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Collision Course:
Macroeconomic Policies and the Crash

As in all emerging market crises, the events of 1890–91 prompted the question of what went wrong and what reforms were necessary to prevent the same from happening again. Policymakers faced intense pressure both domestically and internationally, but what options did they have? By way of addressing the problem, this chapter considers the macroeconomic policy choices open to Argentina in the years before, during, and after the Baring Crisis. Stabilization and the resumption of growth were the principal objectives for the authorities, but having to work within a small-open economy placed limits on the feasibility and compatibility of various policy goals. In particular, we will be asking what room for maneuver existed under the constraints imposed by public debt management, inflation policy, and the choice of exchange-rate regime.

The link between monetary policy, inflation, and the exchange rate is, we hope, by this point quite evident. In preceding chapters we have discussed the general contours of Argentine monetary and credit policies in the 1880s. We saw that, in the medium and long run, a sustained expansion of unbacked paper notes was closely correlated with changes in the domestic price level and in the paper-gold exchange rate. For example, from 1884 to 1891, the monetary base grew at an average annual rate of 17.9 percent while prices increased by 16.6 percent and the paper peso depreciated at an average rate of 18.8 percent.

This evidence pushes the explanation of inflation one step back by recognizing its monetary origin, but it does not tell us very much about the determinants of monetary policy itself. What lay behind the expansionary monetary policy of the 1880s that, ex post, destroyed the fixed parity and devastated the domestic financial system? Likewise, even as we note the close link between steady deflation and the freeze of the money stock in the 1890s, can we explain how such a tight monetary policy proved feasible at a time when public memories of inflationary abuses were still very fresh?

To study these more fundamental political-economy questions, we will need to complement our quantitative monetary history discussion with an assessment of the national government's fiscal performance. In this chapter we show

Table 4.1. *Fiscal Revenues, Expenditures, and Public Debt, 1884–1913*

Period	1884 –87	1887 –89	1890	1891	1892 –99	1900 –05	1906 –13
A. Sources of Fiscal Revenue (as Percentages of Total Ordinary Revenue)							
(1) Import Tariff	65	69	65	63	60	45	55
(2) Export Taxes	6	1	0	0	8	6	0
(3) Consumption Taxes	0	0	0	3	10	21	16
(4) Direct Taxes	10	12	13	11	6	7	7
(5) Public Enterprises	10	5	4	3	7	10	10
B. Expenditures by Function (as Percentages of Total Expenditures)							
(6) Interior	32	36	44	36	27	30	43
(7) Defense	20	17	17	15	26	19	17
(8) Justice and Education	10	10	9	6	8	8	12
(9) Finance	15	17	18	7	11	5	5
(10) Debt Service	23	17	17	34	29	37	21
C. Average Levels (as Percentages):							
(11) Public Debt/Expenditures	270	350	630	740	680	540	320
(12) Expenditures/Output	15	15	10	10	13	12	11
(13) Debt (Variant 2)/Output	41	52	65	72	78	67	40
(14) External Debt/Output	27	28	36	39	58	58	24

Notes and sources: See Appendix 1.

that monetary stability—and, hence, the viability of a gold standard regime—depended primarily on the state of public finances. Thus, given the importance we will accord to the federal budget in the evolution of domestic macroeconomic policies, we shall first briefly consider Argentina's public finances in the period by examining the pattern of the national administration's revenues, expenditures, and debt.

Fiscal Revenues, Expenditures, and Public Debt

Any discussion of Argentina's fiscal position in the nineteenth century must begin with the observation that revenues were heavily dependent on taxes imposed on international trade. Table 4.1, Part A, shows that the most significant tax sources were import duties, accounting for about two thirds of revenues in the decade that preceded the Baring Crisis and one half thereafter.

The relative decline of trade taxes in the 1890s was accompanied by the rise in importance of internal excise (consumption) taxes and by the growth of revenues derived from the development of public enterprises. This proved to be a vital part of the economic reform package. And, as we shall see, such a shift in the composition of fiscal revenue is highly revealing of the way in which political-economy considerations shaped the way tax policies would be applied after the crash to erase the deficits of the public sector.

We should note that export taxes were much less important: they had essen-

tially a temporary character, being eliminated in the years of burgeoning public debt. From a trade-theoretic standpoint, the Lerner symmetry theorem tells us that import and export taxes are substitutes, and have identical effects on the volume of trade and economic efficiency *when trade is balanced.* Even so, the asymmetric tax treatment of imports and exports can reveal political cleavages and is economically important in the short run. The tax structure shows how, even during periods of extreme fiscal distress, policy was shaped by the political complexion of Argentine society, especially the power and influence of the rural sector. And the differential treatment of exports and imports matters in the short run whenever trade deficits or surpluses have to be run to maintain external current account balance.

That such rent-seeking forces could affect the formation of the federal budget had important public-debt management consequences—the implicit tax loopholes given to the export industry narrowed the tax base and limited the range of fiscal policy options. For example, given this import-biased tax structure, the postcrash macroeconomic adjustment that required an increase in exports and a reduction in imports to service the overhanging external debt would, necessarily, produce a decline in fiscal revenues and place additional pressures on the budgetary situation. Thus, the 1891 introduction of internal excise taxes by the Pellegrini administration was intended to partially overcome this rigidity by relying more on the domestic economy to raise revenues.

The composition of national administration expenditures is given in Panel B of Table 4.1. Except during the 1892–99 deflationary period, the dominant component of expenditures was the Ministry of the Interior. A precise breakdown of expenditures in these categories is not available in the official sources on an annual basis.[1] However, from fragmentary evidence we conclude that capital expenditures were the main driving force behind the increase in the ministry's outlays in the late 1880s. In 1888 public works defined as the sum of railway construction, dock works, public buildings, migration subsidies, telegraph works, and railroad guarantees accounted for 56 percent of government purchases. This proportion grew to a remarkable 73 percent by 1889, or 34.2 percent of total government expenditures inclusive of finance and debt service.[2] After a marked period of decline in 1892–99, in which capital expenditures were cut in favor of defense expenditures, the next upsurge in public-sector investments came in the early 1910s. It is striking that on this later occasion they were exclusively financed with the issue of long-term internal bonds.

One of the most surprising and important aspects of the Argentine federal budget is the evolution of funds assigned to service and amortize debt. During the years 1884–90, in spite of the increase in the stock of debt relative to

1. Martínez (1898, pp. 321–80).
2. Estimates from Duncan (1983, pp. 11–34). His estimates are based on *Memorias de Hacienda* for the years 1888–89 (see Cuadro 10 and Cuadro 11 on p. 270).

national expenditures, the debt service share of expenditures declined, a fact that Table 4.1, because of its average-year calculation, does not fully reflect.[3] This countervailing movement of debt stock and service payments shows not that the burden in terms of expenditures was actually reduced, but rather that the paper pesos budgeted did not suffice to cover the normal service of the internal and external debt.[4]
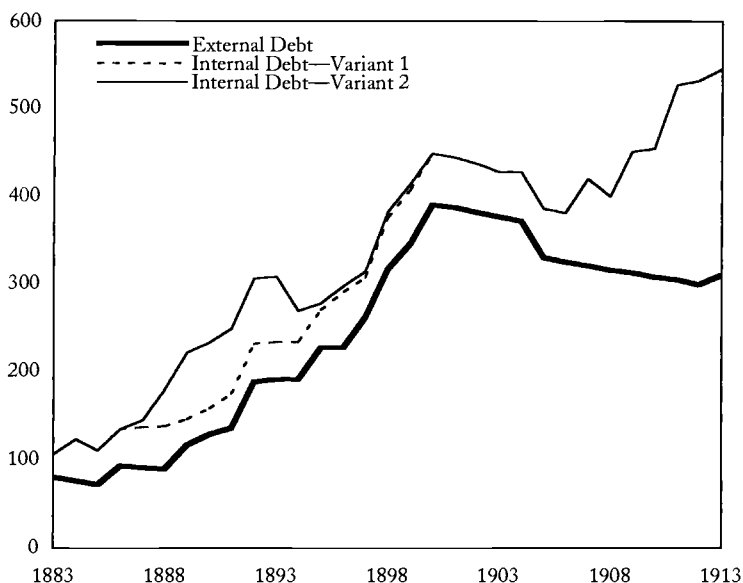
If we estimate the "true" service and amortization of the debt for the years 1884–91, we can see a marked divergence between the "true" expenditures and the amounts budgeted. For the year 1889, budgeted funds covered only 44 percent of required service payments and only 56 percent in 1890. These estimates imply that the official expenditure figures for these same years might have been underestimated by around 12.5 percent.[5] Conversely, for the 1893–97 years, in which the Romero–Bank of England agreement was in force, the paper peso funds assigned by the budget to service the debt exceeded the "true" service of the debt. Here the level of federal expenditures might have been overestimated then on average by about 7 percent. Thus, the budget procedures apparently included in them an implicit sinking fund arrangement to permit the resumption of full service in the years 1898–1905.

A measure of the importance of the federal budget relative to economic activity is given by federal spending as a share of real output. The numbers, while not conveying an exact measure on a year-to-year basis, approximate the impact of the government on the Argentine economy. We can see that, on average, Argentine federal expenditures stood between 12 and 14 percent of real output. While the relative size of the government may appear small by today's standards, it appears very large under a cross-country comparison in the same time period. For example, in the last twenty years of the nineteenth century, the federal expenditures of the United States averaged only 3 percent of gross domestic product. The large Argentine public sector looked much like the Italian case, where central government spending amounted to 10 percent of national output during the years of the international gold standard.[6]

The influence of the federal budget on the course of the macroeconomic

3. The debt service shares in the federal budget were as following: in 1887, 23 percent; 1888, 21 percent; 1889, 17 percent; and 1890, 14 percent. See Appendix 1.
4. This was first noted by Duncan (1983, p. 22): "Así vemos, pues que en 1888 hubo un cambio tan marcado de prioridades en el presupuesto que lleva a reflexionar sobre su función.... Como resultado, el gobierno nacional solo pudo cubrir 3/5 de sus gastos anuales en servicio de la deuda con el gasto presupuestado durante 1889 y 1890. Las restantes proporciones hubo que buscarlas en otros lados: en los recursos extraordinarios, o en las reservas."
5. The estimation is based on *Memorias de Hacienda*, "Cuadro demostrativo de la deuda consolidada de la República Argentina," for the years 1884–91. The table breaks down the public debt by bond issue and includes the yearly amortization of each of them. The interest payments were calculated by applying to the residual values of the bonds their respective stated interest rates. Duncan (1983) compares the budgeted service with the Williams (1920) estimates of the foreign debt service.
6. For the United States see James (1984, p. 192); for Italy see Fratianni and Spinelli (1982, pp. 221–43).

Figure 4.1. Federal Funded Debt, 1884–1914

policies was most strongly felt through the size of the federal public funded debt. Figure 4.1 shows the evolution of federal debt (and the external debt) measured in millions of gold pesos. In Table 4.1 the debt is first shown in row 11 as a proportion of real output. This series (Debt Variant 1) includes the stock of external bonds (floated to finance capital expenditures and refinance the internal debt) and the stock of internal long-term bonds. A second series in row 13 (Debt Variant 2) employs a broader definition and includes, in addition, the debt incurred by virtue of the Law of National Guaranteed Banks.

The difference in the evolution of the two series shows two important trends. First, the accumulation of debt in relation to monetary and banking problems was indeed substantial, accounting for almost 30 percent of the total debt by 1891. Second, the supposedly explosive debt creation for developmental purposes may have been overstated by earlier researchers of the period.[7]

After the crash, during the time of disinflation, there were basically two main influences on the level of public debt. The first major influence was the floatation in 1891–92 of the de la Plaza–Bank of England funding loan that

7. This was recognized by Cortés Conde (1987, p. 16): "In December 1889 the external debt increased by 48 million gold pesos because of debt conversion. This fact gives a misleading impression of the new sources of funds during the second half of the decade.... Except for the 1885 public works loan which starts to flow in by 1886, and the loans related to the northern railroad for 19 million pesos, there were no other new funds."

rolled over the national administration's foreign debt service. The positive effect that this loan had on the level of indebtedness was partially offset in 1892–95 when the fiscal authorities amortized almost completely the stock of interest-yielding gold bonds, the bonds issued before the Baring Crisis to back part of the guaranteed notes.[8]

The second and most important influence was the absorption by the national administration of the delinquent external debt of the provinces; the 1897–1900 upsurge in the level of the federal debt stems from the 120 million gold pesos of external provincial debt that were converted into national external bonds.[9] In short, we emphasize that the upward trend in debt during the 1890s is *not* a reflection of the government having renewed access to international capital markets but rather is the result of the consolidation of old provincial debts.

After 1900, the tide turned at last. During Argentina's gold standard years the stock of public debt relative to output declined dramatically from 78 percent in 1899 to 40 percent on average in the years 1906–13. Its composition also changed. There was a slow but steady policy of external debt retirement and, most important, once the regime appeared credible over time, there was better access to domestic capital markets once Argentine investors were more willing to hold government long-term internal bonds. On the eve of the First World War, almost half of the funded debt, an amount roughly equal to 20 percent of national output, was floated in the Buenos Aires stock exchange. The domestic capital market that had been decimated by the Baring Crisis appeared, by then, to be getting back firmly on its feet.

Debt, Deficits, and Inflation

Given these preliminary remarks, we now develop a more formal analysis of the policy environment before and during the crash to examine whether the Baring Crisis had its roots in the design of inconsistent macroeconomic policies.

Given a pattern of expenditures in excess of revenues, the fiscal authority can finance its budget deficits DEF_t in two ways: by selling public bonds in the capital market over and above the value of bonds being retired or by issuing paper money (domestic credit), or both, so that

$$DEF_t = B_t - B_{t-1} + DC_t - DC_{t-1}, \tag{4.1}$$

where DC_t is domestic credit. To establish a link between budget deficits and the price level we introduce the money market equilibrium condition

8. In 1891 the outstanding stock of guaranteed bonds amounted to 85.5 million gold pesos and by 1895 only 6.5 million. See Appendix 1.
9. By 1896–97, the amount of provincial bonds in default amounted to 116 million gold pesos, representing this a 28 percent of the total national debt. Figures are from Corporation of Foreign Bondholders (1897, p. 349) under the heading "Principal Loans in Default." British pounds were converted at the rate of 1 pound = 5.04 gold pesos.

$$MB_t / P_t = L_t, \tag{4.2}$$

where MB_t is the money base at time t, P_t is the price level at time t, and L_t is the demand for real money base at time t.

By definition, under a gold standard regime, money base equals domestic credit DC_t plus specie reserves S_t. It is equal to domestic credit DC_t under a pure fiduciary regime, so that

$$MB_t \quad = \quad DC_t + S_t, \text{ in a gold standard regime;} \tag{4.3}$$
$$MB_t \quad = \quad DC_t, \text{ in a fiduciary regime.} \tag{4.4}$$

As an example, to cleanly isolate the correlation between budget deficits and inflation rates let us assume, for the moment, a fixed demand for real monetary base $L_t = L$. Suppose also that the fiscal authority has hit a debt ceiling, or cannot augment credit, so that $B_t = B_{t-1}$. Then the government must, under these circumstances, fully monetize the deficit.[10] Equation (4.1) then becomes

$$DEF_t = DC_t - DC_{t-1}. \tag{4.5}$$

How will such deficits affect monetary equilibrium? Under the assumption of a fixed demand for base L, equilibrium in the money market under a gold standard regime implies that the nominal base should remain the same despite the continuous increase in its domestic credit component DC_t and this can be accomplished only by a proportionate decrease in specie reserves. Under a fiduciary regime the monetary equilibrium is restored with a proportionate rise in prices and, via purchasing power parity (PPP), the exchange rate.[11] Thus,

$$DEF_t = DC_t - DC_{t-1} = -(S_t - S_{t-1}), \text{ in a gold standard regime;} \tag{4.6}$$

$$\frac{DEF_t}{DC_{t-1}} = \frac{DC_t - DC_{t-1}}{DC_{t-1}} = \frac{dP_t}{P_{t-1}} = \frac{dE_t}{E_{t-1}}, \text{ in a fiduciary regime.} \tag{4.7}$$

where dP_t / P_{t-1} represents the percentage change in the price level equal to the percentage change in the exchange rate dE_t / E_{t-1} given fixed world prices P^*.[12]

10. Here we have assumed a fixed demand for simplicity. However, to generate the above linkages it is sufficient that changes in supply dominate changes in the demand for monetary base. This was basically the Argentine experience for 1884–91.
11. Recall that in a gold standard regime under the PPP assumption, the level of domestic prices is determined in the world markets by $P = EP^*$. Therefore, given the demand for real base and given world prices the nominal base should remain the same to insure equilibrium in the money market. We discuss evidence in favor of PPP in Appendix 4.
12. Note that if the government is severely credit constrained, so that B_t is zero (all debt suddenly matures and no debt can be rolled over). If there is no immediate fiscal adjustment to reduce the deficit then the threat to monetary or price stability is greatly magnified because of the required amortization of the stock of debt B_{t-1}. In this case, expressions (4.6) and (4.7) become

$$DEF_t + B_{t-1} = -(S_t - S_{t-1}), \text{ in a gold standard regime;}$$

$$\frac{DEF_t + B_{t-1}}{DC_{t-1}} = \frac{dP_t}{P_{t-1}} = \frac{dE_t}{E_{t-1}}, \text{ in a fiduciary regime.}$$

Equations (4.1) and (4.6) show that deficits are not inflationary if the authorities can finance them by borrowing or by running down specie reserves, or both. But equation (4.6) illustrates the well-known proposition that in a credible gold-standard regime governments cannot persistently use money creation as a source of revenue because specie reserves would eventually be depleted, forcing the country to adopt a fiduciary regime as in equation (4.7).[13]

Here, balance of payments crises become a public finance phenomenon once the government of a small open economy can no longer borrow from capital markets to finance a chronic primary deficit. The Argentine historical experience fits well with this description. Table 4.2 shows that the federal government did not collect enough revenues to cover its expenditures and so ran persistent flow deficits from 1885 to 1892. We should recall that immediately after the 1885 demise of the bimetallic standard the monetary authorities precommitted themselves to restore convertibility early in 1887. The conduct of fiscal policy seemed to have supported this goal since the 1886–87 budget deficits were sharply reduced relative to both expenditures and receipts. The fiscal scenario dramatically changed in 1888 when, in only one year, fiscal expenditures inclusive of debt service payments grew by 41 percent and fiscal receipts remained steady. From then on, until some fiscal adjustment took place the federal government typically had to raise additional revenues equal to almost two thirds of receipts to cover the flow deficits. Only during the 1892–93 reform years did fiscal budgets converge toward balance—expenditures were frozen in nominal terms but the gap was closed by a rise in receipts.

How did the economy respond to this set of policy choices? Table 4.3 shows the exchange rate, the budget deficit, the inflation rate, changes in the level of the public debt, and reserves during the crisis. It is true that there is no direct evidence on the flow of paper notes directly advanced to the treasury by the banks of issue; however, here, inferences can still be made and theory can substitute for facts. The counterfactual inflation rate was constructed under the assumption that, in each year, federal deficits were completely financed with issues of paper notes. In other words, if fiscal deficits had been fully monetized, yet other factors such as output and money velocity had remained approximately the same, what would have happened with the inflation rate?[14]

13. Reserves may even be exhausted in an instant by a speculative attack (Krugman 1979).
14. The counterfactual inflation rate is constructed as follows. First, assuming the deficit is fully monetized, the counterfactual growth of paper money $\widehat{MB}_{CF,t}$ is the deficit (column 3) divided by the outstanding stock of paper notes. Thus, following equation (4.1), let $DEF_t/DC_{t-1} = (DC_{t-1} - DC_{t-1})/DC_{t-1} = \widehat{MB}_{CF,t}$. Now, paper money in circulation MB_t times the velocity V_t must equal output Y_t times the price level P_t, so that $MB_t V_t = Y_t P_t$. Log differentiating, and inserting the counterfactual money growth, we obtain

$$\widehat{MB}_{CF,t} + \hat{V}_t = \hat{Y}_t + \hat{P}_{CF,t}.$$

By assuming that output and velocity behave as they did (in both actual and counterfactual scenarios), we can solve for counterfactual inflation $\hat{P}_{CF,t}$. The data are from Appendix 1.

Table 4.2. *Federal Budget, 1885–93*

Year	1885	1886	1887	1888	1889	1890	1891	1892	1893
Millions of Paper Pesos									
Receipts	36	42	52	52	73	73	76	111	125
Expenditure	55	56	68	76	107	96	127	128	123
Corrected Expenditure	56	58	68	86	121	115	128	128	123
Corrected Budget Deficit	19	16	16	34	48	42	52	17	-2
Millions of Gold Pesos									
Receipts	27	30	38	35	41	28	20	34	39
Expenditure	40	40	50	51	60	37	34	39	38
Corrected Expenditure	41	42	50	58	67	45	34	39	38
Corrected Budget Deficit	14	11	12	23	27	16	14	5	-1
Corrected Deficit as Percentage of:									
Receipts	53	38	32	66	66	58	69	15	-2
Corrected Expenditure	35	27	24	40	40	37	41	13	-2

Notes and sources: Corrected expenditures are reported expenditures plus the difference between the debt service realized and budgeted. See text and Appendix 1.

For 1885 the inflation rate is closely matched by the counterfactual rate, which suggests that the monetary authorities may have monetized a considerable proportion of the budget deficit. This possibility is well supported by the fact that the federal government appeared to have been credit constrained and had to amortize part of the public debt stock. In 1886 and 1887, debt played a leading role as a mean to finance the deficit; consequently, there was no clear correlation between deficits and inflation rates in those years.

Why was debt finance available? The primary deficit in Table 4.3 shows a healthier budgetary situation that may have positively influenced public perception of the government's ability to meet its service obligations without resorting to inflationary finance, making the promise of a return to parity more credible. This, in turn meant that the government could float more public bonds in the capital markets and at better prices, since there is a direct link between the market value of government debt and the market's forecast for prospective deficits. In fact, it can be shown that as a consequence of the long-run budget constraint, or solvency condition, the market value of the government's debt at any time is equal to the present value of the government's primary surpluses.[15]

15. For a detailed discussion on the links between public debt and fiscal policy see Dornbusch, Blanchard, and Buiter (1986) and Sargent (1986). For an analysis of the linkages among public finances, credit ceilings, and the market valuation of the public debt in relation with developing-country debt problems see Sjaastad (1983). Formally the link between the value of the debt and fiscal surpluses is as follows. Setting $DC_t = DC_{t-1}$ the government budget implies that $B_t = -SUR_t + (1 + i_t)B_{t-1}$, where $SUR_t = T_t - G_t$ is the nominal primary surplus at time t. Solving recursively forward in time and imposing a no-Ponzi-game condition yields

$$B(0) = SUR_0 + \frac{SUR_1}{1 + i_1} + \frac{SUR_2}{(1 + i_1)(1 + i_2)} + \ldots,$$

which states that the value of the debt outstanding equals the present value of future surpluses.

Table 4.3. *Fiscal Deficits, Inflation, and Public Debt, 1885–93*

Year	Paper-Gold Exchange Rate	Total Paper Notes	Corrected Budget Deficit	Primary Deficit	Inflation Rate	Conterfactual Inflation Rate
1885	1.37	74.8	20.1	5.4	22.8	24.1
1886	1.39	89.2	15.9	-1.0	3.1	8.8
1887	1.35	97.3	16.3	0.4	-4.0	3.3
1888	1.48	129.5	34.2	15.1	0.0	7.9
1889	1.80	163.7	48.1	18.9	19.8	31.2
1890	2.58	245.1	42.2	12.8	40.9	19.7
1891	3.74	261.4	52.2	8.8	56.2	62.3
1892	3.29	281.6	17.1	-15.7	-20.6	-21.8
1893	3.24	306.7	-2.2	-38.8	-6.0	-12.1

Year	Change in Public Debt (Variant 2)	Change in Specie Reserves	Yield Internal Bond	Yield External Bond	Spread over Rendita Italiana	Spread over British Consol
1885	-12.7	-4.8	7.90	6.09	1.53	3.10
1886	23.8	9.1	7.86	5.93	1.79	2.93
1887	10.5	-5.3	8.79	5.48	1.02	2.48
1888	34.0	23.8	8.02	5.18	0.66	2.18
1889	43.1	-31.2	8.01	5.17	0.59	2.37
1890	11.8	-6.3	10.34	5.83	1.23	2.93
1891	15.7	-0.8	10.28	7.58	2.87	4.67
1892	56.7	0.4	9.15	7.51	2.85	4.71
1893	1.7	1.2	8.73	7.70	3.07	4.90

Notes and sources: Exchange rate is paper pesos per gold peso. Total notes and deficits in millions of paper pesos. Inflation and interest rates in percent. Change in public debt and change in specie reserves in millions of gold pesos. See Appendix 1.

Hence there was a positive reaction to the improved fiscal and monetary indicators. By 1888–89 bond prices had started to rise and so, ipso facto, yields were falling (Table 4.3). Another important development was a fall in "country risk" assessed by foreign investors and likely correlated with the perceptions of the government's solvency position. There was a large decline in the spread on bonds relative to both a comparable European long-term bond (the Rendita Italiana) and the British consol, evidence of the government's good credit ratings in the international capital markets.

The fiscal discipline was short lived, and it was precisely then that the public finances were derailed. In 1888, despite a clear worsening in the budget situation, we can see that the inflation and depreciation rates are not closely associated with the counterfactual inflation rate. How was this possible?

Recall that 1888 was the *only* year in which the monetary authorities respected the rules of the game established by the Law of Guaranteed Banks, laws that provided for gold-backed paper note issue. This is evidenced by the close association between the increase in paper notes and the increase in the stock of

specie in Table 4.3. But we note also that specie reserves, in turn, were matched by an increase in the level of public debt.

The causation is clear given the institutional background of the previous chapters: banking reform was financed by an arbitrage operation involving loans negotiated abroad. Basically, the expansion of a gold-backed monetary base was a key component of the expansionary fiscal policy, and there were no dramatic changes in the price level or the paper-gold exchange rate.

As we have seen, the fiscal regime clearly changed early in 1889 when the Argentine government decided to pay off in paper pesos part of the debt denominated in gold. This was tantamount to a partial default by the Argentine government on its contractual obligations. As one might expect, the international financial community reacted in anger. For example, harsh judgment was passed by *The Economist* on May 25, 1889, in an article entitled "Argentine Untrustworthiness":

That those who are now protesting against the claim of the Argentine Government to pay off the Hard Dollars Loan in paper have justice on their side is unquestionable...the claim of the Argentine Government comes as an opportune reminder that in its dealings with its creditors it is not to be trusted, and it is well that this fact should be brought home to investors, because it would appear that before long it will be attempting to raise money here...but the experience that has lately been gained of its financial untrustworthiness, exemplified both in its dealings with bondholders and its refusal to respect its own laws, ought to make investors little disposed to respond to fresh appeals.

It is hard to find an economic rationale for this abrupt change in the debt-service regime. It is even harder to understand why the government embarked on a policy that combined a partial repudiation of its debt, thus damaging its capital market reputation, with a protracted intervention in the foreign exchange market to stabilize the value of the "guaranteed" paper notes. The intervention in the foreign exchange market was a futile strategy because the public— correctly—anticipated that the "dirty float" monetary policy would soon shift from the announced convertibility-resumption objective and end up being a tool for fiscal profligacy. A massive flight from paper currency into specie, an intense currency substitution, resulted.

The monetary and fiscal inconsistency became apparent by the end of the year 1889. The government, already under a debt-ceiling constraint and with its specie reserves almost depleted, had no choice but to switch from debt finance to money creation to cover an ongoing budget deficit. For the 1889– 91 period, the accumulated inflation rate (163.7 percent) and the accumulated depreciation rate (152.7 percent) are closely correlated with the accumulated counterfactual inflation rate (154.9 percent). It seems that in the midst of the crisis inconvertible paper notes were issued almost exclusively for the purpose of financing fiscal deficits. In this way, the world's first emerging-market crisis got underway.

Cartoon 4.1. *La crisis del progreso.* — *Tenia que suceder, Señora; cargado como lo esta, quizo ir tan arriba…que perdio el equilibrio.* (The crisis of progress. — It had to happen, Madam; burdened like that, he wanted to go so high…that he lost his balance.)

Notes: The Baring Crisis, the crash being depicted by the country *(el pais)* falling from a precarious position high atop a pile of seats. Each of the seats bears the name of a failing bank. Seat and bank are the same word in Spanish *(banco)*—a play on words. Falling from the country's arms and bag are piles of debts (*cédulas, títulos,* etc.). Finance Minister Vicente Fidel López is the one doing the explaining; listening is public opinion.

Source: El mosquito, año 27, no. 1422, April 13, 1890.

Before the curtain fell in 1891, the drama concluded with an economic policy that had finally exhausted all the available genuine means of finance and heavily relied on the inflation tax to finance the budget. The inflation tax and currency substitution interacted in unfortunate ways that exacerbated the fiscal problem. If there is a high sensitivity of velocity to inflation (a greater propensity for currency substitution) then this will imply a higher inflation rate for the same level of deficit, all else equal. Moreover, currency substitution will lower the base for the inflation tax, requiring an *even higher* inflation rate to sustain the same fiscal gap. [16]

Interest Rates in the Crisis

We cannot conclude a discussion of the crisis without giving some consideration as to its effect on the domestic credit market. As is well known from recent experience, one of the main side effects of monetary and financial crises in emerging markets can be a sudden and large increase in interest rates for short-term loans. These can result from either active policies of the central bank to restrict credit or, alternatively, from the upward revision of inflationary expectations in the market once a fixed exchange-rate peg starts to crumble and devaluation fears set in.

What can we say about short-term interest rates during the Baring crisis? Unfortunately, until 1901, there is a lack of reliable direct information on the values of the market short-term interest rates and only scattered facts could be gathered from Ricardo Pillado's biweekly report "Revista Económica" published in the newspaper *La Prensa*. In June and July reports of 1890, Pillado asserted that the official banks were still rolling over loans at a 10 to 12 percent annual rate, but he observed that there was no credit available on the margin at those rates. Several quotations suggest that money-lending activities flourished and that transactions were made at unusually high discount rates.

However, by an appeal to theory, we can move beyond anecdotes and indirectly infer the impact of the Juárez Celman's inflationary policies on domestic nominal and real interest rates. Of course, we do have data on long-term interest rates, and a perusal of Table 4.3 seems to indicate, at first glance, that inflationary expectations were not incorporated into the expected return of assets denominated in paper pesos. But such an inference could be far off the mark once it is realized that the yield reported is the yield to maturity of a *long-term* internal government bond. The yield to maturity is the interest rate that equates the discounted value of payments received from the bond with its

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16. For illustration, the 1885 deficit in real terms equaled 20.7 million paper pesos in 1886 prices, and it was financed with an inflation rate of 24.6 percent. The 1891 deficit was almost exactly the same in real terms, 20.6 million 1886 pesos, but then it required a 63.2 percent inflation rate. Here, the 1885 deficit of 20.1 million is deflated by 0.97, while the 1891 deficit of 52.2 million is deflated by 2.53. See Appendix 1.

Table 4.4. *Conjectural Short-term Interest Rates, 1890–91*

If the Juárez Celman administration and the inflation were expected to last:	1 Year	2 Years	4 Years
and a 9% short rate would resume thereafter:	54.5	31.8	20.4
and an 8% short rate would resume thereafter:	88.5	48.3	28.1
with a 9% rate for 5 years, then 8% the next 5, and a 7% rate thereafter:	107.5	57.3	32.1
and expected short term rates coincided with the *ex post* historical interest rates:	120.3	63.4	35.0

Notes and sources: The approximate average maturity of the Argentine bond was 35 years; the estimated yield for 1890–91 was 10.3 percent. Rates are in percent and their calculation is a straightforward application of the formula in the text. For example, the first entry $i = 0.545$ was found by solving the expression $0.103 = (1 \times i + 34 \times 0.09)/35$. The final row of interest rates was estimated by taking, in each case, the actual bond yields for 1892–1900 and bank discount rate for 1901 onward. The bank discount rates are taken from Comité Nacional de Geografía (1941, p. 430).

market value and, as is well known, a bond's term to maturity affects its interest rate.

A link between short and long rates can be estimated based on the theory of the term structure of interest rates. The theory states that the yield on a long bond will equal the average of short-term interest rates that people expect to occur over the life span of the long bond.[17] Thus, the yield on a T-period long bond is approximately equal to

$$YIELD_t = \frac{i_t + E_t i_{t+1} + \ldots + E_t i_{t+T-1}}{T}, \tag{4.8}$$

where T is the number of periods to maturity, i_t is the time t one period interest rate, and $E_t i_{t+j}$ is the time $t + j$ one period interest rate expected at time t. Hence, by making some controlled conjectures on the expected postcrisis short-term nominal rates (conditional on the public's expectations as to the duration of the inflationary upsurge) one can guess the likely range of short-term nominal interest rates during the Baring Crisis years.

Our guesswork is shown in Table 4.4, and it suggests that short-term nominal rates may have greatly exceeded the reported long bond yields, under the assumption that people perceived Juárez Celman's policies as likely to last only a short period of time. We think it reasonable to limit the expected duration of Juárez Celman's regime to one or two years for two reasons. First, in 1889, the Executive had lost the support of Congress when the coalition that brought Juárez Celman into power broke down. Second, the social and political unrest that erupted in 1890 increased the likelihood of a drastic change in the future

17. Mishkin (1986, pp. 140–45).

course of the economy. The revolutionary forces of 1890, headed by the newly founded Civic Union, later renamed the Radical Civic Union (Unión Cívica Radical), denounced the depreciation of the paper money, the disarray of the public finances, and the implications for the country of an open policy of debt repudiation. There were two likely scenarios at this stage: either Juárez Celman would limp along and painfully struggle to the end of his constitutional term in 1892, or he would quite possibly be overthrown well before that time.[18]

As an additional check on our guesswork, we can note that the range of values for the nominal rates of interest simulated in Table 4.4 are consistent with the impact on Argentine interest rates of arbitrage in the foreign exchange market. During the 1880s Argentina had suddenly became well integrated into the world economy and the foreign exchange market was an active margin on which domestic prices and interest rates were determined. With British annual discount rates averaging 4 to 5 percent and the paper peso expected to depreciate by 50 or 60 percent per year, short-term interest rates ought to have been, as a conservative guess, about 60 to 70 percent.

Finally, a sharp upsurge in short-term interest rates is entirely consistent with what we know about credit contraction in the banking sector. Bank created money shrank by 8 percent in 1890 and by a massive 64 percent after the demise of the official banks in 1891. Such a collapse of intermediation would be expected to drive up the price of short-term lending.

The Agenda for Reform

We conclude that the collapse of Argentine financial and monetary institutions was a direct consequence of domestic macroeconomic mismanagement. The plan for growth through financial expansion had been built on the same explosive foundations as failed schemes of the past, such as the Mississippi Bubble.[19] As before, appeals to the fundamentally flawed "needs of trade" (or "real bills") doctrine of money and banking could not disguise an uncontrolled fiscal and monetary profligacy that directly contradicted the commitment to parity.

Up to a point international capital markets accommodated the precrash developments in domestic economic policy. A boom in lending originated in the London market after the Goschen debt conversion of 1887, and this temporar-

18. The political economy issues were explicitly stated in the revolutionary manifesto of July 1890: "Al Pueblo:.... El patriotismo nos obliga a proclamar la revolución como recurso extremo y necesario para evitar la ruina del país.... Pero acatar y mantener un gobierno que representa la ilegalidad y la corrupción; ver desaparecer día por día las reglas, los principios, las garantías de toda administración pública regular, consentir los avances al tesoro, la adulteración de la moneda, el despilfarro de la renta,...esperar la hora de la bancarrota internacional que nos deshonraría ante el extranjero sería consagrar la impunidad del abuso..." (Sabsay 1975, pp. 611–14).
19. Garber (2000).

ily eased the access of the Argentine government to external bond finance.[20] During the early stages of the boom foreign investors were persuaded that the paper peso would return to par, and hence they heavily invested in assets denominated in paper pesos. Yet domestic residents, perhaps with better or, in some cases, inside information, started to bet against the paper peso.[21]

The information asymmetry could not last forever. When foreign expectations were revised, an extreme credit-rationing situation precipitated an inflationary upsurge via deficit monetization and sterilization. The chain of events discussed in this section clearly suggests that it was both the actual and perceived mismanagement of borrowed funds that ultimately caused the credit-rationing phenomenon and the subsequent balance of payments crisis—and not the other way around. International credit tightening was a natural outcome whenever financial markets perceived that a government was not adjusting its plans to avoid default.

The key question for Argentine policymakers after 1891 was how they could overcome such a crisis. Could they resolve the policy inconsistencies behind the crisis, restore macroeconomic stability to the economy, lay the ground work for a more secure financial system, and sufficiently repair Argentina's tattered reputation in global capital markets so as to regain access to foreign credit? These were the urgent tasks for the remainder of the decade that we consider in the next chapter.

20. The nominal rate of interest on British consols were reduced from 3 percent to 2.75 percent in 1887 by Governor Goschen of the Bank of England. The side effects of the debt conversion on Argentina were discussed by Kindleberger (1984, pp. 166–67): "But while the annual cost [of the debt conversion] to the Treasury is reduced, there may well be side effects. In particular, holders of retired debt may not be prepared quietly to accept a lower level of income and, in an effort to prevent this, may switch from government stock into higher-yield and riskier investments.... Another peacetime conversion under Goschen in 1887 fed the boom in securities that culminated in the Baring Crisis of 1890."
21. Williams (1920, pp. 62–63) stressed the important point that European syndicates also intervened in the foreign exchange market to keep down the value of the paper peso with the aim to influence expectations in London: "To make these securities more salable European syndicates shipped gold to Buenos Aires. The increase in the supply of gold would cause paper to appreciate for a time. The fall of the gold premium would create the impression that the paper currency was on the mend. People would take a more hopeful view of the situation in general, and Argentine securities would begin to rise in value."

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