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Volume Author/Editor: Gerardo della Paolera and Alan M. Taylor

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Chapter Author: Gerardo della Paolera, Alan M. Taylor

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# Steering through the Great Depression: Institutions, Expectations, and the Change of Macroeconomic Regime

The experience of Argentina during the Great Depression provides an ideal historical laboratory for the investigation of macroeconomic stability and policy choice in a small open economy under a fixed exchange rate regime.

As in recent developing-country experiences—including examples of contemporary currency boards very similar to Argentina's institutions of the early twentieth century—the essential question is: what happens if you employ a currency board and there is an external crash or deflation threat? This was the nature of the crisis in the 1930s for many countries, and the same potential problem has affected Argentina, Hong Kong, and other countries in the 1990s. What should they do today? To inform that question we ask: What did Argentina do in the past?

The Great Depression began in Argentina in the late 1920s. Like many countries of the periphery, Argentina was exposed to the commodity lottery and the terms of trade worsened in the 1920s.[1] By December 1929, the balance-of-payments crisis was severe and the exchange rate was left to float after a mere two-year resumption of the gold standard.

Recovery began in 1931 as output grew for the first time in several years. By 1934–35 output had regained its 1929 level. Assigning fiscal policy any responsibility for the recovery is implausible: by any measure fiscal policy actually *tightened* during the early 1930s, as in many other Latin American countries and the United States.

However, in monetary policy actions from 1929 to 1935 we see evidence of a change of regime. Many commentators see the creation of the central bank *(Banco Central)* in 1935 as the main monetary policy event of the 1930s in Argentina. We instead emphasize the remarkable decision of the Conversion Office to begin rediscounting in April 1931 and so forge an independent monetary policy. In many ways, we would argue, the Central Bank merely

1. Díaz Alejandro (1983); Kindleberger (1986).

rubber-stamped this new macroeconomic policy regime and continued its operations after 1935.[2]

The Argentine recovery was complete by 1935; and the only pre-1935 change in regime that could be assigned a role in ending the Argentine Great Depression was the action of the Conversion Office. Yet, did it make a difference? We argue that the change of monetary regime was essential to Argentina's recovery in that it helped avert a devastating collapse of prices, and, potentially, of output in 1931–33. Instead of following the United States and other countries into this abyss, Argentina's regime shift destroyed deflationary expectations. Previously extremely high real interest rates were permanently lowered.

In other ways, though, policy was still limited by orthodox thinking. Sterilizations offset gold outflows but never counteracted them. This leads to an important distinction: Temin has argued that recovery from the Depression came through two channels. First, a direct injection of liquidity could lower interest rates and stimulate aggregate demand, something he termed the "Keynes effect." Second, a decisive change in monetary regime could convince agents to discard their pessimistic expectations of deflation, with favorable implications for economic activity via lower ex ante real interest rates, improved balance sheets and asset quality, and so on, termed the "Mundell effect."[3]

Although two escape routes existed, only one was used—but it was enough to avert disaster. Argentina was still a prisoner of its intellectual and economic history, and fear of inflation was still an issue in the midst of slump, as in other countries. The Conversion Office, though willing to follow Prebisch's plan, was not willing to push it as far as it might. There was no "Keynes" effect at work, no large money injection to stimulate aggregate demand as a device to end the Depression more quickly. The channel through which the change in monetary regime had real effects was via the destruction of deflationary expectations, the "Mundell" effect.

Hence we think that the institutional change heralded by the rejection of an old orthodoxy was just as essential to recovery from the Great Depression in the periphery as in the core.[4]

2. In substantive terms, we would argue that the main contribution of the central bank was to put in place a rescue package for the financial sector—by saving the Banco de la Nación—using the proceeds of a large gold revaluation (depreciation). See Salama (1997, p. 21).
3. Temin (1989) noted the impact of these two effects in the 1930s recovery in the core countries, and he too stressed the importance of the Mundell effect and the change of expectations that followed the change of regime. See also Eichengreen (1992a; 1992b). The U.S. experience under Presidents Herbert Hoover and Franklin Delano Roosevelt is a classic example of such a regime shift; see Temin and Wigmore (1990); and Romer (1992).
4. Cross-sectional reduced form analysis of the impact of devaluation on recovery was provided by Campa (1990), following Eichengreen and Sachs (1985). Other studies in this vein include Bernanke and James (1991), and Obstfeld and Taylor (1998). This chapter is perhaps more ambitious in that we focus on a single case-study and examine the structural details of monetary policy and transmission.

## Contours of the Argentine Great Depression

The Great Depression marked the end of an epoch where free trade and integration into external capital markets served as the main strategies for economic growth in Latin American countries.[5] For Argentina, although economic problems had retarded economic growth since 1914, there was a pressure to stand by the old liberal orthodoxy. Even during and after the *worst* recession in Argentine history, during the First World War, few policymakers seriously questioned the return to orthodoxy as the goal for the 1920s, to rebuild an economic order predicated on openness in markets and adherence to the gold standard as a monetary rule.[6] This view was only broken as the threat of an even worse international economic collapse loomed in the early 1930s.

Selected data in Table 9.1 show the impact of the Great Depression on the Argentine economy. From 1929 to 1932, Argentina imported severe deflationary pressures from the international economy. If one were to judge by its trade exposure, Argentina was one of the most vulnerable economies in the presence of such sizeable foreign shocks—shocks that, in addition to pure deflation, also included fierce terms of trade declines as countries took their hits in the "commodity lottery."[7] The external terms of trade declined by 24 percent and the foreign (U.S.) price level fell by 26 percent.

In this context it is astonishing that the Argentine Great Depression was so mild and short-lived by international standards. Hence, the notion that an important change in economic policy took place—and saved Argentina from more pronounced suffering—deserves close scrutiny. As can be gleaned from Table 9.1, from peak to trough (1929 to 1932), the domestic real output fell by "only" 14 percent and had even surpassed its 1929 level already by 1935. Deflation, a curse to avoid in the interwar period, was only about 6 percent (in *cumulative* terms) in the same period.

The behavior of output and prices compares favorably, say, to North American gold-standard countries such as the United States and Canada: they had an overall decline from peak to trough of more than 30 percent in real activity, and more than 20 percent in price level.[8] The Argentine performance was also very good by the standards of the periphery in general, and Latin America in particular. In the same 1929–32 period, Mexico's prices and output fell by 19 percent, Chile's real output by 27 percent, and Brazil's by 28 percent.

We note here that currency depreciations were not always directly correlated with the ability to avoid a slump. For example, in Brazil there was a 66 percent

5. Díaz Alejandro (1983; 1984).
6. On the post-1914 slowdown, see Taylor (1992) and Chapter 7.
7. On these deflations, see Kindleberger (1986); Temin (1989); Eichengreen (1992a). On the commodity lottery see Díaz Alejandro (1984). For a discussion of the general experience of the periphery in the 1920s with terms-of-trade shocks see Kindleberger (1986).
8. The data are from Mitchell (1992; 1993).

Table 9.1. *Contours of the Argentine Great Depression*

*A. Nominal Variables*

| Year | Money Base | Gold Stock | Domestic Credit | Money Supply | Exchange Rate | Price Level | Wage Index | Land Prices | Banks' Discount Rate (%) |
|---|---|---|---|---|---|---|---|---|---|
| 1913 | 823 | 530 | 293 | 1,687 | 2.35 | 100 | 100 | 100 | 5.4 |
| 1928 | 1,406 | 1,113 | 293 | 4,717 | 2.32 | 131 | 180 | 296 | 6.3 |
| 1929 | 1,247 | 954 | 293 | 4,652 | 2.35 | 127 | 178 | 293 | 6.9 |
| 1930 | 1,261 | 968 | 293 | 4,660 | 2.70 | 122 | 166 | 238 | 6.9 |
| 1931 | 1,245 | 593 | 652 | 4,149 | 3.40 | 118 | 155 | 260 | 7.2 |
| 1932 | 1,339 | 584 | 755 | 4,116 | 3.83 | 119 | 146 | 237 | 7.1 |
| 1933 | 1,214 | 561 | 653 | 4,061 | 3.18 | 114 | 139 | 210 | 6.1 |
| 1934 | 1,172 | 561 | 610 | 4,078 | 3.89 | 130 | 136 | 196 | 5.5 |
| 1935 | 1,647 | 1,354 | 293 | 4,180 | 3.75 | 128 | 147 | 185 | 5.4 |
| 1936 | 1,685 | 1,528 | 157 | 4,611 | 3.55 | 131 | 153 | 217 | 5.6 |
| 1937 | 1,679 | 1,422 | 257 | 4,922 | 3.28 | 150 | 159 | 252 | 5.2 |
| 1938 | 1,615 | 1,296 | 319 | 4,811 | 3.86 | 140 | 160 | 271 | 5.3 |
| 1939 | 1,796 | 1,396 | 400 | 4,960 | 4.27 | 143 | 166 | 256 | 5.8 |
| 1940 | 1,810 | 1,329 | 481 | 5,050 | 4.30 | 163 | 176 | 248 | 5.8 |

*B. Real Variables*

| Year | Terms of Trade | Real Exch. Rate | Components of GDP | | | | | | Govt. Deficit/ GDP (%) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Q | C | G | I | X | M | |
| 1913 | 100 | 100 | 4,640 | 4,322 | 204 | 579 | 1,805 | 2,270 | 0.8 |
| 1928 | 99 | 121 | 7,780 | 6,549 | 406 | 900 | 2,901 | 2,991 | 1.7 |
| 1929 | 90 | 126 | 8,146 | 6,781 | 425 | 1,029 | 2,847 | 3,048 | 2.3 |
| 1930 | 88 | 144 | 7,784 | 6,829 | 408 | 871 | 2,100 | 2,533 | 4.3 |
| 1931 | 65 | 165 | 7,216 | 5,248 | 393 | 533 | 2,871 | 1,651 | 2.7 |
| 1932 | 68 | 162 | 6,966 | 5,092 | 393 | 374 | 2,636 | 1,282 | 1.8 |
| 1933 | 64 | 139 | 7,309 | 5,723 | 415 | 418 | 2,474 | 1,506 | 1.7 |
| 1934 | 79 | 159 | 7,912 | 6,085 | 447 | 554 | 2,546 | 1,584 | 1.8 |
| 1935 | 79 | 153 | 8,275 | 6,187 | 538 | 691 | 2,754 | 1,836 | 1.2 |
| 1936 | 96 | 148 | 8,336 | 6,249 | 565 | 824 | 2,491 | 1,870 | 1.7 |
| 1937 | 110 | 121 | 8,964 | 7,145 | 612 | 748 | 2,911 | 2,381 | 2.4 |
| 1938 | 101 | 151 | 8,979 | 7,703 | 634 | 824 | 1,963 | 2,251 | 2.4 |
| 1939 | 89 | 162 | 9,337 | 7,271 | 668 | 691 | 2,501 | 1,755 | 3.6 |
| 1940 | 91 | 145 | 9,486 | 7,588 | 672 | 637 | 2,071 | 1,461 | 2.7 |

*Notes:* All nominal quantities are millions of paper pesos; real quantities are millions of 1913 pesos; ratios are percent; exchange rate is paper pesos per U.S. dollar; all other series are indices with 1913=100. The components of output are, in order, total output (Q), private consumption (C), government spending (G), private investment (I), exports (X), and imports (M).
*Sources:* See Appendix 1; Baiocco (1937); IEERAL (1986); della Paolera and Ortiz (1995).

depreciation of its currency, in Mexico 47 percent, while the Argentine paper peso declined by 63 percent with respect to the gold dollar.[9]

We think it is important here to distinguish between a country *choosing* to depreciate as a regime switch versus *being forced* to depreciate in a crisis. There is an enormous difference between: (a) letting the currency depreciate as a mean to restore equilibrium in the money market; and (b) installing a new policy regime à la Sargent that changes expectations and alters the course of economic decisions.[10] If, in the 1930s, Argentina *were* free to choose (or not choose) a full-fledged change in its monetary regime, and if, as we argue, this was as a proactive political-economy decision, then policymakers must have had a lot of room for maneuver.

Indeed they did. From Table 9.1 we note that around 1930, almost 80 percent of the money base was backed with gold—a backing ratio much higher than in any other gold standard country, and a symptom, as we shall see, of Argentina's thirty years of adherence to an especially strict currency-board regime. The massive gold stock was critical, however, even *after* suspension. By using the gold to service external debt obligations the government could maintain a very orthodox fiscal policy. Argentina did not default on foreign debts in the 1930s: a very unusual feat for a peripheral country. In this way a new policy mix was chosen: "sound finance" in the realm of fiscal affairs, and, at the same time, an unorthodox fiduciary monetary regime. The domestic credit component of the money base, frozen for 32 years by the law of 1899, increased to such an extent that it already accounted for 62 percent of the money base by 1932.

Other macroeconomic responses stand out in Table 9.1. Investment fell by about one half in 1929–31 and by another third in 1932. Private consumption fell by about a quarter. Both shifts greatly exceeded the fall in output. This was possible only because an export recovery and massive import compression provided most of the adjustment.[11] As we shall see, agents began to clamor for a change in policies to redress the negative expectations that prevailed. The dramatic declines in output, investment, and consumption ceased, and then reversed, after 1932. It seems the authorities were successful in the regime change, stabilizing the price level and real exchange rate. Export growth and sustained import compression assisted recovery.

9. In larger samples nominal devaluations were correlated with economic recovery in the 1930s. For the core this was shown by Eichengreen and Sachs (1985) and the idea was extended to Latin America by Campa (1990).
10. See Sargent (1983). He applied the idea of regime change to the end of large inflations in history. Temin and Wigmore (1990) applied the idea to the end of deflationary episodes such as the Great Depression.
11. These patterns of adjustment were common in the 1930s depression in Latin America, despite subsequent beliefs in the structuralist and import-substitution schools that the structure of the economy was inflexible and exports could not generate economic expansion. See Twomey (1983) and Bulmer-Thomas (1996).

In short, by 1933 Argentina had circumvented the most devastating effects of the World Depression. Did policy choices make a difference?

## The Interwar Gold Standard: Orthodoxy and Heterodoxy

Some authors have characterized the Argentine Great Depression as a definite "blessing"—in the sense of creating an opportunity to adopt new economic policies and institutions in the face of widespread pressure from external governments and economic advisors to stick to orthodox policies. This new institutional regime, by deviating from the prevailing *mentalité* of the orthodox gold standard, is what could have insulated the domestic economy from the dismal global scenario.[12]

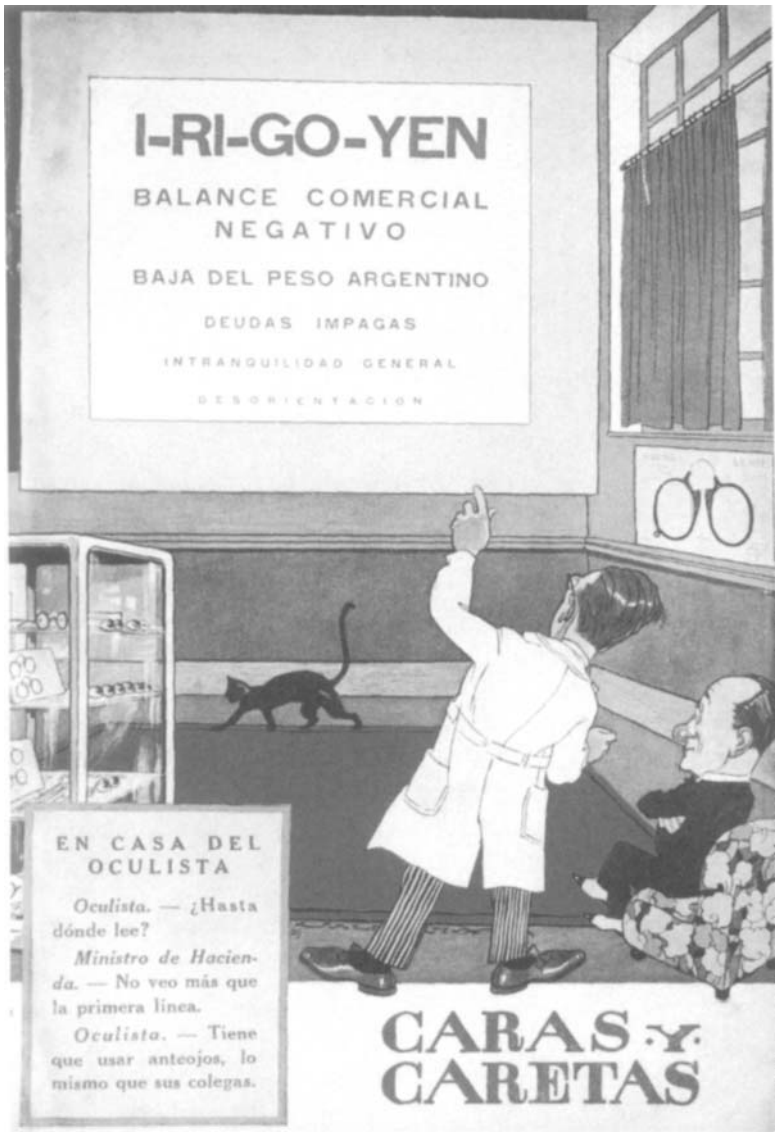
Such a regime would have been hard to envisage just a few years earlier given Argentina's position as a periphery economy and its struggle, over more than a century, to securely establish credible monetary, fiscal, and financial institutions. The long effort to adhere to orthodoxy followed from a political consensus in which few doubted the rewards that would (and did) accrue to Argentina in return for embracing globalization in the late nineteenth century and playing by the internationally approved "rules of the game." Free movements of capital, labor, and goods were a key ingredient in Argentina's pre-1914 success. Against this backdrop, we can see what extraordinary intellectual and technocratic obstacles policymakers had to surmount in the 1930s before they could effect a change in the macroeconomic regime, and, in doing so, depart from the prevailing orthodoxy even ahead of most of the developed countries of the core.[13]

### *Fiscal Policy*

We discuss fiscal policy first because of the important constraints it put on monetary policy, even though in itself it was not an area of regime change at all. The historical record shows no shift in Argentina's basic orthodox fiscal stance—of seeking to maintain budget balance—even during the worst years of the Great Depression. This is not a surprising discovery. Even in the economies of the core, the power of fiscal policy was not unleashed to insulate economies from the

12. See, for example, Díaz Alejandro (1983) and Ortiz (1998). Díaz Alejandro states: "Once upon a time foreign money doctors roamed Latin America prescribing fixed exchange rates and passive gold exchange standard monetary rules. Bankers followed in their footsteps, from the halls of Montezuma to the shores of Daiquiri.... This paper will chronicle some of the ways various Latin American economies coped with them. It will be seen that the performance of several economies was remarkably good, under the circumstances."

13. Argentina was one of the first countries to suspended the interwar gold standard in December 1929. At around the same time Australia, New Zealand, and Uruguay suspended. The first suspensions in the core were Britain and Scandinavia in 1931, the same year other Latin American countries suspended. Eichengreen and Sachs (1985); Campa (1990).




Cartoon 9.1. *I-ri-go-yen — Balance Comercial Negativo — Baja del Peso Argentino — Deudas Impagas — Intranquilidad General — Desorientacion. En casa del oculista. Oculista—¿Hasta donde lee? Ministro de Hacienda — No veo más que la primera linea. Oculista — Tiene que usar anteojos, lo mismo que sus colegas.* ([On the optician's chart:] I-ri-go-yen — Negative Trade Balance — Fall of The Argentine Peso — Unpaid Debts — General Unrest — Disorientation. [Dialog:] At the optician's office. Optician — How far can you read? Economy Minister — I can't see more than the first line. Optician — You have to use spectacles, the same as your colleagues.)
*Notes:* In a cartoon that appeared shortly before the coup by General Uriburu, Irigoyen's government is heavily criticized for doing too little as the international and domestic economic crises worsen.
*Source: Caras y caretas*, año 32, no. 1625, November 23, 1929.

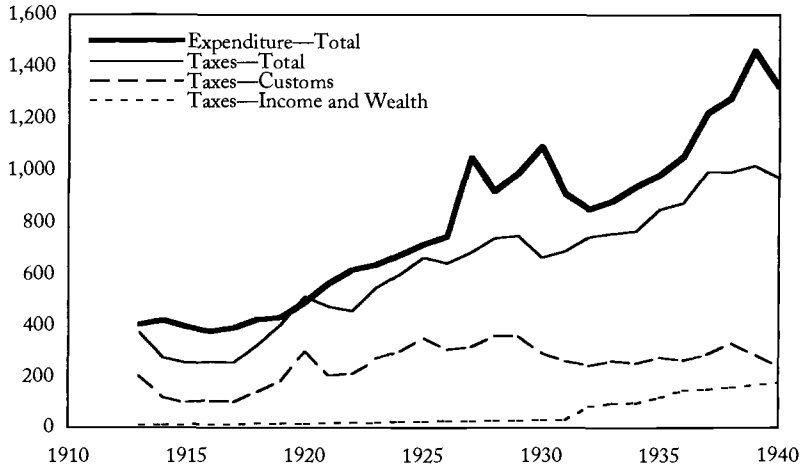
recession. For example, it is hard to find any evidence of *full employment* deficits in the United States during the 1930s. Indeed, for many years, the net fiscal impact appeared to be contractionary.[14] Moreover, if expansionary deficits were not an option for core countries in the 1930s—with their developed taxation systems and fiscal sophistication—they were, of course, still less of a feasible policy choice for countries at the periphery, given their much less developed government structures for managing, administering, and implementing large spending programs.[15]

The 1930s fiscal experience in Argentina accords with expectations.[16] At the start of the interwar period customs taxes constituted a large share of revenues, as is typical in all developing countries.[17] Consequently, tax revenues were cyclically correlated with trade conditions: during recessions, import contraction was a standard response. Since government spending followed an upward trend, endogenous (although not, by definition *full-employment*) deficits appeared in some of these recessions; and, indeed, temporary deficits were run up in the First World War and in 1921–22.

The fiscal response in the 1930s was not so forgiving. High expenditures were run up in 1928–30 and drastically cut back during 1931–33, generating a big contractionary effect just as the economy fell into the Great Depression. Although customs taxes were falling in line with the trade crisis, *total* taxes were increasing. President José F. Uriburu (1930–32), like Hoover in the United States, was a fiscal conservative and sought orthodox budget balance.[18] One important part of the package was a dramatic increase in direct taxes, in the form of income and wealth taxes, which rose from 25 million pesos (less than 5 percent of all revenues) in the 1920s, to 92 million (almost 15 percent) in 1933. With a broad array of aggressive tax programs, the government raised taxes consistently every year after 1930 and closed the deficit from 240 million pesos in 1929, to just 126 million in 1933 (Figure 9.1). Thus, far from pursuing expansionary fiscal policy via increased *full-employment* deficits, the Argentine fiscal response during the Great Depression was such as to generate not even increases in *actual* deficits, but rather a move toward surplus.[19] So our search for

14. Thus, for example, the classic Keynesian tool of macroeconomic management did not fail, but rather was never really used, as was famously pointed out by Brown (1956). This finding was further reinforced by the work of Peppers (1973); and Romer (1992).
15. This was true of Latin America, where few countries in the 1930s were capable of developing new fiscal programs in response to the Great Depression. Twomey (1983).
16. Díaz Alejandro (1983, p. 21).
17. Such taxes accounted for 199 million out of 370 million pesos of tax revenues in 1913, or about 54 percent.
18. General Uriburu deposed President Irigoyen in September 1930 in the first coup d'état against the constitutional order in the twentieth century.
19. We concur with Díaz Alejandro that "in short, there is no evidence that during the early 1930s the Argentine government sought to increase the full employment budget deficit as a means to compensate for the fall in aggregate demand" (Díaz Alejandro 1983, p. 22).

Figure 9.1. Fiscal Structure, 1910–40




*Notes and sources:* See Appendix 1.

a source of Argentine economic recovery must focus elsewhere, and we focus on the change in monetary regime.

Curiously, fiscal orthodoxy and monetary tensions were two sides of the same coin, and the link is critical to our understanding of Argentine policy choice. Intense fiscal pressure was felt in many Latin American countries in 1929–30. Tax revenues fell and foreign lenders refused to roll over debts in the worsening international climate. Deflations and depreciations raised the burden of foreign-denominated debt service. The Argentine deficit for 1930 stood at 4.3 percent of output, a marked increase from previous years; debt service had risen from 18 percent of the budget in 1930 to 29 percent in 1932.[20]

Many countries chose to default in this situation, but Argentina never wavered from its external sovereign debt obligations.[21] With external default an anathema—and attempts to raise new borrowings, depress imports, and boost tax revenues proving insufficient in the short run—the only remaining option for servicing the debt was to draw on the last fiscal resource left to the government: the large gold stock sitting idle in the vaults of the Conversion Office. This course was taken, but the price for subscribing to this fiscally orthodox

20. See Table 9.1 and Díaz Alejandro (1983, pp. 20–21).

21. Why? A conventional interpretation is that Argentina maintained debt service so as not to derail the Roca-Runciman trading pact with Britain, understanding that British creditors could not be let down or else severe trade penalties might result from a diplomatic crisis. We offer another, perhaps more compelling, explanation: Argentina sought to maintain its reputation with foreign creditors to maintain access to capital markets, and was indeed successful in this respect during the 1930s.We discuss this issue in a later part of the paper where we focus on contemporary evidence. See also Lindert and Morton (1989) and Tomz (1998).

Table 9.2. *Changes in Gold Stocks and the Money Base, 1900–1935*

| | | All months | | | Months with ΔG>0 | | | Months with ΔG <0 | | | Means | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Regime | Dates | *b* | s.e. | *N* | *b* | s.e. | *N* | *b* | s.e. | *N* | ΔG | ΔM |
| Gold | 1900:2–14:7 | 1.00 | .01 | 174 | 0.99 | .02 | 87 | 0.99 | .02 | 52 | 2.56 | 2.57 |
| Float | 1914:8–19:12 | 1.00 | .01 | 65 | 1.00 | .01 | 37 | -0.58 | .83 | 5 | 6.74 | 6.74 |
| Float | 1920:1–27:11 | 1.00 | .06 | 95 | 1.00 | .04 | 15 | 1.30 | .39 | 8 | 1.90 | 1.90 |
| Gold | 1927:12–29:12 | 1.00 | .01 | 25 | 1.03 | .03 | 9 | 1.00 | .01 | 16 | -4.43 | -4.43 |
| Float | 1930:1–31:3 | 1.00 | .00 | 15 | 1.00 | .00 | 2 | 1.00 | .00 | 12 | -4.42 | -4.42 |
| Float | 1931:4–35:4 | 0.05 | .24 | 49 | — | — | — | 0.47 | .43 | 13 | -6.66 | 0.57 |

*Notes and sources:* See Appendix 1. Units of $G$ (gold stock) and $M$ (money base) are millions of paper pesos, with $G$ evaluated at parity of 2.27 paper pesos per gold peso. Regression is of $\Delta M$ on $\Delta G$, using Ordinary Least Squares, and reporting coefficient $b$, standard error s.e., and sample size $N$.

response was to draw down the gold stock and, ipso facto, the money base, given the mechanical rules of the currency board. Thus a deflationary money contraction was an inevitable but undesirable side-effect of the course chosen—at least as long as the Conversion Office played by its own rules.

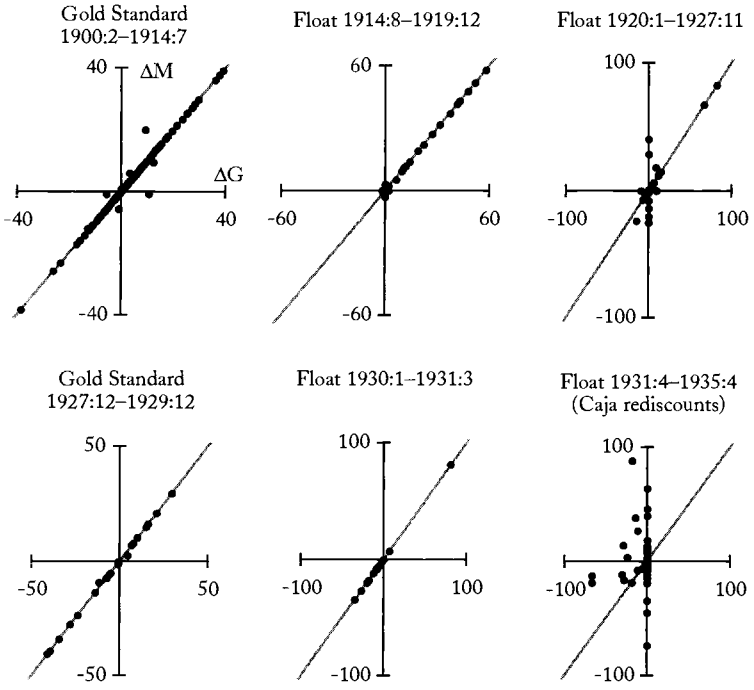
### *Monetary Policy*

In a pure gold standard regime, expansions and contractions of the nominal quantity of money should be exactly correlated with variations in the gold stock at the Conversion Office. For the 1900–1914 and the 1927–29 gold-standard periods, there was just such a one-to-one and rigid association between money and gold as shown by the data in Table 9.2 and Figure 9.2. More remarkably, there was even strict adherence to the rule from 1914 to 1927 during a long suspension of convertibility.

In this period, many core countries witnessed inflations and hyperinflations, but Argentina maintained a key element of orthodoxy. There was no wild recourse to money printing—for example, to finance spending—even though suspension offered an easy excuse and the exchange rate had drifted away from its anchor. Indeed, drift in the exchange rate was unavoidable as most other countries abandoned their pegs from after 1914 until the mid-1920s. The adherence to orthodoxy was all the more remarkable given the enormous economic contraction in the years 1914–19 already noted.

Argentina unilaterally did what it could to stick to orthodoxy and suspension of convertibility in 1914 was seen as just a temporary measure. After 1914 there were occasional outflows of gold for official purposes but these were still accompanied by a strict application of the gold-for-peso rule. From 1914 to 1927 the Conversion Office worked in a kind of asymmetric fashion: the monetary base augmented automatically when gold reserves increased but gold extractions were rarely allowed. Consequently, in periods of demand pressure in the foreign-exchange market, notably in the recession of 1920–21, adjustment took

Figure 9.2. Changes in Gold Stocks and the Money Base, 1900–1935



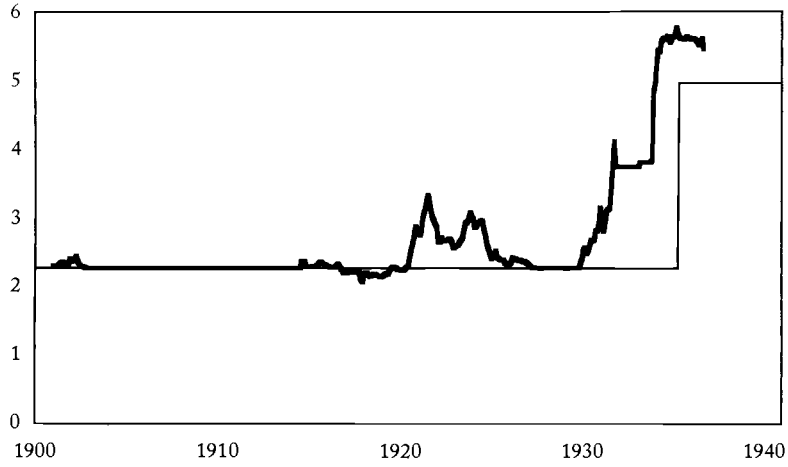

*Notes and sources:* See Table 9.2. The horizontal axis is always $\Delta G$, the vertical axis is always $\Delta M$. Units for both are millions of paper pesos. The 45 degree line is shown.

another form. The quantity of base money remained unchanged, and there was a depreciation of the exchange rate (Figure 9.3).[22] However, it was the universal belief of policymakers and market players alike that resumption at par was the only possible steady-state solution to the turbulence in the monetary and financial markets. How could this tension be resolved?

A "one-way" gold standard, as this has been called, was still consistent with the long-run goal of resumption at par, for a simple reason. During the boom years of 1900–1914, Argentina had built up a huge gold backing for the currency; from 1914 to the mid-1920s Argentina husbanded that stock carefully via the "one-way" devices of the Conversion Office. By the mid-1920s, resumption still looked credible because this strategy left Argentina with much stronger backing for the currency, at least as compared to many core countries, as the gold-exchange standard was built. Actions were geared to the monetization of

22. Depreciation meant an increase in the paper-gold market exchange rate relative to the par value.

Figure 9.3. Nominal Exchange Rate Versus Parity, 1900–1940




*Notes and sources:* See Appendix 1. Units are paper pesos per gold peso. The thin line indicates the official parity, 2.27 until April 1935, and 4.96 from May 1935.

gold inflows but officials were strict about keeping the gold-backing of money to a minimum of 78 percent in the turbulent 1920–25 years.[23]

What price did Argentina pay for this curious "one-way" gold standard policy? Did the exchange rate rise well above par making resumption difficult? Not at all. The most dramatic crisis in 1920–21 saw sudden declines in exports and the terms of trade. Even so, the premium over par never went above 33 percent.[24] In contrast, core European countries could only achieve such close convergence to prewar parity by the mid-1920s as they started to resume the gold standard.

Several observers noted that European experiences with floating rates after 1914 were dismal in the absence of a well-understood monetary "straight jacket" to limit expansionary monetary policies, with monetization often deriving from unsustainable fiscal gaps.[25] Conditions in Argentina could not have been more different. More orthodox than the core itself, this peripheral country, from 1914 through to resumption in 1927, in its rhetoric and actions, was intent

23. At the same time, core gold standard countries such as Italy, Netherlands, Norway, or the United States never surpassed a gold-cover ratio of 50 percent of the money base.
24. In the opposite circumstance, of gold inflow pressure, Argentina was even more orthodox than other countries; in the 1918–19 postwar years, the paper peso strengthened well above par before the Conversion Office decided to permit and monetize incipient gold inflows. In 1918 and 1919, the paper peso in terms of the gold peso was quoted at 2.14 and 2.2, well below the 2.27 par value.
25. See the fascinating article by Eichengreen and Temin (1997) that analyzes the policy debates over the resumption of the gold standard in core European and North American countries in the 1920s.

on the idea of resumption at parity. The regime in place was still essentially a metallic monetary regime. The prevailing *mentalité* allowed no room for money issues not fully backed by gold. Historical experience with profligate monetary policies in the 1880s and before, and the inflation and economic chaos that resulted from such actions, lived on in the minds of Argentine policymakers.

Based on legal developments, some might dispute the idea that from 1900 to 1931 the country maintained a metallic regime. We can recall from the previous chapter that emergency laws were passed in August 1914 to overcome the severe financial crisis. The 1914 rediscount law contained two key measures.

The first measure was intended to delegate to the Banco de la Nación, a quasi-public bank, and the largest of all banks, the microeconomic responsibility to forestall liquidity problems in the financial system via the rediscount window. However, the action of rediscounting commercial paper through this first provision in the law could only effect a change in inside money, or banking money (M3), and not in the monetary base (M0) which was controlled by the Conversion Office.

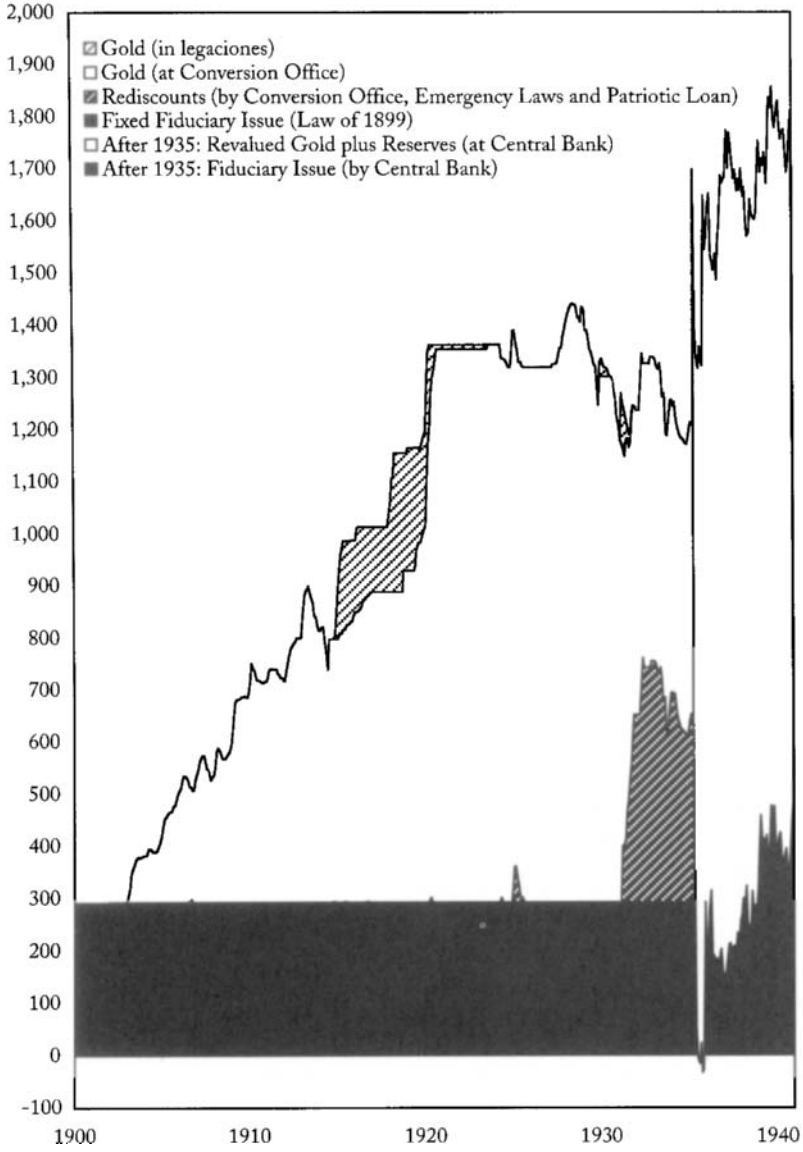
The second provision of the law allowed the Conversion Office to rediscount commercial and government paper so long as gold backing stayed above a lower bound of 40 percent. In the latter we see, as early as 1914, and just 15 years after the 1899 convertibility law, a clear innovation: the design of an institutional capability that would permit the Conversion Office to delink gold and currency movements. Was it used at all? In the period to April 1931 the answer is: almost never. With the exception of three months in the economic crisis of 1925, the monetary authorities never issued fiduciary notes.[26]

The evolution of the money base in Figure 9.4 clearly shows the actions of the monetary authorities during the years of the Conversion Office (January 1900 to April 1935) and the first years of the Central Bank (May 1935 to December 1940). The constancy of the fiduciary issue is immediately apparent as a component of the money base, and above it we see the gold-backed component: the strict gold-money rule applied until April 1931.[27] For this reason we found the very strict correlations between gold and money seen in Figure 9.2.

As we have noted, if gold had to be spent in a fiscal rearguard action, the traditional operations of the Conversion Office would have led to a major adverse monetary shock, unless the rules of the game changed. They did:

26. The conservatism of the Conversion Office contrasts with the more activist behavior of the Banco de la Nación. The bank rediscounted commercial paper in a countercyclical fashion (Salama 1997).
27. Except for a small blip in 1925, and a few other months (where lags kept gold and money slightly out of synchronization) there were no money issues not covered by gold at the Conversion Office. Note that during the First World War, and to a lesser extent in the early 1930s, difficulties in shipping gold out of Europe meant that incipient gold inflows to Argentina were held in European vaults of the diplomatic missions *(legaciones)*, but were the property of the Conversion Office. These were counted as gold backing, and are denoted separately.

Figure 9.4. Composition of the Money Base, 1900–1940




*Notes and sources:* See Appendix 1. Units are millions of paper pesos.

Maintenance of liquidity was not simply a matter of ending convertibility. On the one hand, even after the abandonment of the gold standard, some countries such as Argentina shipped gold abroad to service the external debt and sold foreign exchange to stem the currency depreciation. On the other hand, as early as 1931 South American monetary authorities began to adopt measures which Professor E. W. Kemmerer and Sir Otto Niemeyer would have found unsound. Thus, the Argentine Caja de Conversión, whose old and only duty was to exchange gold for domestic currency and vice versa, began in 1931 to issue domestic currency in exchange for private commercial paper. By 1931 the old Caja even issued domestic currency against treasury paper.[28]

Gold inflows had long ceased at this point, but subsequent gold outflows for fiscal use were sterilized; and even when there were no gold movements the Conversion Office often unilaterally changed the nominal stock of money via rediscounts.[29] Accordingly, we consider this *the* decisive regime change for Argentine economic policy, certainly during the Great Depression and possibly for the twentieth century as a whole.

The basis of the monetary regime shifted from metallic to fiduciary in 1931. By the end of the year, after just nine months, fiat notes rediscounted by the Conversion Office rose from zero to as much as 30 percent of the monetary base. By 1932 the gold backing had already fallen from the targeted 78 percent in 1929 to 43 percent, a ratio only slightly above the lower limit allowed by law.

In this context, it is instructive to examine expectations as revealed by the behavior of the foreign-exchange market. In 1930, the gold premium was never above 28 percent—still below the 1923 mark. However, after the authorities started to sterilized the fiscal outflow of gold in 1931 by rediscounting, the premium skyrocketed to 81 percent and never reverted to a lower value (Figure 9.3).

The reaction of the foreign exchange market was a (very rapid) manifestation of beliefs that had changed: agents increasingly saw the delinking of gold and currency as a permanent phenomenon. Judging from Figure 9.2 they were right. For the 1931–35 period the average annual change in the gold stock was –6.7 million paper pesos, but the average change in the quantity of money was +0.6 million paper pesos.

We will argue that this precocious heterodox approach by Argentina's policymakers helped avert a severe economic collapse. Yet, it was remarkable that they could effect such a dramatic change in regime given decades of adherence to orthodoxy. Where did their bold ideas originate?

28. Díaz Alejandro (1983, pp. 16–17).
29. The rediscounts began under the auspices of the 1914 law and were augmented by a new series of rediscounts of treasury paper under the "Patriotic Loan" legislation of 1932. These are included in the figure.

## The Political Economy of Reflation: A Déja-Vù in 1929?

We recall that the costly effects of deflation on the economy were nothing new in Argentine macroeconomic history. In the aftermath of the 1891 Baring Crisis, Argentine authorities had assured international investors that convertibility would be resumed quickly and at par. It was not to be. As we have noted, there arose a political-economy debate on whether a gold-standard regime should be restored at the original 1881 parity, or if, instead, convertibility should be pursued at the prevailing market rate, thus accommodating the devaluation. We saw that the most important argument denouncing the damaging effects of deflation originated from the little-known Argentine political economist Silvio Gesell (1862–1930) in an article entitled "Monetary Anemia."

The influence of Gesell's ideas on negative expectations and deflationary traps was recognized in the 1930s by Irving Fisher and John Maynard Keynes. In his book *Stamp Scrip*, Fisher acknowledged Gesell's innovative idea:

> Silvio Gesell, who died recently, was a German businessman and quasi-economist.... In 1890, while in Argentina, he proposed essentially that particular substitute for money which now bids fair to sweep [the United States] under the name of Stamp Scrip. Gesell before he died, accumulated a considerable following abroad; but it took the tortures of a depression to bring about any practical efforts to make use of his Stamp Scrip idea.[30]

Keynes went recognized Gesell's influence in the *General Theory:*

> The great puzzle of Effective Demand with which Malthus had wrestled vanished from economic literature. You will not find it mentioned even once in the whole works of Marshall, Edgeworth and Professor Pigou, from whose hands the classical theory has received its most mature imbodiment. It could only live on furtively, below the surface, in the underworlds of Karl Marx, Silvio Gesell or Major Douglas...

In a later chapter Keynes remarked that "it is convenient to mention at this point the strange, unduly neglected prophet Silvio Gesell whose work contains flashes of deep insight..."; he then expended a dozen pages explaining Gesell's contribution to the theory of money and interest.[31]

Gesell's critique of a fixed nominal quantity of money as a suboptimal monetary rule was certainly influential in the 1899 decision to resume convertibility at a new parity. Yet, interestingly enough, he is barely mentioned by the other main influential intellectual figure in our story, Raúl Prebisch. Prebisch was the most influential and respected economist and economic policymaker of the 1930s. He was, perhaps, the only one who could challenge the prevailing *mentalité* and conceive of a policy change to avoid the severe consequences of deflation in line with Gesell's ideas.[32]

30. Fisher (1933b, pp. 17–18).
31. Keynes (1935, pp. 32, 353–58, and 371–79).
32. During the de facto government of General Uriburu, Raúl Prebisch was the Undersecretary of Finance. Already, in 1921, he had written a brilliant article on the problems of the Argentine currency showing that he understood the costly effects of deflation. See Prebisch (1922).

An important task for Prebisch was persuading other policymakers to come around to his position, and his recollection of one such lobbying effort shows how. A crucial figure he had to persuade was Federico Pinedo, a politician and economist who at first viewed deviation from monetary orthodoxy with suspicion. In an interview years later, Prebisch recalled the meeting:

*Prebisch:* I am going to give you an idea of how Federico Pinedo was converted to the idea of creating a Central Bank. As I have said, when the General Uriburu spoke about the convenience of studying the creation of a central bank, in the report I wrote, Pinedo, in a series of conferences, disputed the idea. And he did it in a harsh manner. At the time, I knew him very little. But during the world depression there was a situation, when I was the Undersecretary of the Treasury, a catastrophic situation. The banking system was on the verge of collapse and we decided—I had the idea—to invoke an old rediscounting law that was never applied. The law was approved during the First World War, in the first week of panic that we experienced, and it allowed the Conversion Office to rediscount banking paper. We made it operational.... We stated that the rediscount law was to be applied.... Then Pinedo, who was in the opposition to the Provisional Government, in spite of having been a revolutionary, enrolled with the Partido Socialista Independiente.... He came to see me, I have now a clear picture of that moment; he said: "Prebisch, what mistake are you going to make?" *(«¿Que barbaridad van a hacer?»)* He was agitated...so nervous that he did not want to sit down.... I explained to him the critical situation of the Banco de la Nación. The Banco de la Nación was the institution that administered the Clearing House. The money that the Banco de la Nación had in the vaults was less than the cash at the Clearing House. That tells you about the gravity of the situation.

*Q:* In which period did this occur?

*Prebisch:* This was in the year 1932—no, in the year '31, in the depth of the world depression. I gave him a huge amount of confidential information....

*Q:* And at issue was the project to create the Central Bank?

*Prebisch:* No, no, no. It was putting in motion the rediscounting law to allow the Conversion Office to rediscount. And Pinedo believed that we would provoke inflation. I explained to him for two hours. I did not hide any secret....He asked me a few questions and he started to become more calm. After two hours standing up I said: "Ok, Doctor Pinedo, you now know how is the situation. What would you do if you were in my shoes in the cabinet of the Ministry of Finance?" And he had the loyalty of saying, and this is why I admired him so much: "the same thing that you are proposing". He said nothing more. His criticism of the government ceased. For the first time he understood in the dramatic crisis that engulfed the country and the financial system. And he started to support the measures of the government.... He convinced himself that there was no backtrack, that the Argentine monetary system based on the automatic exchange of gold for paper and paper for gold could not function. But this was in the year 1931. Then 1932 and 1933 elapsed and, when he was minister of Finance in 1934 he called me, and he asked me to draft the proposal for the creation of the Central Bank....[33]

With the leadership of Prebisch a consensus was reached by the economic intelligentsia in Argentina in which they clearly understood that the time had

33. Our own translation from Magariños de Mello (1991, pp. 108–109 and 110). We also see here how very careful Prebisch was to distinguish the 1931 change in regime, as he saw it, from his later work in the 1935 creation of the Central Bank.

come to abandon the rigid constraints imposed by a metallic monetary regime. No one was to perceive this as a temporary political economy decision, but as a fundamental break from the past: but could it save the Argentine economy?

## Institutional Change: The Impact of Monetary Policy

In the discussion so far we have found strong prima facie evidence that if any policy actions mattered for Argentina's economic recovery from the Great Depression, it was most likely monetary policies and the change of regime that were central. We now try to quantify the impact of these policies on the evolution of the macroeconomy in the 1930s using econometric techniques.

### *The Model*

We construct a three-equation dynamic econometric model of exchange rates, prices, and interest rates. The system is estimated using Ordinary Least Squares on annual data for the period 1884 to 1941 and is used for counterfactual simulations of alternative monetary policies in the 1930s.[34]

The estimated model, shown in Table 9.3, looks reasonable. In the first two equations, exchange rates and prices adjust in accord with PPP as they react to the lagged real exchange rate. There is fast pass through in one period from money to exchange rates (a coefficient of 0.25), but slower pass through to prices (a coefficient of 0.16), a common structure in open economy macromodels, reflecting fast adjustment in financial markets but more nominal rigidities in the

34. The equations of the model are as follows:

$$\begin{aligned}
\Delta \ln E_t &= \alpha_1 + \beta_1(L)(\Delta \ln E_{t-1}, \Delta \ln P_{t-1}) \\
&\quad + \gamma_1(L)(\Delta \ln M_t, \Delta \ln P_t^*) + \delta_1(L) \ln q_{t-1} + \epsilon_{1t}; \\
\Delta \ln P_t &= \alpha_2 + \beta_2(L)(\Delta \ln E_{t-1}, \Delta \ln P_{t-1}) \\
&\quad + \gamma_2(L)(\Delta \ln M_t, \Delta \ln P_t^*) + \delta_2(L) \ln q_{t-1} + \epsilon_{2t}; \\
r_t &= \alpha_3 + \beta_3(L)(\Delta \ln M_t, \Delta \ln Y_t, \Delta \ln P_{t-1}, i_{t-1}) + \epsilon_{3t};
\end{aligned}$$

where $E_t$ is the exchange rate in paper pesos per U.S. dollar, $P_t$ is the price level, $M_t$ is the money base, $P_t^*$ is the U.S. price level, $q_t = \ln(E_t P_t^* / P_t)$ is the log real exchange rate, $i_t$ is the nominal interest rate, $r_t = i_t - \Delta \ln P_t$ is the real interest rate, and $Y_t$ is real output.
The first two equations model adjustments of the real exchange rate as being driven by two forces: endogenous adjustment via the lags of $E$ and $P$ and the error correction term $q$; and exogenous adjustments via forcing terms $M$ and $P^*$. We treat the U.S. price level $P^*$ as exogenous to the Argentine economy, and we impose PPP so that $q$ is the relevant error correction term. We also allow monetary policy effects, to the extent that they are orthogonal to $q$, and any serial correlation terms, to have an impact. This might be viewed as "independent" components of monetary policy; for example, money innovations not, say, predicted via the price-specie-flow rule (that is, via $q$). Since our sample is 1884 to 1941, the bulk of these years (excluding 1900–1914 and 1927–29) are years of inconvertibility, and the assumption of complete exogeneity of money is reasonable. The final equation is a standard Mishkin interest rate forecasting equation of the type used by Romer in her analysis of the United States. Great Depression. It is used here in a similar form, with three lags found significant using a step down procedure. See Romer (1992); Mishkin (1992).


Cartoon 9.2. *El fenómeno de la Casa Rosada.* (The phenomenon of the Casa Rosada.)
*Notes:* Federico Pinedo is in command of creating the central bank. On stage, he turns gold into paper. In the box, President Justo and his ministers applaud the performance.
*Source: Caras y caretas,* vol. 38, no. 1901, March 9, 1935.

economy as a whole. Foreign prices pass through to domestic prices quickly, as one would expect in a small open economy. With noninstantaneous adjustment there is scope for monetary policy to effect real devaluations. In the third equation, the real interest rate is significantly affected by money growth so monetary expansions can temporarily drive down real interest rates.

### *The Counterfactual*

Did monetary policies under a new regime end the Argentine Great Depression? The question contains implicit counterfactuals that needs to be examined: essentially, had the monetary regime not changed, what would have happened? Given the suspension of convertibility in 1929, and the imposition of exchange controls, the fiscal use of gold for debt service implies an exogenous path for the gold stock. This simplifies our analysis greatly as we do not have to model endogenous gold flows in a free market for foreign exchange. We just have to consider counterfactual paths of money, and we study two cases.

The basic counterfactual (CF1) examines what would have happened absent the expansion of domestic credit begun by the Conversion Office in mid-1931. In the counterfactual, the sole movements of gold would have continued to be the fiscal use of gold by the central government to service external debt: the currency board would not break the rules and attempt to sterilize the gold outflows by rediscounting.

In a second and less harsh counterfactual (CF2) we permit the authorities to revalue gold, as actually happened, in 1935. But we allow no other forms of monetary expansion after 1935, and changes in money base are based on the actual path of gold and reserves at the Central Bank. Thus, in CF1, we effectively imagine a world without a Central Bank. In CF2, we effectively imagine a world without the Conversion Office rediscounts, but still allow the Central Bank to revalue gold.

Both counterfactuals imply large shocks to the path of money (see Table 9.1). From 1929 to 1934, M0 held constant at around 1,200 million pesos. Gold stocks fell by almost half, from 954 million, to 561 million; but after 1931 domestic credit expanded from 293 million (its level since 1900) and reached 610 million in 1934, almost exactly offsetting the gold loss. Thus, both counterfactuals would have implied a counterfactual decline in 1934 of about 28 percent in money base—a massive nominal shock.

The two counterfactuals differ in what would have happened after 1935. In CF2 the impacts would have been small, since the revaluation in 1935 added almost a billion pesos to the gold backing, expanding it from 561 million paper pesos to 1,354 million. Arithmetically, this overnight "expansion" of gold was

Table 9.3. *Model of Prices, Exchange Rates, and Interest Rates*

*A. VAR Model of Exchange Rates and Prices*

| Dependent Variable | $\Delta \ln E$ | $\Delta \ln P$ |
|---|---|---|
| Constant | 0.11 (0.2) | -0.73 (1.6) |
| $\Delta \ln E(t\text{-}1)$ | 0.02 (0.1) | 0.30 (1.7) |
| $\Delta \ln P(t\text{-}1)$ | 0.04 (0.2) | -0.09 (0.6) |
| $\Delta \ln M$ | 0.25 (1.6) | 0.16 (1.1) |
| $\Delta \ln P^*$ | -0.51 (1.6) | 1.21 (4.2) |
| $q(t\text{-}1)$ | -0.02 (0.2) | 0.16 (1.6) |
| Observations | 56 | 56 |
| R-squared | .15 | .35 |
| Mean of Dependent Variable | 0.02 | 0.02 |
| Standard Error of Estimate | 0.11 | 0.10 |
| Regression $F(5,50)$ | 1.45 | 4.69 |

*B. Mishkin-Type Forecast of Real Interest Rate*

| Dependent Variable | $r$ |
|---|---|
| Constant | 9.69 (1.1) |
| $\Delta \ln M$ | -47.24 (3.0) |
| $\Delta \ln M(t\text{-}1)$ | -44.10 (2.6) |
| $\Delta \ln M(t\text{-}2)$ | -48.26 (2.8) |
| $\Delta \ln Y$ | 71.73 (2.6) |
| $\Delta \ln Y(t\text{-}1)$ | -4.64 (0.2) |
| $\Delta \ln Y(t\text{-}2)$ | 17.02 (0.6) |
| $i(t\text{-}1)$ | -0.27 (0.1) |
| $i(t\text{-}2)$ | 3.23 (0.9) |
| $i(t\text{-}3)$ | -3.50 (1.4) |
| $\Delta \ln P(t\text{-}1)$ | 9.91 (0.7) |
| $\Delta \ln P(t\text{-}2)$ | 25.64 (1.8) |
| $\Delta \ln P(t\text{-}3)$ | 23.11 (1.8) |
| Observations | 54 |
| R-squared | .52 |
| Mean of Dependent Variable | 3.46 |
| Standard Error of Estimate | 10.42 |
| Regression $F(5,50)$ | 3.20 |

*Notes and sources:* See Appendix 1 and text. Sample is annual data 1884–1941. Absolute $t$-statistics in parentheses.

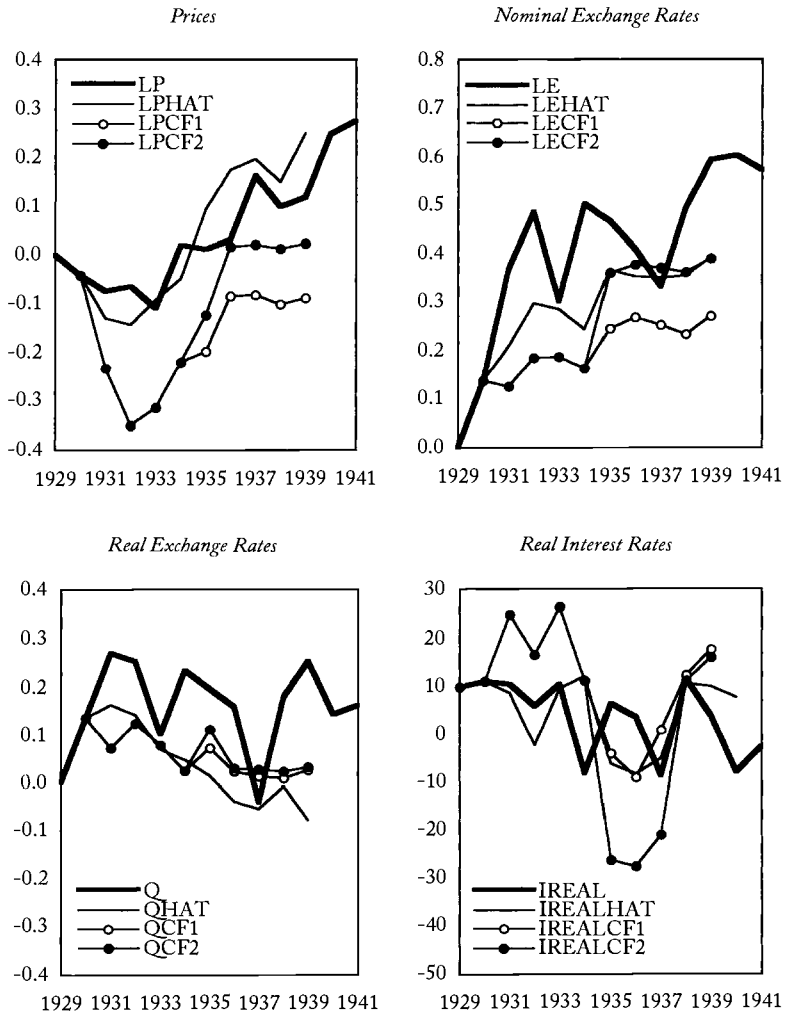
enough to offset all of the unbacked domestic credit.[35] In CF1, conditions after 1935 would have been tougher. Absent revaluation, the path of reserves after 1935 would have been flat up to 1940. There would never have been a significant expansion of the money base to compensate for the almost one third decline after 1929.

Figure 9.5 shows the paths for prices, exchange rates, and interest rates in the two counterfactuals, using the above estimated model. The results show movements in the various variables that accord with intuition as regards the direction of change.[36]

1. *The price level.* In 1929–33 prices showed a cumulative decline of about 5 to 10 percent. In the counterfactuals Argentina would have suffered a more severe and extended deflation in the early 1930s. Without rediscounting, the price level would have fallen about 40 percent, a scenario which would have prolonged deflationary expectations. In the CF2, prices would have barely regained their 1929 price level after 1935 even with the huge gold revaluation. Significant pass-through of U.S. deflation could only just be offset by the revaluation. Worse still would have been the outcome without a revaluation: CF1 shows a persistent 10 percent decline in prices below the 1929 level, raising the question as to whether deflationary expectations would have ever been erased in the 1930s under the old regime.
2. *The nominal exchange rate.* The exchange rate depreciated markedly after the end of convertibility in 1929, with a more than 50 percent loss of value by 1935. This development seriously undermined the credibility of a resumption at the prevailing par of 2.27. Once par was unilaterally adjusted from 2.27 to 4.96 in May 1935 there was no turning back (Figure 9.3). Absent rediscounting, the exchange rate would have been 15 to 20 percent stronger in 1931–34.[37] It is thus not clear whether, in the counterfactual world, agents would have been sure of a permanent regime shift. Without the revaluation of gold the mild depreciation would have persisted into the late 1930s, and, with it, the prospect of a deflation

35. This followed from the peso's loss of more than half its value relative to the old parity of 2.27. The "new" gold cover allowed the Central Bank to create an apparent reduction in domestic credit from 610 million pesos in December 1934 to just 293 million in December 1935 (see Table 9.1 and Figure 9.4). Note that the money injection was not instantaneous, as can be seen from the monthly data, so, for the first couple of months of the Central Bank's existence domestic credit was actually *negative*—that is, gold and reserve backing at the new parity exceeded the outstanding money base: backing was more than 100 percent. See Figure 9.4.
36. Note that all fitted values are derived using one-step-ahead forecast—i.e., actual lagged values are used. For the counterfactuals, dynamic forecast are used, where current fitted values are saved and used as future lagged values.
37. This should not be dismissed as trivial: the reversibility, via deflation, of a 15 percent depreciation is a lot more plausible than the reversal of a 50 percent depreciation. Indeed, such movements in the paper-gold exchange rate had been reversed in the 1920s to permit resumption in 1927 (see Figure 9.3).

Figure 9.5. Prices, Exchange Rates, and Interest Rates, 1929–41



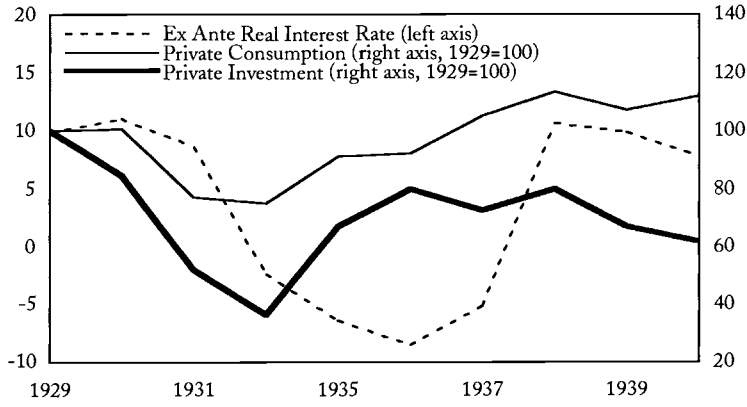

*Notes and sources:* See Appendix 1, text, and Table 9.3. $LE = \ln E$; $LP = \ln P$; $Q = \ln(EP^*/P)$, IREAL = $r$; XHAT = fitted value of X; XCF1 = value of X in first counterfactual; XCF2 = value of X in second counterfactual.

to regain the old par, as in the 1920s. In contrast, the actual story for the exchange rate makes clear the regime shift. Once the paper-gold exchange rate had risen into the range of 5 to 6, agents suspected that the government would not embark on a deflationary attack to reactivate the old regime. The costs, political and economic, would have been too high, and the action thus highly implausible. Instead, drawing on their own history, Argentines saw a parallel to the resumption in 1899 after the inflation of the 1890s, when a sufficiently large devaluation of the paper peso relative to gold (from 1.0 to 2.27) required a shift to a new parity to escape the deflation trap.[38]

3. *The real exchange rate.* The real depreciation of 1929–31 is apparent, but the reversion to PPP is also clear in the figure. Further, the impact of monetary policy in the counterfactual experiments appears weak. Certainly, without the rediscounts, there would have been less real depreciation after 1931, but only by 5 to 10 percent. Similarly, after 1935, the real exchange rate would have deviated little from its fitted value. We conclude that the real exchange rate channel was only a weak conduit for the impact of Argentine monetary policy.[39] So, does this imply that recovery was largely external in origin? And did Argentine policymakers have no real impact through their supposedly radical change of regime? We think not—but if the real exchange rate effects were weak, then we are forced to consider an alternative channel.
4. *Real interest rates.* Real interest rates were high in 1929–31, at about 10 percent. Although nominal rates were much lower (Table 9.1), ex post deflation and ex ante expected deflation contributed to high real rates. The fitted real interest rate, an estimate of ex ante real interest rates constructed using the Mishkin regression technique, adds to this sense of a deflationary regime before 1931. The turning point was the start of rediscounts. Absent this action by the Conversion Office the real interest rate would have risen dramatically to between 20 and 30 percent in the years 1931–34, largely as a result of worsening deflation and persistence in the forecasting equation. Such painfully high real interest rates would have had devastating effects on real activity, particularly investment, killing

38. Or in the international context of the 1920s and 1930s, agents could look overseas for comparisons in the event that orthodox thinking should return: at 300–400 pesos a strategy akin to British deflation in the mid-1920s was conceivable, if a reversal of course was to be contemplated. At over 500 pesos to the dollar, agents would see the situation as closer to the French scenario of the mid-1920s, with resumption at a new par or no resumption at all (but certainly no chance of resumption at the old par).
39. This, in part, reflects the counterbalancing impacts of foreign monetary policy in 1929–31. The real and nominal exchange rate effects of Argentina's policy might be expected to be small, as compared to the much bigger effect of U.S. monetary policy on U.S. prices and exchange rates. In this view of the world, mistakes by the U.S. monetary authority helped other countries recover because of their *enrich*-thy-neighbor impact on real activity via the real exchange-rate channel.

Figure 9.6. Real Interest Rates, Consumption, and Investment, 1929–41




*Notes and sources:* See Appendix 1, text, and Table 9.3.

any chance of recovery.[40] In actuality investment recovery began in 1932 (Table 9.1) just after real interest rates fell.

Given the evidence from our model, we think the main impact of monetary policy change on recovery was in the years 1931–34, when the collapse of output was reversed and recovery to the 1929 level of activity was secured. This did not result from an explicit policy of real depreciation; movements in Argentine monetary policy were very small relative to changes in foreign (U.S.) monetary policy in this period. Nor was the channel the credit market, and lower nominal interest rates, the so-called "Keynes" effect; after all, nominal rates were low and had little to fall before hitting their floor. Rather, the channel was the elimination of deflationary expectations, or the so-called "Mundell" effect; after 1931, the fear of deflation was gone, expectations changed as the monetary regime shifted, and the institutional change began to look credible and permanent.

Investigating the impact of monetary policies after 1933 in the United States, Romer (1992) found a marked correlation between declines in real interest rates, and recovery in investment and consumption activity. She saw this as confirmation of the transmission mechanism from monetary policy to recovery via real interest rates. In the same fashion, we display in Figure 9.6 the same

40. Of course, under CF2, a large injection of money would still have ensued in 1935, from the gold revaluation plan, and, proportionately this would have been much larger, as a fraction of the level of money base in 1935, than in the actual case, absent the rediscounts of 1931–34. Thus, in CF2, there is one very big change in money base in 1935, enough to temporarily drive real interest rates very low for a year or two. Absent the revaluation, in CF1, this effect disappears and real interest rates stay higher, although they do diminish finally in 1935–36 as a result of temporary gold inflows (see Table 9.1).

variables for the Argentine case. Exactly the same pattern is apparent: after 1931 ex ante real interest rates fell, and, as discussed, all of this movement is attributable to the reversal of deflationary expectations; at the same moment, consumption and investment began to recover, offering more evidence in favor of a "Mundell effect" interpretation.

We think these results show strong support for the idea that the change in macroeconomic regime averted a serious depression in Argentina. However, in support of this hypothesis we might also seek more qualitative evidence that such a regime shift took place.

## What Were They Thinking?

In this section we first examine documentary evidence to see what popular opinion in newspapers and other reports has to say about the regime change. We then look back at the trade-off policymakers faced between external default on debts and internal default on convertibility, that is, the choice between fiscal and monetary orthodoxy.

### *Supporting Evidence: Tracking the Crisis in Contemporary Reports*

To better document the perceptions of a change in regime we examined the accounts of contemporaries. Newspapers gave great emphasis to the decrees of December 5, 1929 (the option to rediscount), and December 16, 1929 (suspension of convertibility, referred to as "closure" of the Conversion Office). Reports commented on the impact of gold flows on domestic economy and the inelastic relationship between money and gold. A heated debate about suspension ensued. Some observers considered the rediscount law acceptable, as long as it was not used to monetize deficits and was temporary. Others thought the closure of the Conversion Office illegal. International reaction was not seen as negative since Argentina was able to close on new £5 million loan from Baring and Morgan, despite the suspension.[41]

As the crisis mounted, attention turned to the fiscal problem. Very soon it was appreciated that if the trade balance did not recover and future refinancing

41. "Closure of Caja de Conversión," *Review of the River Plate* (henceforth *RRP*), December 20, 1929, p. 9. Alejandro E. Bunge, "The Rediscounting Faculty," *RRP*, December 20, 1929, p. 11. "The Closure of the Caja de Conversión," *RRP*, December 20, 1929, p. 19. Diego Ortiz Grognet, "Causes and Effects of The Closure of the Caja de Conversión," *RRP*, December 27, 1929, p. 13. Diego Ortiz Grognet, "Results of The Closure of the Caja de Conversión," *RRP*, January 3, 1930, p. 11. Alejandro E. Bunge, "Gold Exports," *RRP*, January 10, 1930, p. 11. Fortunato B. Arzeno, "The Caja de Conversión and the Rediscount Faculty," *RRP*, January 17, 1930, p. 15. "The National Credit," *RRP*, December 27, 1929, p. 19. Guillermo E. Leguizamon, "Illegalidad e inconveniencia de la clausura de la Caja de Conversión," *Revista de Economía Argentina*, June 1931, p. 449.

fell short, then gold would be used to avoid default and it would be desirable to sterilize the outflow:

> Everything tends to the belief that the international balance of payments may be unfavorable in 1930.... in consequence, it is of great importance to adopt from now onward, measures tending to reduce imports, to promote the introduction of foreign capital.... In the regrettable event of the foregoing solutions not being adopted in adequate degree, it will be necessary to export more gold, possibly to the equivalent of some 200 million pesos paper.... In the event of this gold going out, it would be desirable to make use of the rediscount facility...[42]

At the same time, pressure came from the banking sector to ease the liquidity crunch. The Banco de la Nación had already made abundant use of its rediscount provision in creating banking money to help other banks in distress. Now it sought relief in the form of high-powered money via the Conversion Office's own, hitherto unused, rediscount facility:

> At the moment when the moving of the crops and the usual end-of-year business habitually begin to require a larger quantity of notes in circulation, the private banks would not have been able to contribute adequately to supply them without detriment to their own relatively low supplies.... It was indispensable to give them access to the resources of the Banco de la Nación by means of the rediscount of their commercial portfolios.... Against this however, the situation of the bank itself was an obstacle, as its own cash holdings, reduced by the efflux of gold, could not be strained further.... Hence the necessity of permitting the rediscount of commercial bills at the Caja...and the petition in that sense presented to the Executive Power.[43]

Thus, lobbying began to get the rediscount provision actually used. Still, no action was taken by the Radical government to employ it and nobody was sure the regime change would happen.[44]

Slowly, financial constraints tightened. A new loan of 50 million dollars was secured in April 1930, but only for 6 months. It was a short-term patch of the fiscal gap, and it failed to halt the depreciation.[45] By now pessimism was gathering steam; orthodox views were harder to maintain and the calls for central banking were growing.[46] Observers saw through the gold standard's "asymme-

42. Alejandro E. Bunge, "The Fall in the Peso: Loan Issues Abroad," *RRP*, January 31, 1930, p. 19–23.
43. Banco de la Nación Argentina, "The Financial Year 1929," *RRP*, February 21, 1930, p. 11.
44. Some observers lobbied for a central bank as a solution but this required a long-range plan. Moreover, the Irigoyen administration was distracted, confronting much bigger social and political problems in the year 1930. A rapid reaction was needed as attempts to plug the gap were getting desperate. "The Monetary Question and Possible Answers," *RRP*, March 7, 1930, p. 13. "From Conversion to Centralization? Will Argentina Join the World Movement toward Central Banking?" *RRP*, April 11, 1930, p. 15.
45. *RRP*, April 11, 1930, p. 17. *RRP*, April 18, 1930, p. 7.
46. Alejandro E. Bunge. "Argentine Money, Finance, and Balance of Payments: The Outlook for 1930," *RRP*, June 20, 1930, p. 11. "Central Banking and Currency Control: Gold Movements and Cash Reserves—Their Aplication [sic] to Argentine Conditions," *RRP*, May 9, 1930, p. 15. "Deserting the Gold Standard: Argentina's Attitude toward Gold Movements," *RRP*, May 30, 1930, p. 17.

try" and the adverse consequences of large-scale sterilizations by France and the United States. An early resumption began to seem unlikely and even once-conservative commentators such as the *Review of the River Plate* started to see that reopening the Conversion Office would have disastrous consequences.[47] Around the same time it became apparent that the deflation was having serious effects on business:

> If the risk-taking capital and the entrepreneurs' reward are greatly reduced, this being the mainspring of our economic machine, business enterprise is grievously restricted. It is very difficult to get a forward business movement on a *falling* price level. No doubt in the long run just as good business can be done upon one level as another, but it is the transition that works havoc. The object of greater stability is to avoid these dangers.[48]

In September, the Radical government of Irigoyen was deposed amid labor unrest and breakdown in the rule of law. General Uriburu led a new government committed to sound policies to rebuild the economy. But there was still no change in monetary policy: the new Finance Minister thought any "fundamental" change should await a subsequent, democratically elected government.[49]

There was still no use of the rediscount law, and this remained so until April 25, 1931. Contemporary domestic and international reports saw this as the crucial turning point. On the next day the most influential daily *La Nación* led with the story on its front page under the headline "THE REDISCOUNT UP TO 200,000,000 PESOS WAS AUTHORIZED," remarking that

> The measure was suggested by the business and commercial corporations to the government. The government affirms that this is not to create new ventures but rather a definite means to regulate credit to avoid the sudden contraction of loans by banks.... Undersecretary Prebisch added that this is an important step that the government has made to overcome the biggest defect in the prevailing monetary system, which is the rigid inelasticity of the volume of money in circulation.

The *Review of the River Plate* reflected the views of international business and led its next issue on May 1 with a story titled "Re-Discount Decreed." A more optimistic outlook came the next week (May 8) in an article "Inflation as a Remedy: Would it Help to Cure Trade Depression?" they cited the "recently granted re-discount facilities" and noted that "needless to say the main interest in connection with the whole idea of inflation is centered upon its possible application to the remedy of the present state of world trade depression..."

International opinions can also be detected in the *Economist* article of May

47. "For while it is true that by opening the Conversion Office tomorrow exchange might be brought to close upon parity, the contraction in Argentine currency which would result might well prove catastrophic in its effects upon the general commercial movement in the country." See "Gold and the Currency: Are Shipments Under Current Conditions Advisable?," *RRP*, August 1, 1930, p. 29.
48. "A Stable Price Level: Are Present Difficulties Really Due to Over-Production?," *RRP*, August 15, 1930, p. 13–15. Emphasis as in the original.
49. "The Government and the Caja," *RRP*, September 19, 1930, p. 9.

23 "Re-Discount Operations in Argentina" where the inflationary essence of the whole plan was applauded:

> Rediscount of commercial paper held by the Banco de la Nación Argentina has already been effected with the Conversion Office.... The backing is ample, and provide that all the safeguards governing the commercial paper are adhered to unflinchingly, the issue of additional money at the present moment will help the local situation. Nevertheless, it is undeniably inflation, and moreover, it undermines, be it by ever so little, the whole principle of Argentina's currency legislation...

We think it is apparent that contemporary observers, domestic and foreign, were in little doubt that Argentina had taken a bold "inflationary" step in April 1931 in defiance of orthodoxy.[50]

### *Paths Not Taken: Why Not Just Default?*

Are our counterfactuals the relevant ones for study? One puzzle not addressed by our analysis is why Argentina did not choose some other counterfactual path. An obvious candidate would be the path chosen by so many other countries in Latin America: default. If Argentina had not used up gold to honor external obligations there would have been no need for sterilizations and the use of the rediscount facility. This would have eased fiscal tensions in the 1930s—and perhaps at a small cost? It has been argued that being a "good debtor" in the 1930s did not do Argentina much good in the long run: in the postwar Argentina was treated no better than "bad debtors" in world markets.[51]

We have two responses to these observations. First, more than any other country in the region, Argentina had bought into the idea of orthodoxy ever since the painful attempt at stabilization during the 1890s Baring Crisis. In that watershed event, the national government suspended any attempt to restore convertibility but stopped short of canceling service on debts, although municipal and corporate issues were in a shameful default and had to be later assumed by the nation. As President Carlos Pellegrini declared during the negotiations:

50. Of course, Prebsich never viewed the policy as inflationary, rather antideflationary, in an attempt to stabilize prices in a specific historical situation. He was always ready to dismiss as academic arguments that the policies might lead to inflation. See his article "La inflación escolastica y la moneda argentina" in the July 1934 issue of *Revista de Economía Argentina.* In the long run, such inflationary tendencies *were* realized, but Prebisch resigned from the Central Bank in 1943 in objection to what he saw as a tendency to excessive money printing.
51. See Lindert and Morton (1989); Jorgensen and Sachs (1989); Eichengreen and Portes (1989). However, the fact that Argentina was not treated better than defaulters in capital markets after 1940 may not be a puzzle after all, because *ceteris paribus* did not apply. Prior to the 1940s Argentina stood out as a bastion of orthodoxy and sound policies in Latin America. With the rise of Perón, and a shift to inward-looking policies and price distortions, Argentina by the 1950s and 1960s looked like one of the worst places in Latin America for foreign investors, not one of the best, based on these objective economic criteria. Potential investors surely did not ignore these more immediate disincentives, whatever the repayment record decades prior. See Taylor (1994; 1998).

Not to have serviced these debts with punctuality, the government would have had to declare the country bankrupt, producing such a terrible reaction in our European creditors that there would not have been limits to the general indignation directed against us, and they would have closed forever those markets, resulting in the shame of our nation and the rapid decadence of our social state.[52]

We think the same *mentalité* persisted in the 1930s, "a conscious internal perception that satisfaction of debts was a necessity."[53] Argentina believed it would be rewarded for good behavior, as Pellegrini believed in the 1890s. It is striking that in the contemporary press the subject of default is almost never raised, and the possibility was dismissed as remote:

A precipitate return to parity is not, apparently, intended and would not be desirable.... The investor must, therefore, wait patiently for the financial and monetary reforms of the Provincial Government to fructify. This should not cause him any distress, since the service of the external debt of the Republic will be promptly effected and default, as far as the present Government is concerned, is unthinkable.[54]

Second, although it is generally agreed that as a "good debtor" Argentina reaped no long-run benefits after the 1940s, the ex post outcome differed from ex ante beliefs. Moreover, beliefs that faithful debt service would be rewarded *were* correct, at least in the short run. In the late 1930s, Argentina obtained much better access to capital markets than defaulting countries. There were several refinancing loans, including 129 million dollar of 35-year external conversion bonds in 1937 and a 25 million dollar 10-year issue in 1938. And the terms of these later loans were good:

The new issues yielded an average 4.7 percent when the U.S. rate on Baa corporate bonds hovered around 5.2 percent.... Thus Argentina's good behavior did seem to earn it some return in easier credit access during the 1930s when capital markets were closed to most Latin American countries.[55]

Sadly, the new loans flowed only briefly after the global crisis abated and before the Second World War. If such large-scale loans had been available in the early 1930s, instead of the small refinancing secured, Argentina might have averted the substantial fiscal use of gold in 1929–35.

The costs of deviating from the gold standard as a "contingent rule" were appreciated, as were the costs of default; capital markets could punish both kinds of deviance with higher costs of borrowing.[56] Argentina understood the tradeoffs and had to make a choice. As in a model of public debt management,

52. Quoted in Fishlow (1989, p. 99).
53. Fishlow (1989, p. 99).
54. *Economist*, March 14, 1931, p. 568.
55. Data on loans and quotation from Jorgensen and Sachs (1989, p. 75). It could be that Argentina gained an increase in reputation by paying in exceptionally harsh external circumstances, giving a "positive surprise" to its creditors. This is argued in a game theoretic model of reputation of capital-market access by Tomz (1998).
56. On the contingent rule, see Bordo and Kydland (1995); Bordo and Rockoff (1996).

the fiscal authority fixed the level of public debt and the monetary authority made the choice as to its composition as between bonds and money:[57]

> Increasing the rediscount limit and at the same time shipping gold to pay for the loan in question, means a reduction of the percentage of the metallic guarantee which Argentina's currency has hitherto enjoyed. It must not be forgotten, however, that even although this is in a sense equivalent to inflation, it has in its favour two very important points; in the first place, an external debt becomes an internal liability, and secondly the actual amount of the currency in the hands of the public suffers, for the time being, little or no change.[58]

The most elegant feature of the Argentine case is that once the country reached a "debt ceiling" the combination of an orthodox fiscal policy and a heterodox monetary policy satisfied the solvency (transversality) condition of the government budget constraint. In an exceptional international crisis, Argentina made a remarkably smooth transition to a fiduciary monetary regime while retaining creditworthiness in external capital markets. Although they had almost no degrees of freedom, such was the technocratic finesse of Prebisch and Pinedo.

57. Sargent (1986).
58. *RRP*, August 28, 1931, p. 17.