

invite the repetition of crises in the same countries, through higher interest premia and quicker flight when repayment problems loom (though we now turn to evidence against this fourth possibility).

Whatever the cause of the consistency of national repayments behavior, have creditors taken notice? They have indeed rationed credit to the Soviet bloc and China, and have continued to lend heavily to high-income good repayers like Australia and Canada. But among Third World borrowers, they have taken little note of history in their lending in the 1970s. Given the findings shown in figure 2.2 that default history raised the probability of rescheduling, both in 1980–86 and earlier, one would expect major banks to charge higher premia, or lend at shorter term, or lend less, to governments with a default history. They did slightly the opposite in 1976–79, according to table 2.6. Governments with histories of default and rescheduling paid about 0.04 percent *less* in interest, on slightly longer-term loans, than governments with unblemished repayment records. Repayments history, which helps predict subsequent repayments crises in the international cross-section, was ignored.

2.2.6 Were Defaulters Punished?

A clearer result from the history of rates of return on sovereign debt relates to the *ex post* treatment of those who fell into arrears: The only ones punished were a few countries defaulting in isolation before 1918. Before World War I, creditor-country military power could punish an individual borrowing country. Such was the fate of Egypt in 1880, as noted above. Venezuela also capitulated to gunboat pressure, in 1902. The Dominican Republic's attempt to default led to an invasion of the U.S. Marines and a takeover of the country's customs revenue in 1905. Nicaragua also lost her sovereignty to the Marines and to U.S. customs supervisors in 1911–12. Mexico, Turkey, and the Soviet Union were denied new credits after their repudiations around World War I.

Yet surprisingly few debtors have been punished since the 1920s, either with direct discriminatory sanctions or with denial of future credit. A correct reading of the relevant history is that the majority of nonrepayers "escaped" punishment during global crises. In the 1930s, debtors may have seemed to suffer cutoffs and trade retaliation, but the impression misleads. In that crisis and its early-postwar aftermath, the United States and other creditors were indiscriminate in their denial of fresh credits: Almost *no* governments in less developed countries got fresh loans, whether they were repaying old ones or not. A temporary gesture toward credit discrimination was the U.S. passage of the Johnson Act in April 1934 prohibiting private loans to foreign governments in default. But for the rest of the decade no loans were forthcoming even to governments exempt from the Act, and in July

Table 2.6 Debtor History vs. Interest Premia, 1976-79

Country	Borrowing Experience, 1976-1979				Repayment Record, 1980-86
	Interest Premium	No. of Loans	Amount Lent (\$ mill.)	Weighted Term (yrs.)	
<i>A. Countries with no defaults or reschedulings before 1980</i>					
Algeria	1.46%	46	2,822	7.5	—
Côte d'Ivoire	1.88	9	362	6.6	r '84-'86
Jordan	1.30	9	340	6.9	—
Korea, South	1.03	17	2,519	9.0	—
Malaysia	0.92	10	1,188	8.2	—
Morocco	1.21	13	2,070	7.6	r '83, '85
Portugal	1.02	22	1,506	7.6	—
Thailand	1.03	11	460	7.5	—
Tunisia	0.94	7	427	8.2	—
These nine	1.20%	144	11,694	7.9	
<i>B. Countries with pre-1940 nonrepayments, none 1940-1979</i>					
Bolivia	1.73	8	494	6.5	r '80,'81
Colombia	0.95	12	1,089	9.6	—
Costa Rica	1.16	11	521	9.5	d '83,r '83,'85
Ecuador	1.10	21	1,395	8.8	r '83, '85
Greece	0.79	13	1,497	9.4	—
Mexico	1.10	66	14,539	7.7	d '83,r '83,'84
Panama	1.52	12	871	8.4	r '85
Spain	1.02	75	5,511	7.7	—
These eight	1.09	218	25,916	8.0	
<i>C. New post-1940 countries with reschedulings by 1979</i>					
India	0.86	4	155	6.2	—
Indonesia	1.19	17	2,773	8.2	—
Philippines	1.24	28	2,953	8.7	r '84
These three	1.21	49	5,881	8.4	
<i>D. Countries defaulting before 1940 and rescheduling 1940-79</i>					
Argentina	1.36	41	4,398	8.2	r '82-'85
Brazil	1.38	116	10,191	9.5	r '83, '84
Chile	1.41	16	1,475	8.1	r '83-'85
Uruguay	1.45	7	357	8.5	r '83-'85
Venezuela	0.82	27	6,170	7.4	r '85
Yugoslavia	1.27	10	458	7.5	r '84, '85
These six	1.23	217	23,048	8.6	
<i>E. All 26 countries</i>	1.16	628	66,538	8.2	
<i>F. Classified by later repayment record (1980-86)</i>					
12 repaying on schedule	1.09	243	20,286	8.1	—
14 reschedulers	1.20	385	46,252	8.2	r

Sources: The data summarizing borrowing experience for 1976-79 were kindly supplied by Professor Sebastian Edwards. They underlie Edwards (1986, 574-77), and draw on data published by the World Bank. The repayments record is from table 2.8.

Notes: Interest premium = percent premium over London Interbank Offer Rate (LIBOR) on public and publically-guaranteed borrowings from banks in the Eurobank market.

r = rescheduling.

d = default, as defined in table 2.8.

— = repayment on schedule.

1945 exemptions were granted to every government belonging to the IMF and the IBRD (International Bank for Reconstruction and Development)—in effect, to every government outside the Soviet bloc (Lewis 1948, 140–5, 204–6).

Even trade policy, which had the chance to discriminate in the bilateralism of the 1930s, was not used to discriminate against defaulters or in favor of faithful repayers. Protectionism was too sweeping. Britain's Imperial Preference system might be viewed as an exception, inasmuch as it favored Commonwealth countries, who happened to have been faithful repayers, but even here repayment history was not the organizing principle. The United States, for its part, concluded reciprocal trade agreements after 1934 that favored defaulting countries as often as not (Tasca 1938, 274–75, 330–35; Tasca 1939, chaps. 1 and 2). The Export-Import Bank was restructured in 1936 in a way facilitating new loans to good neighbors, many of whom were Latin American defaulters on dollar bonds (Felix 1987, 31).

In the postwar era U.S. lending again failed to discriminate against defaulters among Third-World governments. Barry Eichengreen (chap. 3 in this volume) has shown as much for the lending of 1945–55. And, as we have seen in table 2.6, defaulters paid no extra premium when borrowing in 1976–79.

In the 1980s, too, the signs of discrimination against problem debtors remain weak, at least among developing countries. Bond lending has virtually dried up, and the revival of bank lending has been very meager, for countries who have repaid faithfully as well as for those demanding repeated rescheduling. Whatever the private wisdom of the pervasiveness of creditor pessimism, the external cost of repayments breakdown seems as evident in the 1980s as in the 1930s: Some faithful repayers (e.g., Colombia, Egypt) have suffered credit contraction along with problem debtors.

Thus the seeming irrelevance of repayments history in creditors' eyes is itself a lesson of history. It predicts that borrowers will not suffer much by following the lead of Peru and Bolivia in 1984 and Brazil and Ecuador in 1987 in cutting repayments and demanding partial write-downs of debt—at least if they do so collectively.

2.3. Options for Handling Debt Crises: Some Suggestions from History and Theory

A combination of history and theory offers tentative lessons on dealing with a repayment crisis once it has already broken. History's contribution in this case is not based on the assumption that the present resembles the past, but on our belief that present crisis management differs from that of the bond era in an instructive way. What is special

about the lingering crisis of the 1980s is official third-party intervention, led by the IMF. To understand what difference this option makes in a debt crisis, we need to use a framework that includes the main stylized crisis-management options.

2.3.1 Overview

The starting point for analysis of a debt crisis is to define the crisis. The present definition is straightforward: A debt crisis exists *if in the absence of a better offer, the debtor would rather impose unilateral nonrepayment than repay fully*. While there may be some incentive to bluff in such matters, let us accept insistent statements by a debtor government that it “cannot” repay fully without help or concessions from others as good prima facie evidence that it will not repay fully without such help. That is, as a rule of thumb, a debt crisis exists if the debtor says it does.

The options for minimizing the costs of a debt crisis are unilateral, two-party, and three-party. The creditors have two unilateral options (subject to the problem of getting organized as a group). They can impose penalties on the debtor if he does not repay, or they can lend more to the debtor on the current terms. Such a net transfer of resources will surely be satisfactory to the debtor. If no such unilateral aid is forthcoming, the debtor also has a unilateral alternative to full repayment: full or partial nonrepayment. The two-party option is one with a long history: The debtors and creditors can reach a compromise, each side bringing its own threat to the bargaining table. The two-party category includes cases in which the debtor unilaterally imposes a partial-repayment offer that creditors cannot refuse. The three-party options are more complex, typically involving financial aid and other policy measures by an official agency such as the IMF, the World Bank, or the government of the United States.

The options are conveniently judged with the help of table 2.7, which gives a schematic overview of the distribution of gains and losses from each course of action. The simplicity of the framework may deceive. It is *not* based on a one-period view of debt negotiations. Rather it stems from a model of sequential multi-period decisionmaking described elsewhere (Lindert 1986). Its effects on different parties are based on capitalizations of the values of options for the future conditioned on this year’s behavior. While policy recommendations are proscribed here, we describe the likely effects of each option on world wealth. We turn to the options in the order in which they are listed in the columns of table 2.7.

2.3.2 By Definition, Direct Full Repayment Is Out

A debt crisis has been defined as a situation in which V_t^D , the maximum social welfare attainable by the debtor by defaulting in this year,

t , exceeds V_t^R , the maximum welfare attainable by faithfully repaying this year, with the option to repay or default next year.⁸ The welfare inequality $V_t^D > V_t^R$ is a direct translation of an inequality in the resources available for intertemporal consumption, as detailed in a companion paper (Lindert, 1986). Repaying this year means giving up principal and interest. In the framework used here, all of a loan is viewed as repayable at the end of the same year, with a new loan to be negotiated. If D_t is the borrower's debt at the start of the year, the debt service given up is $(1 + r_t)D_t$, where r_t is the interest rate on the loan. The countervailing advantage of faithful repayment is the avoidance of any penalty or loss of future access to credit. We can use P_t to represent the capitalized direct sanctions penalty for nonrepayment, taking such forms as foreign-policy reprisals, disruption of the debtor's foreign trade and seizure of his assets in the creditor country (Kaletsky 1985). P_t may vary with the size of the defaulted debt. The other cost avoided by repayment is B_t , the capitalized value of the borrower's surplus on all future borrowing made possible by the better repayment record. The definition of a debt crisis assures that the debtor would lose from repayment: $P + B < (1 + r)D$, if we drop the time subscripts. Unfortunately, the lender would gain more by avoiding default than the borrower would lose. In imposing penalties, the lender realistically recaptures only a fraction, α , of the penalty imposed. The rest of the penalty $(1 - \alpha)P$, is a deadweight loss from default, or a world wealth gain from repayment. Yet the borrower can impose this net cost by choosing default. Full repayment is ruled out in a debt crisis.

Note that the condition defining a debt crisis does not hinge critically on whether or not the debtor is bankrupt. Bankruptcy is a sufficient but not a necessary condition for a debt crisis. If the debtor is sovereign, meaning that direct seizure of collateral and similar penalties are less than the debt service owed, [$P < (1 + r)D$], there can be a default incentive (i.e., a debt crisis, with $P + B < (1 + r)D$) even with debtor solvency (the debtor's assets, K , greater than $(1 + r)D$).

2.3.3 Relending Versus Default

A Theorem

The point brought out in the second column of table 2.7 is that extra lending at the same interest rate in a debt crisis does not remove the default incentive, but rather raises the amount defaulted on. If more is lent by the start of this period (D raised), the value of the debt service to be defaulted on at the end of the same period is raised by more than the costs to the debtor of defaulting.

This result states that more debt raises the net national welfare gain, and the net national wealth gain, from defaulting: $\partial(V^D - V^R)/\partial D > 0$ and $1 + r > \partial(P + B)/\partial D$. It follows from (a) the definition of a debt

Table 2.7 Debt Crisis: Options for the Morning After

Given that the debtor would prefer (or “be forced to”) default without a rescue package, the following options bring the listed capital-value payoffs relative to complete default on the original loans:

Party	Unilateral Options		Two-Party	Third-Party Rescues	
	(1) Direct Full Repayment	(2) Extra Loans (ΔD), Same Terms	(3) Partial Debt Write-down	(4) Fully Repay Easy Rescue Loan	(5) Next-Year Default on Easy Rescue Loan
Debtor	$P + B - (1 + r)D < 0$	$\Delta(D - P - B) > 0$	$P + B - (1 + \lambda)D \geq 0$	$P + B - (1 + e)D - MAC \geq 0$	$P - P^e - eD \geq 0$
Lenders	$(1 + r)D - \alpha P > 0$	$\Delta(\alpha P) - \Delta D < 0$	$(1 + \lambda)D - \alpha P \geq 0$	$(1 + r)D - \alpha P > 0$	$(1 + r)D - \alpha P > 0$
Third party (rescuer)	—	—	—	$(e - r)D < 0$	$(e - r - 1)D + \alpha P^e < 0$
World wealth	$(1 - \alpha)P + B > 0$	$-(1 - \alpha)\Delta P - \Delta B$	$(1 - \alpha)P + B > 0$	$(1 - \alpha)P + B - MAC - \text{moral hazard costs}$	$(1 - \alpha)(P - P^e)$, with moral hazard costs
Punch lines:	Debtor won't allow this.	Greater default.	Workable, though untidy.	May be dominated by (3).	Possible, dominated by (3).

where α = share of default penalty recoverable by creditor as collateral (asset seizure),
 B = capitalized benefits to debtor from future credit rations,
 D = initial outstanding loan from banks to debtor,
 e = interest rate on concessionary (“easy”) rescue loan ($e < r$),
 λ = revised interest rate forced onto lenders ($\lambda < r$),
 MAC = macroeconomic adjustment costs imposed on debtor as part of the rescue package,
 P = penalty inflicted on the debtor for default on initial loan,
 P^e = penalty inflicted on the debtor for default on initial rescue loan,
and r = interest rate on original loan.

Note: The results under (1) and (2) are derived at length, and those under (3)–(5) are hinted at, in a multi-period model in Lindert (1986).

crisis (i.e., a situation in which $(1 + r)D > P + B$), and (b) the plausible condition that the elasticity of default costs with respect to the amount of debt be less than unity that:

$$\frac{\partial(P + B)/\partial D}{(P + B)/D} < 1.$$

This is almost surely true. For one thing, $\partial B/\partial D < 0$: Allowing extra lending to take place reduces the untapped borrower's surplus by increasing the ration of credit toward the unattainable complete-trust amount of lending where the borrower's surplus stops growing with the ration of credit. In addition, the direct penalties against defaulters have a fixed-cost component. It is plausible to assume that the first little bit of debt repudiation damages the debtor's standing substantially, leaving less increment in penalty available for punishing extra levels of default. In other words, $\partial P/\partial D < P/D < (P + B)/D$.⁹

Once these premises are granted, the inadvisability of extra lending follows. Relending in a debt crisis magnifies the Ponzi-scheme aspect of overlending to a sovereign debtor. Whether it raises or lowers the cost to the world cannot be said with certainty, but it cannot reverse that net cost, a cost made more certain by the raising of the debtor's default incentive.

Myths about Relending and "Panic Risk."

Is there no case in which creditors in the aggregate can gain by lending more in a debt crisis? No, not with *sovereign* debt.

Earlier defenses of the idea of relending to debtors threatening non-repayment are either flawed or inappropriate to the case of sovereign debt. One flawed view stresses an ability-to-pay dynamic. The simplest variant dates back at least to Domar:¹⁰ If only the debt can grow faster than the rate of interest, every individual loan can be repaid. A more popular variant argues that all is well if the debt/export ratio is kept from rising by having export growth outstrip the interest rate (Cline 1983, 46–72; Cline 1985, 36–45; Avramovic 1985; Dornbusch 1985, 343–83; Dornbusch and Fischer 1985, 60–65; Feldstein 1986). It is used with favor in writings by the World Bank and policymakers in debtor countries (e.g., World Bank 1985, 50–53; Simonsen 1985). But as shown elsewhere (Lindert 1986, 3–6), the popular variant is just Domar's variant in disguise, since the export terms cancel out. Both variants fail to note or correct the fact that infinite relending to a sovereign debtor in a debt crisis is a Ponzi scheme. Nor do they note that even on this view's own terms, the crisis is avoided *only if* the lenders are chained to repaying themselves *forever*.

The best theoretical case for relending at the brink of default is one presented by Hellwig (1977). In Hellwig's model, the borrower goes

for some time without income, then gets a random income that might allow repayment. Once the stream of lending has begun, moral hazard sets in. The borrower overconsumes in the initial period, running low on funds and demanding more. Despite the clear danger of bankruptcy, the creditor rationally yields and relends to save at least the possibility that the borrower will get rich and repay. Hellwig assumes that bankruptcy settlements hold such clubs over the borrower that he will want to repay if at all possible (1977, 1883–85). Since the issue becomes whether or not the borrower is able to repay, involuntary relending is indeed rational (given the questionable decision to start lending in the first place). But Hellwig's model, while correct, cannot be applied to the case of sovereign debt, since his key assumption rules out debtor sovereignty. The sovereign debtor would still ask whether he had an incentive to repay, even after becoming rich. The present result is not contradicted.¹¹

The present result also challenges the usual description of "panic risk," the danger that individual lenders will stampede to stop lending when a default incentive looms and triggers a capital loss for all creditors. The usual story is that their pursuit of individual security ruins the collective creditor interest. The formation of lending syndicates is one device for solving the "free-rider" problem among already exposed creditors.¹² There is reason to question, however, whether the "panic risk" or "free-rider" problem really exists during a rush to stop lending. It could exist, of course, if those who panicked were misjudging the ability of the borrower to repay all debts. But if they are fleeing because they correctly perceive that the debtor has an aggregate default incentive, panic by individual lenders does not impose any special cost, any "panic risk," on the whole community of creditors.¹³ What is wrong with the usual discussion of panic risk and free riding in the context of sovereign debt is its assumption that creditors' collective interest is served by continuing to relend in a debt crisis. It is not. If the debtor has a default incentive, those creditors who continue to relend are not averting the capital loss that panic would bring. They are only pretending it does not exist—and are magnifying its present discounted value by relending.

2.3.4 Two-Party Debt Renegotiation

As a Game

The debtor and creditor(s) can reach a compromise that gives each side something better than its unilateral alternative. Each can use its unilateral option as a threat point. The debtor has the default option, precluding full repayment as a debt crisis outcome. Column (3) of table 2.7 lists the bargaining outcome that gives the debtor least, one in which

he gets just enough reduction in interest rate (from r down to λ) to match the perceived gains of default. The creditors gain by avoiding default, recapturing enough of their investment, $(1 + \lambda)D$, to outweigh the seizure value of the debtor's assets, αP . The latter (αP for them, costing the debtor P) defines their threat point. The lower it is, the more the informed debtor can force creditors to write down debt obligations.¹⁴ The two parties are likely to find a bargaining solution between the two threat points. In at least one formal model, they do find such a compromise under special assumptions (Bulow and Rogoff 1986), but there is no general theorem establishing a smooth bargaining solution.

How It Worked in the Bond Era

The two-party approach worked as well as could be expected before World War I. The exact outcomes varied with circumstances. At the benign noncrisis extreme, there were uncontroversial reschedulings that preserved the contractual capitalized value of debt while postponing (and magnifying) nominal service obligations to meet a pure-liquidity problem.¹⁵

Of the cases involving real give and take, three prewar Latin American examples illustrate the flexibility of two-party bargaining. One solution was reached between Mexico and her creditors in 1885–86. Eager to attract fresh foreign capital, incoming President Díaz signed three decrees on 22 June 1885 cutting government spending and offering a partial repayment of old foreign debts, but refusing to pledge any special government revenue to creditors. A year later these terms were accepted by the Corporation of Foreign Bondholders, and other arrangements were soon worked out regarding Mexico's non-London debts. Lending resumed until the revolution (Turlington 1930, 171–211; Wynne 1951, 30–47).

The Romero Plan (Arreglo Romero) of July 1893 revised Argentina's foreign public debts along similar principles.¹⁶ Argentina was excused from 30 percent of interest payments for five years and from all amortization for eight years. Still in arrears despite a funding loan in 1891, Argentina was able to convince her private creditors that this was the best they would be offered. Creditworthiness, fresh inflows, and faithful repayment ensued. Financial rehabilitation owed less to fiscal belt-tightening than to a revival in demand for Argentina's exports from the late 1890s on (possibly helped by undervaluation of the peso after its stabilization).

The Brazilian funding loans of 1898 and 1914, organized by the Rothschilds, showed how private-bank conditionality differed with circumstances. The 1898 loan required that Brazil retire some of her note issue, which had grown too rapidly in the mid-1890s. In exchange,

Brazil got very little debt reduction, the loan calling primarily for value-preserving postponement of service, akin to the pure “rescheduling” packages of the 1980s. As Fishlow (1985 and 1987) has noted in this context, “[f]unding loans were not all finance and no adjustment,” and in 1898 Brazil was prepared to take little direct financial relief and some adjustment for the sake of regaining creditworthiness. In 1914 she gave up less. In the eyes of creditors as well as her own, Brazil’s troubles were not self-inflicted, but stemmed from a sudden plunge in her terms of trade on world markets, warranting renewed credit after a minor rescheduling.

The same workability could not be recaptured, of course, in the wake of the Mexican and Russian revolutions. In both aftermaths, creditors held no effective clubs over the postrevolutionary governments—no extra sanctions (*P*) that were not being imposed anyway, and no credible promise of generous future credits (bringing borrower surplus *B*) to compensate repayment of large past debts. No system was likely to succeed in averting default in these cases.

The same applies to the 1930s. Bargains were struck repeatedly, but each settlement was promptly breached by the debtors. As the present analysis of debtor incentives implies, repayment collapsed because, in effect, *P* and *B* plunged to zero. Threats of penalties against a debtor country were not credible, given that so many countries defaulted and that international trade and trade finance could hardly be made worse by vindictive creditors. Nor was there any reasonable prospect of renewed lending large enough to tempt most debtors into faithful repayment. The breakdown of the 1930s shows only that a worldwide collapse, which was not due in any large degree to the international debt defaults, posed a problem so great that no bargaining solution could work, no matter who helped out.

2.3.5 The Three-Party Approach

By contrast, international debt settlements in the postwar world are governed in part by international agencies ready to intervene in the debt-bargaining process—the International Monetary Fund, the World Bank, the Paris Club—and by the hegemonic lobbying efforts of the United States government on behalf of sound international finance. Outright repudiation has largely been replaced by those other “re-” words: rescheduling, refinancing, restructuring, renegotiation. The consensus is that this intervention has helped avoid the instability of the 1930s. Yet there are reasons to question the consensus. The imperfect bilateralism of the bond era may have been a more realistic approach to the inherently untidy problem of sovereign debt than the new third-party interventionism.

Its Postwar Evolution

The evolution of the three-party approach can be divided into three postwar stages for expositional purposes. Before about 1955, when governments borrowed abroad mainly from other governments, re-scheduling was also bilateral. The troubled debtor got assistance directly from an agency of the lending government, such as the export-import bank. Concessionary refinancing, like Marshall Plan aid, was an American affair. The IMF and World Bank still concentrated on their initial priority tasks, the balance of payments and development loans, respectively. This earliest phase resembled the two-party approach of column (3) in table 2.7.

Between about 1955 and about 1979 the supply curve of concessionary third-party financing shifted out. The Fund and Bank began to assume a greater and greater third-party role in debt refinancing (Bittermann 1973, chap. 3). In some cases, they merely provided good offices, as an informed catalyst in negotiations between other governments. In others, they, especially the IMF, laid out formulas for macroeconomic adjustment in the borrowing country. And in some cases, they actually contributed to the refinancing package, with loans on their own separate terms. Their supply of concessionary financing may have been raised by the establishment of explicit Fund conditionality between 1952 and 1955, a move that may have raised the contributions of their conservative main subscriber, the United States (Dell 1981, 9–12). Essentially the same policy guidelines for the supply of concessionary finance have remained intact since.

After 1979, and especially after the debt crisis broke in mid-1982, the demand curve for refinancing shifted far to the right. Debtors' first recourse was, as usual, to their immediate creditors. By 1979, however, these creditors were private banks whose exposure had risen to heights not approached since the 1920s. The private banks were more reluctant than the earlier government creditors to write down the debt obligations due them. They suffered greater exposure, lacked any foreign-policy motivation to make concessions to a foreign government, and (in the United States) were (and still are) constrained by law to declare any loan with interest arrears to be "nonperforming," forcing a write-down of net worth. What private creditor banks have sought in the crisis since 1982 is an extension of third-party rescue, the policy that was emerging in the 1955–79 period. The surge in demand for third-party help posed a delicate policy issue.

Third-Party Rescues in Principle

To judge the potential and the perils of third-party rescue packages, let us first describe this approach as an ideal type and then compare it with actual practice in the debt crisis of the 1980s.

A stylized third-party rescue would lead to the cost-benefit accounting sketched in column (4) of table 2.7 above. The third party (e.g., the IMF or World Bank) grants a rescue loan at the lower interest rate, e , which the debtor uses to pay off private creditors at the higher interest rate, r . The private creditors recapture their money in full, and the debtor gets a reduction in its external liability. The rescuer, with money ultimately raised from taxpayers, subsidizes the combination of the first two parties, giving interest-rate relief ($e < r$) that is split between the debtor government and its private creditors.¹⁷ The two parties thus gain, relative to the bond-era institutions forcing them to bargain only with each other. The world benefits in exactly the same way as with two-party negotiations: It saves the deadweight loss from the retaliatory penalties, or $(1 - \alpha)P$, subject to subtler costs discussed below.

Which side tends to capture the subsidy—the debtors or the creditors? No simple answer can be firmly given, but there is reason to suspect that the creditors are the larger proximate beneficiaries. Their gain is the more tangible, at least: They get repaid the full risk-elevated interest rate (r) on their loans, whereas two-party bargaining would have forced them to accept a write-down ($\lambda < r$). The debtors are given enough to forestall default (though it could return, as column (5) in table 2.7 warns).

Three Extra Costs

Subsidizing international lending on insufficient collateral would not seem so costly if one just looked at the subsidy wedge and the likely elasticity of long-run overlending response as a percentage of world product, calculated on the back of an envelope. The effect on world wealth could be as low as that in the two-party settlements of column (3). There are three subtler costs, however: moral hazard costs, macroeconomic adjustments costs, and costs of delays in settlement.

A third-party rescue involves an extra moral hazard not present in the two-party case.¹⁸ That subsidy tied to the write-down ($e - r$) D encourages the type of lending wave that creates debt crises. Yet it captures only those immediate world gains, $(1 - \alpha)P + B$, that two-party settlements could have captured without the extra moral hazard.

Rescue packages involving the IMF also impose macroeconomic austerity on the debtor countries (via conditionality). Austerity is not a bad in itself. In fact, given the frequent bias toward inflated government payrolls, monetized deficits, and inflation, austerity can be its own reward from the viewpoint of the adjusting nation. The IMF could continue to offer incumbent policymakers its services as the classic “ogre of first resort,” taking blame for short-run adjustment costs and

giving them the extra political chance to survive until the whole nation reaps the longer-run gains from austerity.

The issue here is not the idea of conditionality, but its current marriage to repayment of private creditors. In the 1980s, IMF conditionality has imposed macroeconomic adjustments in relation to the debt hang-over, not just in relation to the macroeconomic need for austerity in the debtor country. Some countries might be pressured too much, others too little. To the extent that there is merit in correcting debtor-country macropolicies just to encourage international creditworthiness, that is a task that might be left to private conditionality (Friedman, in Williamson 1983), just as it was in the two-party bargaining before World War I. The Fund has the option of concentrating its conditionality on the seriousness of macroeconomic overheating in the debtor country.

A third subtle cost of the three-party approach is a cost of delay, which has become evident in the wave of reschedulings in the 1980s. Unlike the ideal concessionary third-party relending of column (4) in table 2.3, the involvement of the IMF and the World Bank has not brought significant relief to debtors and has not resolved the uncertainties of the debt overhang. To be sure, dozens of rescheduling and refinancing agreements have been signed. Yet the terms involve no clear write-down of debt. While debtors' demand for liquidity has been assisted by debt rollovers with grace periods, the rescheduling loans tend to involve a *higher* interest-rate spread over LIBOR. Of the fourteen leading debtors whose rescheduling in 1980–86 was noted in table 2.4 above, nine are slated to pay clearly higher spreads over LIBOR than those at which they borrowed in 1976–79; four (Argentina, Panama, Mexico, Yugoslavia) are paying spreads both above and below, but averaging above, their 1976–79 rates; and only the B-loan to Côte d'Ivoire is below the 1976–79 average rate (Watson et al., 1986, 106–22). While one could argue that the rescheduled rates over LIBOR might be below the shadow price of funds given the debt crisis, they do not concede any write-down of existing debt.

Why has little or no debt relief yet been offered to debtors in the negotiations of the 1980s? While the issue must remain open to debate, we hypothesize that the intervention of the Fund and the Bank has impeded the striking of bilateral bargains between debtor governments and the creditor banks. Debtor countries seeking debt relief are also shopping for concessionary new loans from the Fund and the Bank. Under current practice, an impasse arises—or is imposed by creditor resistance. IMF policy generally proscribes agreement with a debtor country for concessionary finance in exchange for domestic belt-tightening until the country has reached an agreement restoring good standing with private foreign creditors. The link between creditor satisfaction and official

financing is explicit in the Fund's pursuit of "co-financing" packages since 1982. Knowing this, the main banks have the option of holding out for repayment at or near the original high interest rates. With official aid held hostage, the debtor resorts to buying time, remaining current on debt service and signing short-run rescheduling agreements involving little or no relief. The delays continue, and cloud capital formation, until the debtor gives up on the process—a resignation seemingly signalled by Brazil in February 1987.

The three-party approach thus has extra problems, the magnitudes of which depend on whether the approach is truly followed or only simulated. A genuine rescue, by reducing debt service, poses a moral hazard. It subsidizes the combination of debtors and lenders, inviting future waves of overlending. It also distributes costs of macroeconomic austerity according to foreign debt outstanding, rather than according to the severity of domestic macroeconomic disequilibrium. If the three-party approach is only simulated, as in the indecisive reschedulings of 1980–86, time is wasted, prolonging uncertainties that may depress capital formation. One way or the other, the three-party approach seems to offer lower world wealth than the two-party approach.

2.3.6 A Note on Creditor Distress

An obvious fear about the suggestion just raised is that leaving lenders to their own devices threatens financial instability. In an unlikely extreme case, if their full Third World exposure were a capital loss, the nine top U.S. banks would be insolvent. Is there not a case for an official bailout to avert the financial panic that might attend their bankruptcy?

The issue of financial panic definitely cannot be resolved in the space available here. It is one on which reasonable people may differ. Yet we would be remiss if we did not indicate our own views on this issue, an issue naturally raised anew by our interpretation of the evidence above.

We suggest three reasons why such a concern does not make a case for policies rescuing shareholders and managers of the troubled banks. One minor reason is that panic probabilities can be invoked only when the kind of default possible exceeds lenders' exposure and the lenders are major financial institutions. In most cases, the two-party bargaining process would predictably yield an outcome in which the creditors suffered only a partial default. Neither they nor the debtor countries on the other side of the table have an incentive to let the main creditors fail. A second restraint on the fear of financial destruction is that a major U.S. bank in serious trouble can be purchased by any of several already-willing suitors (e.g., First Interstate, Sumitomo, etc.), with its operating units intact. Its accumulation of knowledge, customer rela-

tions, and physical capital need not be dismantled and auctioned off in uneconomical parts.

Above all, history reminds us that a key line of defense for avoiding financial panics stemming from bank insolvency (whether bank investment policies are at fault or not) is to protect the nonequity *claimants* on the insolvent banks. Given a capital loss on the banks' (or other private creditors') assets, the central bank or other rescuer bears only the same or less cost by defending nonequity claimants as it would bear by sheltering shareholders' net worth against any capital loss at all. The U.S. bank failures of the early 1930s did not show that the "lender of last resort" needed to protect banks' shareholders, but that it should have protected depositors and other claimants, calming more fears with less official loss and less moral hazard. And, back in the international sphere, the Bank of England followed a similar strategy in the Barings Crisis of 1890. When Barings was threatened with insolvency because of its Argentine investments, it was liquidated and reorganized with some loss of partners' equity. The claimants on Barings were rescued first, with the Barings partners' equity left at market risk. No tidal wave of panic resulted (Clapham 1958, 2:325–39).

2.4 Conclusions

There is a growing body of literature in which lessons are carefully drawn from comparisons of the 1980s debt crisis with earlier crises involving international lending to sovereign debtors. This chapter concentrates on two sets of issues: the long-run patterns of behavior toward international lending, and the policy options for dealing with debt crises after they have hit.

On the private returns to such lending, we get a mixture of results:

1. On the whole, lending to foreign governments has brought investors a higher real rate of return than the alternative of lending to their own governments, despite foreign defaults. Between 1850 and about 1970, lenders were promised about a 2 percent *ex ante* premium on the bonds of ten foreign governments, and ended up with about a 0.42 percent *ex post* premium. In the wave of lending since 1973 the *ex ante* premia were again about 2 percent over home-government bonds. The *ex post* returns still depend heavily on future repayments, subject to the constraints quantified in table 2.4. Debaters over the need for official intervention into the international-debt sphere cannot yet cite any past aggregate shortfall in investors' private returns.

2. For a subset of major government borrowers, the crises of non-repayment have been deep enough or frequent enough to make their bond debt an inefficient part of foreign portfolios for over a century.

The foreign bond debts of Chile, Mexico, Russia, and Turkey have offered negative net returns. Investors had foreseen some likelihood of default in three of these four cases, charging higher than average *ex ante* interest premia (Russia is the exception here).

3. There is a significant historical consistency in the identities of the countries defaulting. Countries that had defaulted before 1929, for example, were more likely to default in the 1930s than were others. Similarly, countries that had defaulted or needed concessionary refinancing before 1980 were more likely to be in arrears or get rescheduling agreements in the 1980s.

4. Defaulting debtors were not consistently punished. There were only a few early cases where countries trying to default in visible isolation led to direct sanctions and discriminatory denial of future credit. Most of the defaults occurred in the worldwide crises of the 1930s—and possibly the 1980s—when uncooperative debtors suffered no more than cooperative ones.

For international debt crises in full swing, there is no tidy solution, because of the inherent defects of unenforceable lending. We rank the available options according to their likely world-wealth effects, arguing from a mixture of history and theory that

5. In a debt crisis, merely relending to the same borrower on the same terms (pure “rescheduling”) must lower creditor and world wealth, given that it was necessitated by the borrower’s credible threat to cut repayments unilaterally if no lending occurred.

6. The older direct two-party bargaining of the bond era, in which debtors and creditors turned to partial repayment plans, had a mixed record. Revolutions and the Great Depression brought sweeping debt repudiation and credit cessation, but other cases were resolved much more smoothly. Direct two-party bargaining can be said to be workable, if untidy.

7. The modern three-party approach, with international agencies intervening in debt crisis negotiations, introduces three further complications beyond those of the imperfect two-party bargaining of the bond era. First, the experience of the 1980s finds that the three-party approach has produced short-run cosmetic agreements with little clear resolution of the underlying disagreement over resource transfer. The attending delays may have prolonged investment uncertainty. Second, if truly concessionary rescue loans had been forthcoming, they would have brought moral hazard, inviting further waves of private gambling on foreign sovereign debt. Finally, further work is needed to determine whether third-party (e.g., IMF) pressure for macroeconomic adjustment has become less correlated with the need for such adjustment because the pressure is attached to the extent of external debt.

Appendix A

Data Sources and Data Processing for the Bond Sample

Overview of Data Sources

Bondholders' Watchdog Annuals

The most important of these were the annual reports of the British Corporation of Foreign Bondholders (CFB). The series dates from 1873, and the approximate period of full detail covers the half-century from 1885 to 1935. During this interval, the typical issue comes in three parts: a brief narrative account of such country-specific important events as new issues, negotiations, defaults and consolidations; a more quantitative series of country appendices; and finally, a brief summary of "Principal Loans in Default." CFB tries to report all obligations of debtor governments, but its coverage of sterling issues is of higher quality than its coverage of other European and American-based lending activities. The country appendixes try to provide summary measures of debt outstanding and total debt service for some countries, but the terms of aggregation cannot be relied upon to be consistent from one year to the next. For the purposes of this project we did not make any use of aggregated information from CFB or any other source, but instead applied our own aggregation methods to the information on individual issues. During the late 1930s the quality of the reporting deteriorates rapidly. The editors blame the manpower demands of World War II, but the timing of the decline suggests that the real cause may be demoralization and shortage of funds associated with the massive wave of default of the early 1930s. Reports continue to issue until at least the mid-1970s, but are usually inferior in quality to other sources available for this period.

By the 1930s several other annual publications are available to supplement those of the CFB. The American-based Foreign Bondholders' Protective Council (FBPC) was patterned after the CFB, and provides very good coverage of American issues outstanding during the 1930s and 1940s. FBPC data have been of special value in tracing the details of patchwork funding arrangements for Latin American debt during the 1930s and its subsequent liquidation during the 1940s. It is also of great value in tracing the arrangements made to adjust Japanese debt during the post-World War II period. By comparison to CFB, however, it gives less attention to issues of foreign (here, non-American) origin.

The best American annual source of debt information is that provided by the Moody's annual reports. We began to rely on these as a main

source of information for debts to all countries around the year 1930, creating a period of overlap with the CFB coverage. Fortunately, the Moody's and CFB figures reconcile quite well during this period.

Occasional Compendia

Certain other publications which were not issued on an annual basis also contributed extensively to the data base. For the interval 1850 to 1885, before the period of greatest reliance on CFB data, the chief sources were Hyde Clarke (1879) and Fenn (1874, 1889, and 1898). Thereafter, we consulted the American compendia Fitch (1918), Kimber (1925), Kimber and Nagel (1933), and Dominick and Dominick (1934, 1936). These sources constituted the most detailed summaries of debt outstanding at points of time, and the preferred research strategy was, where possible, to jump from one compendium to the next, falling back upon the annual publications only when necessary to resolve conflicts or focus on particular years of interest.

Country Studies

The third most important class of information source for this project consisted of special studies, usually devoted entirely to a single country. Perhaps the best of these were those included in Wynne (1951). From this work we made use of chapters devoted to Egypt, Mexico, and Turkey. Three other important resources were Peters (1934), Turlington (1930), and Ludwig (1985), devoted respectively to Argentina, Mexico, and Brazil.

For each country, coverage typically moved from one dominant source to another. In trying to keep the reader informed about the passing of dominance from one source to the next, we do not mean to imply that the secondary sources were disregarded; only that in most cases they were found to be redundant.

Sample Design Strategy

Definitions of "Sovereign" and "External" Debt

The mass of data available from the sources mentioned above was assembled for the benefit of contemporary investors, not subsequent scholars. Definitions and categories shift over time and make it necessary to apply some criteria in deciding what to include and what to leave out. The most important case in point here is that of government guaranteed railroad debt. In many sample countries this category of investment was at least as important an avenue of capital inflow as direct government bond issue, but it is not included in this study because technically there is presumed to have been some recourse avail-

able against nonsovereign private borrowers before any guarantee could be invoked. Also, these sorts of flows are very poorly documented until their failure makes them direct government obligations. When this happens, it is usually necessary to treat them as new inflows at the time of the activation of the guarantee. Where possible, of course, we tried to include as much of the original issue information as could be retrieved.

In the same sense it was not always clear which issues should be considered truly external. The general criterion employed here is that real foreign debt should be issued and serviceable abroad, and should be redeemable in foreign currency. In some cases such as that of Argentina, this test is met by certain bonds explicitly denoted "internal," because of the need to circumvent a legislative ceiling on interest payable on "foreign" debt. These were included in the study, while the Argentine mortgage instrument known as a "cedula," which was apparently popular in European portfolios during the last century, was left out except where service was specified to be made in gold values.

Throughout the process of data collection, we were mindful of the fact that some international lending is motivated more by strategic considerations than by expectation of financial return. Thus we excluded all government-to-government transactions associated with the two world wars. In the post-World War II regime, however, the dividing line was not so obvious, given a proliferation of international financial intermediaries who were subject to some degree of manipulation on behalf of the global interests of the lending country governments. Here the sorting task became very difficult. In one case, that of Turkey, we observed some surprisingly low ex post rates of return on post-World War II dollar debt, which were not due to default. Whether they were due to unanticipated dollar inflation, or whether the loans were semi-concessionary from their inception, remains unclear. For some purposes the reader may wish to exclude them from the sample, which is easily done because there were no pre-World War II dollar denominated loans to Turkey.

Choices of Sample Countries

Our strategy, as mentioned in the text, was to sample the greatest value share of all loans since 1850 at the least research cost by tracking the whole population of external bonds issued by the ten top foreign-borrowing countries. The "top" countries were to be those with the greatest real gross borrowing over the whole 130-odd years. Lacking world data on total borrowings by country, we had to make an initial guess based on the secondary literature. The ten countries followed here were thus chosen by hunch, even before we could construct the

estimates in table 2.1 of the stock of outstanding external debt at three dates. Table 2.1 reveals that we probably did not pick the top ten. In particular, Chile should have been replaced with New Zealand if we were to get as close as possible to the top ten borrowers over the whole period.

Yet by picking up a Latin American that defaulted in the 1930s and is again a problem debtor in the 1980s, we at least made the sample and the task of data-gathering more interesting than if we had followed the history of yet another good repayer, such as New Zealand. Chile, we expect, will interest more readers. The switch means that our sample is slightly biased toward nations with troubled histories, a slight bias that helps firm up some of this paper's finding but not others.

Choice of Sample Period (1850–1983)

We originally intended to build a continuous data set embracing both bonded (largely pre-World War II) lending and direct bank lending (largely post-1970) in a unified format. It did not take long, however, to discover that the best data available for the former category of lending activity took the form of information about individual issues, whereas the information on the more recent wave of bank lending took the form of aggregated flows into and out of each borrowing country. Thus, an apparent regime shift in lending practices was accompanied by an apparent regime shift in reporting practices.

The main reason for this recent emphasis on aggregate flows is probably the fact that individual loan contracts had become too small relative to the whole, too short in their term and too flexible in the determination of interest rates (i.e., indexation to LIBOR), to permit reporting on the specifics of each individual issue. It may also be significant that when sovereign loans became permanent features in the portfolios of the lending banks and ceased to be traded on public financial markets, information on individual issues became proprietary to the banks themselves in a way that it had not been previously. At any rate, in a project such as ours, it is apparent that such a change in reporting conventions was not accomplished without the loss of important information. One is faced with the anomaly that in spite of the technical advances in data handling which had taken place during the period since World War II, the quality of the available data deteriorated. Any merger of the two data sets would have necessitated discarding the additional information available for the earlier set, making it impossible to draw conclusions about "anticipated" returns as well as realized returns. We decided to maintain the separation in order to take full advantage of the richness of the data on bonded lending. The reader will note that bonded lending tends to "taper down"

throughout the post–World War II period as it is supplanted by the new practices, while the direct lending by banks explodes into prominence in the mid-1970s.

In fact, the temporal distribution of bonded lending may be said to show almost symmetric tails, accelerating from about 1850 to 1890, and with a phaseout period from about 1940 to 1980. It is far from a smooth curve, since it covers many cycles of boom and bust, and in fact there is some overflow at either end. We initiated the investigation at 1850 largely because the preceding two decades were almost totally quiescent. Several large issues were floated in the 1820s to Latin America and Russia, and we used the expedient of treating the outstanding balances as cash inflows in the year 1850. Similarly, we assumed where no evidence of default existed, that all outstanding issues were paid off at par in 1983, our final year of coverage. The bulk of these loans were to Australia and Canada and Japan, so this was probably a very safe assumption. (In contrast, the outstanding balances for defaulted loans to czarist Russia were *not* assumed to be repaid in 1983).

The Collating Algorithm

The Data Records

The relative abundance of information about individual bonded issues made its demands upon the available technology of aggregation, particularly because of the emphasis to be placed on stacking all loan contracts together as if they had a common inception year. It is precisely here that data on aggregate cash flow totals will not suffice. In order to stack loans to a common origin date it is necessary to treat the aggregate debt service annuity payable by a sample country to its creditors as being composed of many substreams traceable to different origin dates and thus subject to different discounting schemes. For this purpose, we employed a system of breaking down the history of each loan into annual data on debt service, retirement, and balance outstanding, so that the information could then be reassembled for the purpose of stacking. This will henceforth be referred to as a “collation algorithm,” since its primary function is to sort and arrange data for convenient analysis. In all cases except that of Canada, we made use of the same general approach to the collating of data. The number of issues considered per country borrower varies widely, from 22 in the case of Egypt, to 439 in the case of Australia. There is great variance in the size of the issues, because countries differ in the extent to which their various subdivisions have borrowed on their own account. Canada represents the extreme case in this regard, where the number of tiny issues overwhelms the means of assimilating them into the data base.

For this reason all the results for the 488 Canadian bonds are pre-aggregated into aggregate cash flows with a spreadsheet program, without any ability to stack by origin year.

The typical pre-World War II bond issue by a sample country specified repayment in a fixed annual sum for a specified number of years in return for an inflow generated by the flotation of bonds of specified face value. The ability to hold the entire principal outstanding until maturity appears to be an option that was available chiefly to white commonwealth borrowers, although Japan also borrowed according to this model. When the United States began lending in the 1920s, its mode of operation sometimes called for repayment in specific blocks of outstanding debt leading to a staggered repayment stream, but fortunately these instances are uncommon. Other exceptional forms sometimes occurred when there was lending to a sovereign under stress. Here interest may escalate in stages or a sinking fund may not commence until a specified future year. Loan contracts may vary as to whether or not specific revenues were pledged as security, and the degree of choice to be exercised by the creditor in specifying the currency of service. The agreement may contain provisions about how bonds were to be selected for payoff; whether the borrower could retire ahead of schedule; and the price, not necessarily par, at which outstanding debt must be retired.

All the above features might be considered contractual between borrower and lender at the time of the capital inflow. Having entered into the loan agreement, the creditor then faced not only the risk of imperfect fulfillment of the contract by the debtor, but also the risk of imperfect fulfillment of expectations about prices and exchange rates. In order to capture the rest of the story, source materials must be scanned for reference to ensuing irregularities, balances outstanding, and dates of final retirement. New issues may give rise to new inflows, or consolidations may replace one issue with a successor issue. The desired objective is to follow the payment history generated by a given loan transaction until it was extinguished at maturity, completely defaulted, or paid off in some market-mediated transaction. Consolidations or refinancing operations or settlement agreements that did not involve the public marketing of fresh debt were not considered sufficient reason to "restart the clock," and the descendant issues in these cases were treated as originating in the year of the initial capital inflow. With the good data available for most publicly offered issued during the bond-lending era, this goal was generally attainable.

The "Collator" Program

The "collator" program was used to construct a schematic representation of the year-by-year history of each loan qualifying for inclu-

sion in the study. The program accepts information on the contract specifications and subsequent changes in performance for each loan, and targets outstanding balances for particular downstream years. It interpolates between the fixed points in the history of the loan to provide a continuous track on interest, retirement, and balance outstanding for each year of the loan's life. One-time flows which come at the beginning or the end of the loan's life are recorded in a fourth payment category reserved for lump-sum capital flows.

This stage of creation of annual breakdowns for all loans manages to capture almost all types of performance risk faced by the lender, with the possible exception of disputes involving currency of service. First, it takes note if the original issue price of the bonds differs from par, because this results in an increase of face value outstanding which is not the same as the amount of the associated capital inflow. In addition, the collating procedure captures intervals of complete or partial default, or the payment of interest with retirement suspended. It can show changes in terms or face value, or the issuance of cash bonuses which may come as part of a negotiated settlement. Most subtly, it incorporates an iterative procedure which uses a downstream year balance outstanding together with other information on the loan history to estimate the average price at which bonds are being retired by the action of a contractual sinking fund. This is useful in cases where countries are specifically permitted to retire their debt through purchase on the open market if it is circulating below par. When prices are low, countries may be able to retire debt much faster than anticipated without spending more than is called for in the contract, and this is captured by the procedure. Unless specific mention is made to the contrary it is assumed that no more is being allocated to retirement than is called for by the contract, and when retirement is observed to lag behind schedule it is assumed that the loan is not being fully served.

The original schematic loan record also includes an index section in which are stated some of the particulars of the loan such as its title, if any, its currency and power of 10, source references, and notes about its eventual disposition. The selection of the service currency is sometimes confused by language which appears to permit the bearer to select service in a currency of choice, from among several possibilities. There was no clear way to resolve problems of this sort, and almost universally it is simply assumed that the currency of service is that of the major lending country associated with the flotation of the loan. When a loan issues in more than one currency tranche, each tranche is considered to be served in its own currency of origin. Purported gold clauses were assumed not to be enforced in the absence of mention to the contrary, because in practice they seldom proved binding. The lack of certainty about service currency is of limited consequence in light

of the predominance of dollar and sterling issues. The exchange rate questions arise most urgently in the case of French franc loans which depreciated drastically in value along with the franc after World War I. Most franc lending, however, was concentrated in Turkey, Brazil, and most importantly Russia. Of these, Turkey and Russia paid little and nothing, respectively, after the abandonment of the gold standard. Brazil paid in paper francs during the 1920s despite a decision of the World Court in favor of the gold clause. Before the decision could be fully implemented, the Brazilian debt too was in default.

The creation of the initial loan profiles is in no instance completely straightforward, although it approached this state most closely in the case of the best-behaved borrowers. Many of the sample countries have very contorted borrowing histories, and no array of programming tools can eliminate the need for spot judgment and improvisation. The most noteworthy of these exertions are mentioned briefly in an unpublished appendix giving country histories. In general, one goal was achieved and one was abandoned. Each country history has been assembled out of individual loan records in such a way as to be a coherent whole, but the same cannot be said for each individual loan record. Often a consolidation or a settlement plan would be captured only by the inclusion of loan records drawing together fragments of many original issues under one heading. Where this happened, neither the original issue records nor the record specifically dedicated to, say, a consolidation plan, tells a complete story about the stream of payments arising from an original market offering. Only when taken together do the records produce meaningful net present values and rates of return on bonds born in the marketplace.

To compute the *ex ante* contracted returns of tables 2.2 and 2.10, the loan profiles for each country are then subjected to a "masking" program which creates a new hypothetical loan record showing perfect performance on the part of the borrower, regardless of how bad was the actual outcome. This was done by discarding all information about any decreases in the service flow. In these "idealized" loan records, the borrower is presumed never to reduce the amount remitted from one year to the next until the whole balance is retired. (This procedure is possible solely because of the observed rule that in *no* case was any loan contract observed to specify in advance a decrease in the annual service prior to the full repayment of the loan.) Consolidation issues emerging from periods of interrupted service were eliminated, since under perfect performance they would never have occurred. The result is a new record base which can be used to calculate hypothetical "contracted" yields, and thus by contrast separate the *ex post* impact of contract nonfulfillment from the impact of movements in exchange rates and prices.

Summary Measures for Rates of Return and Net Present Value

To judge the net profitability of holding foreign sovereign debt, we need to compute its real internal rate of return, v , the real rate of return on alternative assets, \bar{p} , and the net real present value, NPV , of the sovereign debt over and above the value of a comparable investment in the alternative asset. The real rate of return measure, v , must take into account all departures from the contracted payments schedule, and not be just the real equivalent of the stated coupon rate.

Measuring real rates of return for alternative assets requires a treatment of inflation, given that all loans are repaid in currency. There is no consensus model of price expectations. Nor is one particularly appropriate here, since the present study seeks to determine the ex post record rather than ex ante expectations. Our choice of price inflation measure is accordingly straightforward: We use the ex post rate of price inflation from one period to another to convert the nominal interest rate on alternative assets, n , into an ex post real rate of interest, \bar{p} . The real rates v and \bar{p} are calculated by discounting debt service flows that have already been deflated into constant (1913) dollars or pounds.

What alternative assets? To highlight the distinctive property-rights feature of foreign sovereign debt, one might want to contrast it with domestic private debt backed by full collateral. It is hard, however, to find a long time series on such private debt with no changes in its own riskiness. We resort instead to a comparison of foreign sovereign debt with the rates of return on government debt of the main lending countries, the United Kingdom and the United States. (These convenient time series on relatively safe debt might make the return to foreign sovereign debt look good in the eyes of readers forgetting about the risk differentials.) The main type of risk associated with holding U.K. or U.S. governments is the hard-currency inflation risk shared by the foreign government debt.

To compare foreign sovereign debt with domestic (lending-country) government debt from the private creditor's viewpoint, we shall not compare the flows of returns on two equal loan outflows. To keep accidents of the ex post timing of commodity-price movements from seeming to affect the relative return on foreign government debt, we adopt the reverse strategy of comparing the different present valuations of the same stream of debt service on home and foreign government debt. The basis for this choice should be evident from the following algebra and discussion.

We define three summary measures:

(1) The real *internal rate of return* on foreign sovereign debt is v , as defined by the equation

$$0 = \sum_{t=0}^T (S_t/p_t) (1 + v)^{-t} - L_0/p_0,$$

where

time T = the number of years to full maturity;

S_t = the actually-repaid nominal debt service in year t , consisting of both interest and principal-repayment;

p_t = the level of consumer prices in the lending country (countries) in year t ;

L_o = the initial nominal loan outflow at market price (not necessarily par), here assumed to take place fully in the initial year 0.

(2) The real *net present value* of the foreign sovereign debt relative to home-country government debt is NPV , as defined by the equations

$$\begin{aligned} NPV &= \sum_{t=0}^T (S_t/p_t) (1 + \rho_t)^{-t} - L_o/p_o \\ &= \sum_{t=0}^T (S_t/p_t)(1 + \pi_{ot})^t (1 + n_o)^{-t} - L_o/p_o, \end{aligned}$$

where the real rate of interest from the initial year 0 to year t (or ρ_t) depends on the nominal rate on t -year government bonds at year 0 (or n_o) and the geometric-average rate of inflation from year 0 to year t (or π_{ot}):

$$1 + \rho_t = (1 + n_o)/(1 + \pi_{ot}), \text{ so that } \rho_t \approx n_o - \pi_{ot}.$$

In other words, the net present value (NPV) measures how much more the lenders would have to lend their own governments, beyond L_o/p_o , to get the same stream of real service payments they could get from lending just L_o/p_o to the foreign government. Of course, NPV can be of any sign.

(3) The rate of return on the alternative asset is summarized in the *effective real rate of discount*, or $\bar{\rho}$, defined by the equation

$$0 = \sum_{t=0}^T (S_t/p_t) (1 + \bar{\rho})^{-t} - \sum_{t=0}^T (S_t/p_t) (1 + \rho_t)^{-t}.$$

The effective real rate of discount is thus a geometric average of the real rates of return, the ρ_t 's, on lending to a lending-country government. A simplification will be adopted in the measurement of ρ_t . As is implicit in its definition above, ρ_t uses data on a single long-term nominal size of interest, n_o , as the rate that lenders could get by buying the whole service stream, instead of combining different rates on different maturities. This simplification seems appropriate to the degree of commitment that lenders make in buying foreign long-term (usually 30- or 40-year) government debt.

All three summary measures are thus shaped by the time-path of real ex post debt service (the S_t/p_t 's). The alternative asset, a loan to the British or U.S. government, is imagined to pay back the same complicated time-stream of real debt service that lenders experienced on their lending to sovereign foreign governments. The two kinds of assets

differ only in the real values initially lent to get the same complicated debt-service stream.

To see why such an approach should be preferred to just using an ordinary government bond as the alternative asset, consider the case of a 40-year loan to the government of Chile in 1878. On the typical pattern, Chile would pay back a fixed debt service each year with a somewhat larger outpayment in the final year, 1918. With what time-profile of British or U.S. debt service should this foreign loan be compared? If we chose a 40-year government bond that was completely end-loaded, with all service coming in the final year 1918, the high prices of that year would greatly depress the rate of return on lending to, say, Her Majesty back in 1878. On the other hand, if we chose a British bond with a fixed nominal debt service each year for 40 years, we would find a relatively high real rate of return on lending to Her Majesty in 1878, because returns in the high-price year 1918 would play a smaller role in the British debt service than in the Chilean debt service. It is desirable to free the rate-of-return gap between Chilean and British government debt from any spurious dependence on the accidents of the timing of inflation. This can be done with the formulas outlined above, which compare different present values or different rates of return on the same time-profile of debt service.

Extra inflation in any i^{th} year cannot reverse the sign of NPV or the rate-of-return gap $\nu - \rho_i$. Starting from the initial rates ν and $\bar{\rho}$, raising p_i and π_{oi} ex post inflation will affect the present values of foreign debt (L_o/p_o) and home government debt ($NPV + L_o/p_o$) in the same ways: deflating the real value of the i^{th} year's debt service and discounting it less rapidly by lowering the ex-post real rate of return $\rho_i \approx n_o - \pi_{oi}$. Before any price increase in year i , that year's contribution to the NPV gap is

$$\begin{aligned} NPV_i &= (S_i/p_i) (1 + \rho_i)^{-i} - (S_i/p_i) (1 + \nu)^{-i} \\ &\approx (S_i/p_i) (1 + n_o - \pi_{oi})^{-i} - (S_i/p_i) (1 + (\nu - \rho_i) + n_o - \pi_{oi})^{-i}. \end{aligned}$$

The inflationary shifts dp_i and $d\pi_{oi}$ will shift NPV_i as follows:

$$\begin{aligned} dNPV_i &= -(S_i/p_i^2) (1 + n_o - \pi_{oi})^{-i} dp_i - (iS_i/p_i) (1 + n_o \\ &\quad - \pi_{oi})^{-i-1} d\pi_{oi} + (S_i/p_i^2)[1 + (\nu - \rho_i) + n_o - \pi_{oi}]^{-i} dp_i \\ &\quad + (iS_i/p_i)[1 + (\nu - \rho_i) + n_o - \pi_{oi}]^{-i-1} d\pi_{oi}. \end{aligned}$$

The only thing keeping $dNPV_i$ from cancelling out to zero is the appearance of the discount-rate gap $\nu - \rho_i$ in the formula. Given that dp_i and $d\pi_{oi}$ have the same sign,

$$\text{sign}(dNPV_i) = - \text{sign}(\nu - \rho_i) = - \text{sign}(NPV).$$

Ex-post inflation cannot reverse the initial signs of the rate-of-return advantage, or the net-present-value advantage, of foreign debt. This

desirable property led us to choose the summary measures described here.

Stacking and Aggregation.

The procedure for “stacking” loans into aggregations for summary measures is much the same whether it is the contracted (*ex ante*) or the realized returns that are being summarized. One by one, the loan records for a particular sample country are taken from storage. They are filtered to discard any loan records to be defined out of the subsample in question (e.g., a subsample defined by borrowing country and time period). Qualifying loans were reduced to two currencies, the U.S. dollar and the pound sterling. In the runs reported here, the U.S. dollar stacks consisted only of loans issued and repayable in U.S. dollars, while flows in all other currencies of issue and service were converted into pounds sterling at the current exchange rates. Once all figures were in either dollars or pounds, they were converted into real 1913 consumer bundles by following the conventional consumer price indexes of the United States of the United Kingdom. These real 1913 values were reaggregated into dollars or pounds at the 1913 exchange rate, \$4.86656 = £1. Of course, if the results in question are nominal rather than real, the deflation step is omitted.

For stacking into aggregates, each loan’s capital inflows, interest and retirement are netted into a single net cash flow, year by year. The net cash flows are then added across all loans. For reasons presented in the text, we have chosen to present results that are based on starting all bonds at the same abstract year of issue. Stacking therefore involves adding together all the net cash flows for the same number of years since each bond’s issue, not the same historical year. Obviously, this means that most of the inflows occur in the same initial year for all loans. As we had hoped, such all-at-once stacking reduced the incidence of multiple sign reversals in the net flow, which could have led to multiple roots for the same internal rate of return. Experimentation showed that even when we did not follow the all-at-once rule, an iterative computer routine seemed to converge on a clear and sensible value for the international rate of return.

The all-at-once rule for stacking was not followed for one particular country, Canada. Having already slaved to enter 439 Australian loans, we were daunted by the prospect of tracking what would have been over 600 external-currency Canadian bonds, issued by all levels of government down to the Saskatoon School District. We resolved to try time-saving short-cuts for Canada, knowing that hers was a dull story of good repayment (except for Alberta and a few cities). The first was to throw out the subprovincial borrowers (school districts, Ontario Hydro, etc.), bringing us down to 488 external bonds issued by the

Dominion and the provinces. Then we saved a little time (alas, not much) by aggregating loans historically on spreadsheet files—historically, rather than all at once, to save on file space by overlaying loans onto the same record. Each “loan” for Canada, as it was later entered on the computer, was in fact the whole stream for a province or the Dominion in a particular external currency (either U.S. dollar or all others, aggregated into the pound sterling). By keeping most Canadian loans from starting as early as the others in the stacks, we lowered the present value of Canadian borrowing, and weighted Canada’s rates of return toward those earlier in history. To view separate eras in tables 2.2 and 2.3, we diced the Canadian profiles into period-specific flows, assuming full repayment at the end of each period.

Appendix B

Additional Tables

(Tables 2.8–2.10 follow on pages 92–100.)

Table 2.8

A Summary of Default and Reschedulings on Government Debts to Foreign Creditors since 1820

Nation	Privately Held Bonds, 1820–1929	Privately Held Bonds, 1930s	Loans, Mainly Official, 1940–79	Privately Held Loans, 1980–86
Abu Dhabi			—	—
Afghanistan			—	no loans
Algeria			—	—
Antigua & Barbuda			—	—
Argentina	d 1830, '88–'93,'15(locals)	d local gov'ts only	r'51,'56,'62,'65	r'82–'85
Australia	—	—	—	—
Austria	d'68	d'32	—	—
Bahama Islands			—	—
Bahrain			—	—
Bangladesh			r'74	—
Barbadoes			—	—
Belgium	—	—	—	—
Belize			—	—
Benin			—	—
Bhutan			no loans	no loans
Bolivia	d'74–'75	d'31	—	r'80(2),'81
Botswana			—	—
Brazil	r'98,'14,d'17 (locals)	d'31	r'61,'64	r'83,'84
Bulgaria	d'15	d'32	no loans	no loans
Burma			—	—
Burundi			—	—
Cameroon			—	—
Canada	—	d Alberta, locals only	—	—
Cape Verde Islands			—	—

Central African Republic			—	r'81,'85
Chad			—	—
Chile	d 1826	d'31	r'61,'63,'65,'72,'74,'75	r'83,'84,'85
China/Taiwan	d'13	d'38	—	—
China/PRC			no loans	—
Colombia	d'79,'00	d'32	—	—
Comoro Islands			—	—
Congo, PR			—	—
Costa Rica	d 1827,'74,'95	d'37	—	d'83,r'83,'85
Côte d'Ivoire			—	r'84,'85,'86
Cuba	—	d'33	—	r'83,'85
Cyprus			—	—
Czechoslovakia			no loans	—
Denmark	—	—	—	—
Djibouti			—	—
Dominica			—	—
Dominican Rep.	d'69,'99	—	—	d'82,r'83,'85
Ecuador	d'68,'11,'14,'27	d'31	—	r'83,'85
Egypt	d'76, ^a	—	—	—
El Salvador	d 1827, '21	d'32	—	—
Equat. Guinea			—	r'85
Estonia	—	—	—	—
Ethiopia	no loans	no loans	—	—
Fiji			—	—
Finland	—	—	—	—
France	—	—	—	—
Gabon			r'78	—

(continued)

Table 2.8 (continued)

Nation	Privately Held Bonds, 1820–1929	Privately Held Bonds, 1930s	Loans, Mainly Official, 1940–79	Privately Held Loans, 1980–86
Gambia			—	—
Germany/FRG	d reparations	d	—	—
Germany/DDR			no loans	—
Ghana			r'66,'68,'70,'74	—
Greece	d 1824,'93	d'32	—	—
Grenada			—	—
Guatemala	≈6 d's	d'32	—	—
Guinea			—	r'86
Guinea-Bissau			—	—
Guyana			—	r'82,'83,'84(2)
Haiti	—	—	r'52,'65	—
Honduras	d 1827,'73,'14	—	—	d'81–83,r'82,'84
Hungary	—	d'31	no loans	—
Iceland	—	—	—	—
India			r'58,'69,'72–'76	—
Indonesia			r'66–'70	—
Iran			—	—
Iraq			—	—
Ireland	—	—	—	—
Israel			—	—
Italy	—	—	—	—
Jamaica			r'70,'79	r'81,'84,'85
Japan	—	—	d'41–'52	—
Jordan			—	—

Kampuchea			r'72	no loans
Kenya			—	—
Korea, North			—	—
Korea, South			—	—
Kuwait			—	—
Laos			—	—
Lebanon			—	—
Lesotho			—	—
Liberia	d'74	—	r'63,'68	r'80,'81,'82
Libya			—	—
Luxembourg	—	—	—	—
Madagascar			—	r'81(2),'82,'83,'84,d'84
Malawi			—	r'83
Malaysia			—	—
Maldives			—	—
Mali			—	—
Mauritania			—	r'85,'86
Mauritius			—	—
Mexico	d 1827,'67,'14	no loans	—	d'83,r'83,'84(2)
Morocco			—	r'83,'85
Mozambique			—	r'85
Nepal			—	—
Netherlands	—	—	—	—
New Zealand	—	—	—	—
Nicaragua	d 1827, pre-1911	—	—	d'80,'81,r'80,'81,'82,'84
Niger			—	r'84,'85
Nigeria			—	r'83(2)
Norway	—	—	—	—
Oman			—	—
Pakistan			r'72,'73,'74	r'81

(continued)

Table 2.8 (continued)

Nation	Privately Held Bonds, 1820–1929	Privately Held Bonds, 1930s	Loans, Mainly Official, 1940–79	Privately Held Loans, 1980–86
Panama		d'32	—	r'85
Papua New Guinea			—	—
Paraguay	d 1827,'20	d'30–'33	—	—
Peru	d'75–'84	d'31	r'68,'69,'78(2)	r'80,'83,'84,d
Philippines			r'69	r'84
Poland	—	d'36	—	d'82,r'82(2),'83,'84,'85
Portugal	— ^b	—	—	—
Qatar			—	—
Romania	d WWI	d'33	—	d'81,r'82,'83
Russia/USSR	d 1839,'17	no loans	—	no loans
Rwanda		—	—	—
St. Lucia			no loans	no loans
St. Vincent			no loans	no loans
Sao Tome & Principe			no loans	no loans
Saudi Arabia			—	—
Senegal			—	r'81,'84,'85
Seychelles			—	—
Sierra Leone			r'77	r'80,'84
Singapore			—	—
Solomon Islands			—	—
Somalia			—	—
South Africa	—	—	—	—
Spain	d's pre-'79	—	—	—
Sri Lanka			—	—
Sudan			—	r Dec:'79,'81,'82,'83,'84

Suriname			—	—
Swaziland			—	—
Sweden	—	—	—	—
Switzerland	—	—	—	—
Syria			—	—
Tanzania			—	—
Thailand	—	—	—	—
Togo			—	d'79,'82,r'80,'83,'85
Trinidad & Tobago			—	—
Tunisia			—	—
Turkey	d'76-'81, WWI	no loans	r'56,'58,'63,'79(2)	r'80,'81,'82
Uganda			—	r'81
U.A. Emirates			—	—
U.K.	—	—	—	—
U.S.	d several states	—	—	—
Upper Volta/BF			—	—
Uruguay	d'76	d	r'65	r'83,'84,'85
Vanuatu			—	—
Venezuela	d'34,'47,'64,'78,'92,'98 ^c	—	d'60	r'85
Vietnam			—	—
Western Samoa			—	—
Yemen Arab Rep.			—	—
Yemen, PDR			—	—
Yugo./Serbia	—	d'37	r'65-'69	r'84,'85
Zaire			r'76,'77,'79	r'81,'83,'85,'86
Zambia			—	r'83,'84,'86
Zimbabwe			—	—
<i>Totals</i>				
Countries covered	56	57	157	157
Problem debtors (d,r)	29	24	22	42
No loans	1	4	9	8

(continued)

Table 2.8 (continued)

Sources: Clarke (1879); Corporation of Foreign Bondholders, various years; Foreign Bondholders' Protective Council, various years; Winkler (1933); United Nations (1948); IBRD annual reports, various years; Bitterman (1973); Hardy (1982); Watson et al. (1986); Moody's *Municipal and governments manual*; Dillon and Oliveros (1987).

Notes:

d = unilaterally defaulted, or simply went into arrears, on at least part of the foreign debt of national or local (provincial, city) governments or utilities starting in the year listed. No attempt is made here to record when a past default was settled.

[blank] = not a sovereign nation anytime in this period.

r = negotiated refinancing on terms at least partly concessionary.

— = fully met all service obligations without rescheduling that lowered creditors' capital value.

no loans = no lending, or negligible lending, recorded in the sources cited here.

^aEgypt attempted default, but instead lost her national sovereignty.

^bBrief mention has been made of temporary nonrepayment by Portugal, before 1855 and 1891–93, but the sources listed here offer no specifics.

^cVenezuela attempted default in 1898, but by 1902 military threats had forced her to repay on contract.

Not counted as defaults are the breakdowns in war debts between allies, or the nonpayment of foreign debt service by countries occupied in war. Not counted in any totals, though listed here, are the governments of four usually-creditor countries: U.S., U.K., France, and Germany.

Table 2.9 Annual Real Net Investment by Foreign Creditors in the Government Debt of Ten Countries, 1850–1982 (In millions of dollars at 1913 consumer prices and exchange rates. Gross new lending minus retirements. Excludes interest payments and changes in real value of outstanding debt due to changes in consumer prices.)

Year	Net Inflow	Year	Net Inflow	Year	Net Inflow	Year	Net Inflow
1850	89.44	1884	141.01	1918	19.67	1952	-3.04
1851	52.36	1885	140.04	1919	23.35	1953	17.40
1852	4.40	1886	163.47	1920	28.11	1954	-0.16
1853	-0.61	1887	67.10	1921	175.49	1955	-414.45
1854	8.80	1888	272.90	1922	200.53	1956	84.45
1855	51.91	1889	191.48	1923	-24.98	1957	-62.55
1856	-0.49	1890	78.45	1924	308.72	1958	-18.30
1857	-0.78	1891	91.65	1925	-5.97	1959	85.40
1858	50.54	1892	67.11	1926	154.41	1960	-71.93
1859	25.56	1893	85.35	1927	327.34	1961	-0.49
1860	96.78	1894	1,563.03	1928	176.33	1962	26.54
1861	-1.52	1895	6.39	1929	3.19	1963	3.01
1862	81.87	1896	148.66	1930	-11.87	1964	-63.62
1863	36.49	1897	58.14	1931	-121.33	1965	47.38
1864	18.03	1898	41.72	1932	-155.94	1966	-128.95
1865	76.47	1899	5.05	1933	-4.67	1967	13.40
1866	29.03	1900	89.75	1934	112.51	1968	-59.64
1867	114.67	1901	110.27	1935	-152.54	1969	132.78
1868	62.60	1902	26.33	1936	20.81	1970	150.28
1869	68.10	1903	16.27	1937	-123.73	1971	191.71
1870	92.09	1904	108.51	1938	-41.25	1972	426.86
1871	112.01	1905	510.68	1939	-40.15	1973	668.07
1872	81.40	1906	473.55	1940	-280.28	1974	982.61
1873	246.87	1907	141.19	1941	-51.98	1975	953.01
1874	27.31	1908	253.16	1942	-122.21	1976	1,719.55
1875	66.17	1909	414.07	1943	-210.33	1977	1,601.01
1876	194.25	1910	366.30	1944	-214.20	1978	2,427.78
1877	35.06	1911	122.92	1945	16.10	1979	2,062.21
1878	17.07	1912	76.96	1946	-136.52	1980	1,136.42
1879	40.33	1913	258.62	1947	-93.04	1981	1,617.86
1880	82.77	1914	223.55	1948	13.29	1982	1,093.50
1881	35.35	1915	131.56	1949	9.39		
1882	28.58	1916	95.25	1950	-310.30		
1883	114.44	1917	148.76	1951	117.75		

Table 2.10 Realized Nominal Returns on Bond Lending to Ten Foreign Governments, 1850–1983.

Borrowing Nation	<i>n</i>	Rates of Return (%)			(Millions of nominal \$)	
		<i>v</i>	$\bar{\rho}$	$v - \bar{\rho}$	<i>NPV</i>	<i>L</i> ₀
Argentina	187	5.71	3.53	2.18	516.3	2,631.3
Brazil	143	4.39	3.57	0.81	190.6	1,517.0
Chile	60	3.62	3.90	-0.28	-27.7	637.5
Mexico	<u>52</u>	<u>3.42</u>	<u>4.25</u>	<u>-0.83</u>	<u>-68.6</u>	<u>923.2</u>
Four Latins	442	4.76	3.70	1.06	610.6	5,709.1
Australia	439	5.60	4.52	1.09	1,358.7	9,836.9
Canada	488	4.51	2.82	1.69	925.9	1,635.6
Egypt	21	6.00	3.20	2.80	305.1	423.9
Japan	60	5.48	3.86	1.61	407.8	1,873.6
Russia	48	1.48	2.98	-1.50	-654.3	3,386.8
Turkey	<u>54</u>	<u>2.28</u>	<u>3.54</u>	<u>-1.26</u>	<u>-207.3</u>	<u>1,645.4</u>
These six	1,110	4.47	3.91	0.56	2,135.9	18,802.2
All ten	1,552	4.54	3.86	0.67	2,746.5	24,511.2

Note: The procedures used here are the same as for table 2.3, except for omitting the price deflation.

Notes

1. Sovereign debt is defined as any financial claim that is unenforceable by seizure of debtor assets matching the debt in value. This paper takes a conventional narrow focus on the interest-earning nonmonetary claims of private creditors on foreign governments. It ignores such sovereign claims as unbacked paper money and the debt and equity obligations of private parties who can take refuge behind the ineffectiveness of contract laws.

2. For a further summary of the lending waves and an analysis of the incidence of default in terms of trade shocks and fiscal policies, again see Fishlow (1985).

3. For the years before World War I, we used the widely-publicized railroad bond rate. Splicing the two different rates of return together might cloud the comparison with foreign sovereign debt. However, the prewar railroad bond rate is hardly used in our calculations, since very little of the foreign sovereign debt was in dollars before World War I. The returns on the large amounts of interwar and postwar foreign sovereign debt in dollars were therefore compared with the U.S. government bond rate, as preferred.

4. As for the higher premia charged to Canada and Japan after World War II, these were elevated by the fact that Canada and Japan borrowed early in the postwar era, when fears about nonrepayment still lingered and when the interest rate on long-term U.S. governments was pegged exceptionally low.

5. In November 1931 a mixed court went further, ruling that Egypt had to continue to repay creditors in sterling at its gold-standard value, even though this meant doubling the British commodity value of the service payments. The protectorate government refused, however, and soon won higher-court deci-

sions in favor of its insistence on merely repaying the sterling value (Wynne 1951, 629–31).

6. In summarizing Mexico's credit history, we have counted the Maximilian service on old loans, but have omitted any other aspect of Maximilian's loans on the ground that they do not refer to Mexico. After Maximilian's fall, the French government took the unprecedented step of repaying French creditors half of their investments in the Maximilian loans, on the grounds that the government had encouraged them to take such a risk. The same procedure was not followed after the Russian Revolution, however, even though the French government had knowingly deceived private investors on the quality of czarist Russian government bonds.

7. Two other kinds of conclusions by conventional rate-of-return studies are not pursued here. First, by following the returns to holding a bond over its entire lifetime, we do not disaggregate into the annual (or other short-term) gains that would hypothetically be realized by an investor buying, holding, and selling within that year. For an excellent example of the annual rate-of-return approach, with its heavier use of market price data, see Edelstein (1977 and 1982). We have suppressed this disaggregation into individual years by summarizing the returns to the whole chain of holders of each bond.

Second, we offer little view of the variance of returns. The perceived variance across possible outcome states exists, of course, only in the ex ante eyes of the potential investor, and is only indirectly revealed in ex ante returns like those in table 2.2. Yet other studies have shown an interest in commenting indirectly on the unobservable perceived variance by measuring ex post variation in returns (1) across debtors, (2) across creditors, (3) across the lifetimes of a cross-section of individual securities, (4) across individual holding years for a cross-section of securities, and (5) across the years of existence of a single security. Of these, our table 2.3 sheds only a little light on the first. With additional work, our data set could yield variances (2) and (3). For studies of variance (4), see Fishlow (1987) and again Edelstein (1977 and 1982).

8. The sudden reference to abstract social welfare, so soon after a discussion of real-world debtor governments, may surprise. Yet the charitable assumption that governments maximize some social-welfare analogue to individual utility suits the present debating purpose. If officials' goals are narrower and less worthy of the "social" label, then the present paper's warnings about rescue operations will be reinforced.

Another element of realism that is missing at this point is soon to be introduced: The borrower often has an incentive for only partial, rather than complete, debt repudiation.

Our definition of a debt crisis is narrower than our definition of debtor sovereignty:

$$\begin{aligned} \text{a debt crisis exists} & \quad \Leftrightarrow (1+r)D > P + B \Leftrightarrow V^D > V^R; \\ \text{the debtor is sovereign} & \quad \Leftrightarrow (1+r)D > P. \end{aligned}$$

9. We should deal with two other ways in which one might suspect that extra lending could somehow raise P and B faster than D , making debt more enforceable and allowing a reduction in the interest rate. First, one might suspect that a better collateral mechanism could be devised, e.g., developing stronger trade dependence, raising P more than D . But if so, then why was this option not already taken? Second, one might imagine that a third party, such as the IMF, could raise B more than D by offering new loans at so low an interest rate that the borrower's surplus from continued faithful repayment, B , is raised more than D is raised. But this proposal, discussed below, can only raise B by writing down debt service. It is a form of partial default.

10. Domar (1950). Domar's reasoning was repeated recently by Niehans (1985). This reasoning has been criticised for overlooking the default implications of its treatment of the infinite horizon (Lindert 1971, 1976). See also the 1928 quotation from Auld in Felix (1987, 20). Note that this frequent argument would have been correct if it had been confined to the case in which D remained below the enforceable limit on prudent lending, the limit $h = (P + B)/(1 + r)$.

11. A model that might seem to contradict the present result in the context of sovereign debt is that of Krugman (1985), which explicitly argues (on pp. 88–89) that defensive relending is rational for creditors. But Krugman's formal model (pp. 84–88) implies the opposite, i.e., that extra lending raises the (second-period) incentive to default. The alleged case for defensive relending is not based on his formal model, and makes some questionable assumptions: (a) that postponing default somehow prevents it; (b) that a small fresh loan would entice borrowers to repay debt service exceeding the fresh loan; and (c) that offering submarket interest rates to a problem borrower is a way of avoiding default (in fact, it is a way of acquiescing in partial default).

12. The issue is noted in Sachs (1984, 29–37) and Eaton, Gersovitz, and Stiglitz (1986, 496–98).

13. Panic could ruin the collective ability of *already exposed* creditors to hide the likelihood of default from new lenders, who might somehow have been induced to take over their exposure. Such a successful deception would not, however, have raised the wealth of all creditors.

14. The B term is included in column (3) under the simplifying assumption that successful negotiation of partial debt reduction restores the credit ration that the borrower would have had with full repayment. The assumption seems reasonable. While the debtor's record is tainted, lowering debt from $(1 + r)D$ to $(1 + \lambda)D$ can convince creditors that the rewards from further default have been lowered enough to warrant safe relending up to the prudence limit $h = (P + B)/(1 + r)$.

15. There were also pure unilateral refinancings permitted by contract, in which the debtor took advantage of a dip in market yields to retire old high-interest debt.

16. For further background, see Peters (1934), Ferns (1960), Ford (1962), and Fishlow (1985).

17. And, apparently, the taxpayers take a capital loss equal to $(e - r)D < 0$. One might argue that the lower interest rate is not below market, and thus not a loss, given that repayment is more certain than on the other debt in the marketplace. This argument would presumably rest on the perception that a debtor always tries to remain faithful to the IMF, the "lender of first resort." Yet the same would hold for loans to other debtors not on the brink of default, suggesting that the rescue does indeed impose a risk-adjusted loss on the taxpayers relative to their other (via-IMF) lending opportunities.

18. Here we echo a theme sounded by Vaubel (1983), among others, though with more emphasis on the international private lending hazards and less on macro-policy hazards.

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