seems reasonable once we recognize that a very large loan, at least 20 million pounds sterling, would have been needed to achieve total backing for the country's monetary base, and we recall that the Funding Loan of 1891 had been granted to save Argentina from a default situation and *not* as a line of credit to increase the treasury's specie reserves.

A second option would have been the adoption of a higher rate of monetary expansion in order to accommodate the monetary needs of a growing economy, thus avoiding any further deflationary pressure. In principle, this policy could have been followed under a convertibility system or one of a flexible exchange rate, although only under the latter with any effectiveness in the long run. In accordance with modern monetary theory, this course of action would have

represented an optimum monetary policy in the Gesell-Friedman sense if the authorities set a target of stable prices. However, it would have depended on a series of unlikely assumptions. First, the government had to have had the relevant information and the technical and legal flexibility to know at what speed it should inject money into the economy; and second, economic agents, just beginning to recover from the catastrophic crisis of 1891, would have to have perceived correctly the government's intentions to neutralize deflationary pressures and not instead see a monetary expansion as yet another return to an inflationary scenario. A floating exchange-rate regime of this kind was probably unthinkable in a period dominated by a rigid policymaking *mentalité* that prized above all adherence to the gold standard, a fixed exchange rate system.

In the early 1890s, then, the prevailing economic doctrines mandated a return to convertibility at par and not to a nominal exchange rate at a level higher than par. At first, Argentina was to make its best effort to play by these rules even if, at the end of the day, an accommodation to a new parity was unavoidable. Thus, after struggling with deflation for almost a decade, the policy goal was finally changed in 1899. The arguments of Gesell, and the export lobby, held sway and a new parity was adopted that matched the prevailing market exchange rate of 2.27 paper pesos per gold peso. The need for further deflation was over and, with macroeconomic stability restored, the long-awaited opening of the Conversion Office for normal exchange operations could go ahead. The stage was set for Argentina's resumption of gold standard convertibility.