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Volume Title: Developing Country Debt and Economic Performance, Volume 1: The International Financial System

Volume Author/Editor: Jeffrey D. Sachs, editor

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-73332-7

Volume URL: <http://www.nber.org/books/sach89-1>

Conference Date: September 21-23, 1987

Publication Date: 1989

Chapter Title: How Sovereign Debt Has Worked

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Chapter URL: <http://www.nber.org/chapters/c8987>

Chapter pages in book: (p. 39 - 106)

2 How Sovereign Debt Has Worked

Peter H. Lindert and Peter J. Morton

2.1 Introduction

The international financial community has often preferred to repeat the past rather than study it. Since 1974 international lending has passed through another cycle of enthusiasm followed by nonrepayment and creditor revulsion, repeating a pattern that has recurred several times since the eighteenth century.

The process is costly. Relative to ordinary private lending, lending to sovereign debtors¹ brings costs to either side or both sides, and often to third parties. The unenforceability of debt service obligations sooner or later breeds lasting creditor distrust and cuts the supply of capital to countries where its marginal product is generally high. One such net capital cost takes the form of credit disruptions and other penalties levied by creditors, with greater damage to the debtors than gain to the creditors. The debtors' macroeconomies are destabilized by the borrowing boom and later bust, especially when the bust brings unforeseen austerity.

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The authors wish to thank the National Science Foundation and the Institute of Governmental Affairs, University of California at Davis for financial support, and Wendy Eudey, Kara Hayes, and Hai Wen for research assistance. They have also benefitted from comments on preliminary partial drafts at the University of California (Davis, Berkeley, Los Angeles, Santa Cruz), Harvard University, the University of Illinois, the University of Michigan, the Washington Area Group in Economic History, and Williams College, and by Thomas Mayer and Mira Wilkins. A much fuller set of appendixes is available as a separate working paper from the Institute of Governmental Affairs, University of California, Davis CA 95616, and the underlying bond data set is available in either hard copy or floppy disk from the authors at cost.

Those caught in the current lingering debt crisis cannot blame their innocence on an absence of historical literature. The recurrence of default has been pointed out by scholars and by bondholder protective councils for a century (Fenn 1874–98; Corporation of Foreign Bondholders, annually from 1873; Clarke 1879; Fitch 1918; Foreign Bondholders' Protective Council, annually from 1935; Kimber 1925 and 1933; Winkler 1933; Borchard 1951; Mintz 1951; Wynne 1951; Cameron 1961, chaps. 13–16; Bittermann 1973; Kindleberger 1978; Cizauskas 1979). Scholars have added a comparative anatomy of debt crisis, finding what kinds of trends trigger debt crises and what kinds of borrowers are less likely to repay (Díaz-Alejandro 1984, Edwards 1984, Fishlow 1985, Sachs 1985, Eichengreen and Portes 1986). We know that the problem inheres in sovereign debt, that the timing of the crises is related to unforeseen deflation, and that countries with runaway government budgets and less commitment to trade are more likely to have recurring repayment crises.

The remaining uncertainties are how the lending waves unfold and what can be done once a crisis is in full swing. This chapter addresses these two issues at the start and end of the lending cycle. In section 2.2, we shall argue that past lending to foreign governments has brought high private returns in the aggregate, but with curious patterns that suggest (but cannot prove) an unprofitable “bubble” dynamic of excessive investment followed by excessive revulsion. Investors seem to pay little attention to the past repayment record of the borrowing governments. They may or may not have been wise in ignoring the past. Their inattention, at any rate, reveals that they do not punish governments with a prior default history, undercutting the belief in a penalty that compels faithful repayment.

Section 2.3 turns to historical experience with the different policy options available in the wake of a major debt crisis. Noting the necessary imperfections in any policy approach, we discuss some arguments in favor of the older bond-era direct confrontation between problem debtors and their creditors, an approach that usually led to partial default. The more recent approach of bringing the IMF and the World Bank into tripartite debt-crisis negotiations has brought extra costs relating to moral hazard, delays, and macroeconomic adjustment.

It is fair to ask whether history should be consulted at all as a guide to present debt-crisis options. As a statistician might put it: “If history is supposed to be the sample, what is the population? And are we really sampling from the same population today as in the past?” That is, is there really a probability distribution of outcomes likely to be shared by the past and the present? A cautious affirmative answer can be ventured in this particular case. The merits of comparison and contrast with the past are greatest when there is a durable mechanism at work.

Such is the case with sovereign debt, which is subject to that inherent defect of unenforceability and which reveals its basic repayment and relending dynamic only over a long period of time. In such cases, deductive modeling quickly reaches barriers that only a longer empirical view can push back.

2.2 Sovereign Debt Repayment since the Early 19th Century

It has been suggested that it would be far better were the national capital employed in home works instead of being lent to foreign countries. So far as an individual is concerned, whether he loses £1,000 in a [domestic] bubble company or in a swindling foreign loan, the operation and the sequel are the same. (Hyde Clarke 1879, 21.)

If there were no rescuer, no International Monetary Fund, how would sovereign debt work? How well would creditors and debtors be likely to fare? How far below the *ex ante* contracted rates of return were the rates eventually realized by the whole chain of debtholders? Were the returns either so excessive or so low that they suggest a case for special policy intervention in defense of either debtors or creditors? While the future need not match past patterns, there is a long and varied history to tap in forming guesses. In what follows, we offer an extensive menu of results, allowing readers to choose which results to emphasize.

2.2.1 Background

Fresh lending to foreign governments followed the same wave-like pattern as other international lending in the nineteenth and early twentieth centuries. There was a post-Napoleonic wave in the 1820s, including loans to most of the newly independent nations of Latin America, followed by widespread default. Gross lending to governments, like international lending in general, returned to high tide in the 1850s, in the late 1860s and early 1870s, in the late 1880s, in 1904–14, and again in the late 1920s. The wave of lending to foreign governments in the late 1920s, like that of 1974–82, exceeded any before World War I in real absolute value and even as a share of lender-country GNP. Each wave ended with at least some occurrence of repayments breakdown, sometimes due to international trade depression, sometimes due to government budget crises, and sometimes due to the revelation of financial abuses.²

The timing and magnitude of the lending waves is illuminated differently by figure 2.1. We cast a particular light on the long-noted waves by measuring the net real investment flow, rather than the gross flow. Setting aside the “spike” of 1894, caused by heavy Russian borrowing (not all of it truly external), figure 2.1 singles out the 1906–14 and 1973–81 waves as the greatest. These two would probably stand out even if all figures

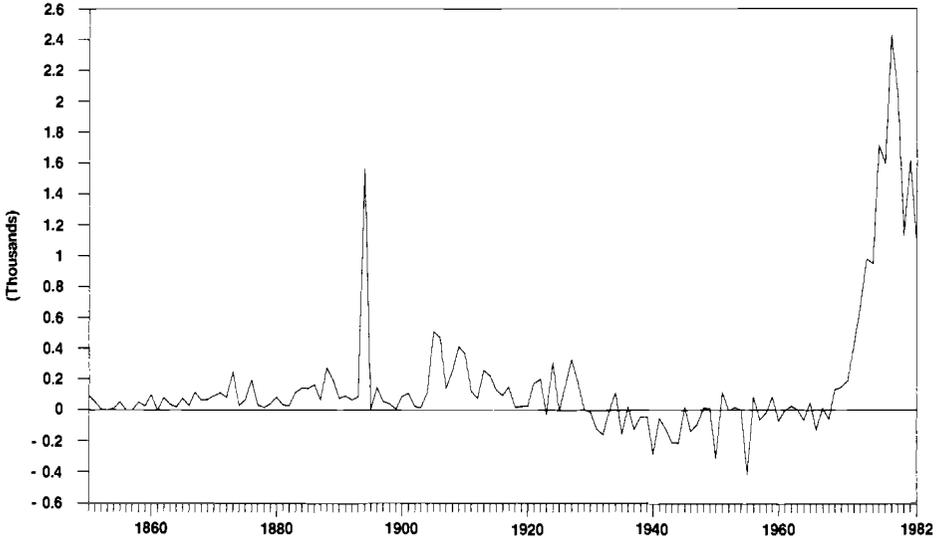


Fig. 2.1

Real net investment by foreign creditors in the government debt of ten countries, annually, 1850–1982. *Notes:* The vertical axis measures the real value of fresh lending to ten governments—Argentina, Australia, Brazil, Canada, Chile, Egypt, Japan, Mexico, Russia, and Turkey—by foreign creditors, predominantly private, minus retirements on the same external debt in the same year. The figures are in millions of dollars at 1913 prices, with flows in other currencies converted at the 1913 exchange rates. Payments of interest are not included, nor are changes in the real value of outstanding debt due to movements in the consumer-price deflator.

The large “spike” of 1894 was a loan package of \$1,489.5 million to the Russian government, much of which may have been purchased by Russian creditors. On the foreign-domestic mixture in subscriptions to Russian hard-currency loans see Anan’ich and Bovykin (forthcoming, section 2).

The genuine rise after 1973 is slightly exaggerated in relative terms by a change in series. For developing countries the post-1970 data cover not only bonds but the other types of lending captured in the World Bank’s loan disbursements data.

were divided by real national product or real wealth. The famous wave of the 1920s is less impressive on this net investment measure. It was, to a large extent, a refinancing wave in which fresh loans, most of them in dollars, largely covered service on prewar, mostly sterling, loans. It was also, of course, an era in which international lending was partly preoccupied with trying to induce German recovery and reparations.

Who defaulted, and when? It is not easy to summarize the frequency or percentage of nonrepayment. We begin by noting the countries that

defaulted outright, in whole or in part, at one time or another, here and in table 2.8 in appendix B.

Soon after the lending wave of the 1820s most Latin American governments defaulted to some degree. Several southern states in the United States defaulted in the 1830s–40s and again in the Reconstruction era. Latin America and the Eastern Mediterranean (Greece, Turkey and, momentarily, Egypt) figured prominently in the default waves of the mid–nineteenth century. The end of the late–1880s lending wave featured relatively few defaults, the most notable being Argentina’s partial nonrepayment (on which more later) and lingering difficulties with Colombia’s debt service. Brazil’s good record was finally compromised with repayment lapses necessitating refunding loans in 1898 and 1914. The 1910s brought wholesale defaults in the Mexican Revolution, the Russian Revolution, and the fall of the Ottoman Empire. The greatest wave, however, came in the early 1930s (Eichengreen and Portes 1986; Eichengreen, chap. 3 of this volume), in which essentially all of Latin America, most of Eastern Europe, Turkey, and China defaulted. In the early postwar years, with bond finance dried up and most of the trickle of loans coming from governments or with their guarantees, outright default was replaced with a murmur of repeated concessionary refundings for problem governments, notably Turkey, Latin America, and some newly independent nations (Bittermann, 1973). The list of countries needing concessionary refundings in the 1970s and 1980s is more extensive but similar, still featuring Latin America, Eastern Europe, and now much of Africa (Watson et al. 1986).

Other areas always repaid. One was Western Europe outside of Germany and Spain. Another consisted of the sovereign Arab nations, with only slight exceptions. Asia east of the Persian Gulf consistently repaid, except for China in the 1930s, Japan between 1941 and 1952, and the independent Philippines. So did the white Commonwealth nations.

The list of incomplete repayers by itself conveys only very limited information, however. Foreign governments had to offer higher interest rates than creditors’ home governments, precisely because nonrepayment was feared. To judge their repayment behavior or to judge the lenders’ behavior, one needs a careful accounting of their borrowings and debt-service outflows.

To capture the overall tendency in sovereign debt repayment, one needs to examine as long a period as possible, in order to avoid overemphasis on either good or bad times. One must also take care to sample loans or countries fairly, to avoid picking a sample of particularly problematic borrowers or particularly faithful ones. The desired goal is equiprobable sampling of all constant-price dollars ever lent by private parties to foreign governments that were expected to remain sovereign, and to pursue the mean and variance of repayment of that population

of constant dollars. In practice, one samples in some more convenient way that does not sacrifice representativeness to any serious degree. Eichengreen and Portes (1986) drew a random sample of loans from the 1920s, giving equal sampling chance to each loan, not far from equal sampling of each constant dollar. We intend different coverage here, encompassing only loans to governments but spanning a much longer period of time. The longer time span means a diversity of sources, preventing our sampling individual loans from all times and nations.

To span as long a time period as was practical, we began with the bonds outstanding in 1850, and those floated between 1850 and about 1970, following them all the way to settlement or to the end of 1983. In choosing bonds to follow, we exploited the historical concentration of sovereign debt into a small number of borrowing governments. Specifically, we follow the experiences of ten borrowing governments: Argentina, Australia, Brazil, Canada, Chile, Egypt, Japan, Mexico, Russia, and Turkey. We follow their foreign bond debt, drawing on bondholder annuals, periodic compendia of foreign investments (Fenn, Fitch, Kimber, Dominick and Dominick, etc.), and country studies. We concentrate on bond lending, with separate later treatment of the brief bank-loan wave of 1974–82.

Table 2.1 ranks the top external-debtor governments by their debts on three benchmark dates. As can be seen, our ten-country sample accounted for a large share on each date. Our ten were almost, but not quite, the top ten borrowers over the last 130-odd years. As appendix A elaborates, we included Chile, a more interesting but less important borrower, in lieu of New Zealand or South Africa. The use of Chile may slightly bias the ten-country sample toward a low-repayment result from a worldwide perspective, but the conclusions that follow take this possible bias into account.

The procedures used to process 1,552 external bonds from the history of the ten countries are laborious and complex. One has to judge which debtors were truly “sovereign” in the sense of being able to evade the usual legal recourses faced by ordinary private defaulters. Though one could extend the term to cover anybody borrowing from a foreign source, we have followed only government borrowers, including local governments but excluding private borrowers backed by government guarantee. One must also judge which government debts were truly external. Our judgments rested on the place of issue, the currency of account, and hints about the residence of most holders. Appendix A offers a guide to our treatment of such complexities.

2.2.2 Choosing Summary Measures

Summarizing the flows of real resources between creditors and debtors calls for three related measures. One is the internal rate of return on the loans, with all flows converted into real consumable resources.

The resources in question are consumables of the lending countries, since (a) these mattered directly to lenders, (b) the loans were in lending-country currency, and (c) appropriate price deflators are harder to derive for the debtor countries.

The second measure is the real rate of return on an alternative asset, used for comparison with the real (and realized) internal rate on foreign sovereign debt. Any choice of an alternative asset implies a degree of riskiness, which may or may not be comparable with the risk on lending to a foreign government. The main quantitative results all compare sovereign foreign debt with home-country bonds. For foreign debt repayable in sterling, the home-country alternative was to buy consols. For foreign debt repayable in dollars, the home-country alternative was long-term U.S. government bonds.³ We follow an unconventional procedure, however, in specifying the term structure of the investment in the alternative asset, as explained more fully in appendix A. To minimize the influence of inflation and deflation on the difference in the real ex post rates of return on foreign sovereign debt and home-country debt, we match the stream of repayments on the hypothetical holdings of home-country debt to the actual repayments on the foreign sovereign debt in question. The alternative real rate of return is thus an average of real ex post rates on a mixture of holdings of home-country governmental bonds maturing at the times dictated by the actual repayments of foreign sovereign debt.

The third summary measure is a net present value of the foreign sovereign debt vis-à-vis home country debt. Specifically, it is the present value of the repayments on the mixture of home-country bond holdings, discounted back to the time of purchase, minus the amount actually lent to a foreign government with the same realized repayment stream. It is thus the amount by which lenders to foreign governments were able to *lend less* to foreign governments than they would have had to lend to the home government to get the same repayments (again, see appendix A for details).

How should we deal with the fact that the loans occurred at different times? How should a loan made in 1850 be weighed against a loan made in 1950? The answer depends on the question being asked. One might wish to know how much better or worse the whole chain of investors would have fared ex post if they had chosen the alternative asset, instead of the sovereign foreign debt, starting from a moment in history. To find out, one would use the first kind of procedure:

1. All investments are discounted to the same year (e.g., 1850), at the alternative-asset interest rate (\bar{p}).

This first procedure will give heavy weight to early experience (e.g., loans in 1850), regardless of the date to which all flows are discounted. A more important question, however, is what probability distribution

Table 2.1 Top Governments Ranked by Gross External Debt to Private Creditors, 1913–14, 1930, and 1979

Rank	1913–14		End of 1930		End of 1979	
	Country	%	Country	%	Country	%
<i>Top 10 externally-indebted governments at each date</i>						
(1)	Russia	35.7	Australia	17.0	Mexico	12.0
(2)	Australia	9.0	Canada	9.7	Brazil	9.6
(3)	Japan	6.7	Brazil	8.1	Canada	9.2
(4)	Brazil	5.8	Japan	6.6	Norway	7.6
(5)	Argentina	5.1	Union of South Africa	5.4	Australia	5.1
(6)	Turkey	4.8	New Zealand	5.4	Venezuela	4.6
(7)	Union of South Africa	4.3 ^a	Rumania	5.3	South Korea	4.3
(8)	Mexico	3.5	Belgium	5.2	Algeria	4.3
(9)	Canada	3.4	Argentina	3.9	Turkey	3.7
(10)	Egypt	3.4	Chile	3.1	New Zealand	3.6
<i>Other sample countries</i>						
	(15) Chile	1.4	(12) Egypt	3.0	(12) Argentina	2.4
			Mexico, in default ^b		(17) Chile	1.4
			Russia, in default ^b		(23) Egypt	1.3
			Turkey, in default ^b		(47) Japan	0.1
					Russia, in default ^b	
	All countries	100.0	All countries	100.0	All countries	100.0
	Share owed by 10 sample countries:	78.8		51.5		44.8
	Total value (\$ billion):	12.6		14.4		83.0
	Number of countries covered:	42		47		108

Sources: For 1913–14, we preferred Kimber (1925) and our detailed estimates for the ten sample countries, but made sparing use of United Nations (1948). For 1930, we preferred Royal Institute for International Affairs (1937) and our detailed estimates, but also made use of United Nations (1948). For 1979, we used Moody's *Manual of municipals and governments* for bonds issued by governments of developed countries, and the World Bank's *World debt tables* for gross disbursed borrowings (not just bonds) of developing-country governments from private foreign creditors. The difference in coverage may elevate the ranks of less developed countries.

^aTotal public debt, not just external.

^bThe outstanding amounts on Mexican, Russian and Turkish external loans are disregarded here as they were effectively repudiated, in order to give balances that were more representative of borrowing activity in the 1920s (for 1930) and the 1970s (for 1979).

Excluded from this table are foreign borrowings of financial-center countries, which debts were not "external" in the sense that a strictly external repudiation was made more difficult by their ready salability in the borrowing country. In the absence of comprehensive exchange controls, any repudiation would have to apply to all public debt.

of outcomes the past suggests for future experience. Here the reader has free range of choice. Is the more peaceful experience of the mid-nineteenth century the best lesson that the past has to offer the future? If so, one could be content with the first procedure. But if one (plausibly) considers more recent experience more relevant, one can choose from these three workable procedures:

2. “all loans at once”—give the same weight to every constant-price dollar of fresh lending, regardless of when it occurred, starting all loans at the same hypothetical year. This gives somewhat greater weight to the heavy gross flows of the 1920s than to the smaller gross volume of prewar lending;
3. do the same as in (2), but weight each loan by its share of lending-country wealth at the time of the loan instead of deflating by consumer prices; or
4. insist that only the interwar and postwar experience is a valuable guide to the future.

We consider the second—“all loans at once”—the fairest offering from the pre-1973 past to the future, but our results can also be used to infer the results of procedure (4).

The available data allow us to compare realized flows with those originally contracted, and to compare nominal flows with real (price-deflated) ones. Three of the following four kinds of flows, with their corresponding rates of return, are presented:

	<i>Contracted (ex ante)</i>	<i>Realized (ex post)</i>
Nominal	Table 2.2	Table 2.10
Real	Not calculated	Table 2.3

Table 2.2 sets the stage by introducing national average ex ante returns and capitalized values contracted at the time of bond issue. In the bond era, investors asked for premia ($v - \bar{p}$) on foreign government bonds that were usually between 1.5 and 2.6 percent. These premia will serve as a yardstick for several comparisons to follow. We will find, first, that the real realized returns were well below these ex ante premia. Virtually all of the shortfall in real realized returns was due to defaults, not to ex post inflation, which affected both home-bond and foreign-bond returns similarly. Second, the ex ante rates in table 2.2 did not differ across countries in any way that consistently foretold the international differences in ex post returns. True, the market guessed “right” in charging lower premia to Canada and Japan before World War II, and in charging more to prerevolutionary Mexico and Turkey.⁴ But the market was unable to foresee the enforced full repayment by Egypt or the massive default by czarist Russia. The wide differences in realized returns were unpredictable.

Table 2.2 Contracted Nominal Returns on Bond Lending to Ten Foreign Governments, 1850–1983

Borrowing Nation	n	Rates of Return (%)			(Millions of \$)		Risk-Neutral Expected % of Capital Loss
		ν	$\bar{\rho}$	$\nu - \bar{\rho}$	NPV	L_0	
<i>A. All marketed bonds, 1850–1983</i>							
Argentina	181	5.92	3.47	2.45	561.4	2,476.6	2.31
Brazil	129	6.19	3.64	2.55	572.3	1,517.4	2.40
Chile	60	6.89	3.94	2.95	274.5	637.5	2.76
Mexico	<u>48</u>	<u>5.83</u>	<u>3.11</u>	<u>2.72</u>	<u>376.8</u>	<u>843.8</u>	<u>2.57</u>
Four Latins	418	6.09	3.52	2.57	1,785.0	5,475.4	2.43
Australia	439	5.60	4.52	1.09	1,358.7	9,836.9	1.03
Canada	488	4.51	2.82	1.69	925.9	1,635.6	1.61
Egypt	20	6.71	3.29	3.43	222.9	513.9	3.21
Japan	60	5.75	3.51	2.24	525.1	1,682.4	2.11
Russia	48	4.94	2.92	2.01	1,952.2	3,456.4	1.92
Turkey	<u>46</u>	<u>5.86</u>	<u>3.33</u>	<u>2.53</u>	<u>744.9</u>	<u>1,300.1</u>	<u>2.39</u>
These six	1,101	5.44	3.86	1.59	5,729.7	18,425.3	1.50
All ten	1,519	5.59	3.78	1.81	7,514.7	23,900.6	1.72
<i>B. Bonds issued 1850–1914 (or outstanding in 1850)</i>							
Argentina	110	5.07	2.91	2.15	295.4	930.5	2.05
Brazil	77	4.86	2.95	1.91	270.6	843.4	1.82
Chile	32	5.39	2.98	2.42	100.7	251.1	2.30
Mexico ^a	<u>33</u>	<u>5.78</u>	<u>2.91</u>	<u>2.87</u>	<u>325.1</u>	<u>578.1</u>	<u>2.71</u>
Four Latins	252	5.19	2.93	2.26	991.8	2,603.1	2.15
Australia	232	4.35	3.01	1.34	539.2	1,567.0	1.28
Canada	62	4.47	3.17	1.30	50.1	81.8	1.24
Egypt	17	7.18	3.11	4.07	227.8	443.8	3.80
Japan	32	4.36	2.90	1.47	217.5	896.9	1.41
Russia ^b	48	4.94	2.92	2.01	1,952.2	3,456.4	1.92
Turkey	<u>34</u>	<u>7.39</u>	<u>3.16</u>	<u>4.23</u>	<u>737.8</u>	<u>752.3</u>	<u>3.94</u>
These six	425	5.13	2.98	2.15	3,724.6	7,198.3	2.04
All ten	677	5.32	2.97	2.36	4,716.5	9,801.4	2.24
<i>C. Bonds issued 1915–1945</i>							
Argentina	69	5.81	3.78	2.05	184.9	1,231.7	1.94
Brazil	52	7.85	4.51	3.34	301.7	674.0	3.10
Chile	28	7.86	4.56	3.30	173.7	386.4	3.06
Mexico ^a	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Four Latins	149	6.76	4.13	2.63	660.4	2,292.1	2.46
Australia	114	5.16	4.00	1.16	510.0	3,425.6	1.10
Canada	243	4.51	3.94	0.64	127.0	489.1	0.61
Egypt ^c	3	3.75	4.40	-0.65	-4.9	70.1	n.a.
Japan	9	7.71	4.48	3.24	243.3	516.8	3.00
Russia	0	0	0	0	0	0	0
Turkey	<u>3</u>	<u>4.30</u>	<u>3.30</u>	<u>1.00</u>	<u>3.8</u>	<u>51.6</u>	<u>0.96</u>
These six	372	5.35	4.05	1.30	879.3	4,553.2	1.24
All ten	521	5.82	4.07	1.75	1,539.7	6,845.3	1.65

(continued)

Table 2.2 (continued)

Borrowing Nation	n	Rates of Return (%)			(Millions of \$)		Risk-Neutral Expected % of Capital Loss
		ν	\bar{p}	$\nu - \bar{p}$	NPV	L_0	
<i>D. Bonds issued after 1945^d</i>							
Argentina	4	8.88	3.95	4.93	81.1	314.4	4.52
Brazil	0	0	0	0	0	0	0
Chile	0	0	0	0	0	0	0
Mexico	15	5.94	3.56	2.39	51.7	265.7	2.26
Four Latins	19	7.53	3.77	3.76	132.8	580.1	3.50
Australia	93	6.32	5.37	0.95	309.5	4,844.3	0.90
Canada	183	4.51	2.28	2.23	748.8	1,064.7	2.13
Egypt ^e	0	0	0	0	0	0	0
Japan	19	6.61	3.70	2.91	64.2	268.7	2.73
Russia	0	0	0	0	0	0	0
Turkey	9	3.69	3.58	0.11	3.3	496.1	0.11
These six	304	5.85	4.68	1.17	1,125.7	6,673.8	1.11
All ten	323	5.99	4.61	1.38	1,258.5	7,253.9	1.30

Notes:

n = the number of bonds covered here.

ν = the internal rate of return implied by the bond issue price and repayment terms.

\bar{p} = the rate of interest on bond lending to the home government (U.K. consol rate or U.S. Treasury long-term bond rate, depending on the place of issue).

NPV = net present value, defined in the following special way: the amount investors were able to save by buying the same promised repayment stream from a foreign government at higher interest instead of from the British or U.S. government.

L_0 = the gross value initially lent to the foreign government.

The "risk-neutral" expected % of capital loss" = $(\nu - \bar{p})/(1 + \nu)$ is a suggestive hypothetical measure used here as in Feder and Just (1984). If bond purchasers were risk-neutral, the coexistence of the two rates of return, ν and \bar{p} , would imply the stated percentage of expected nonrepayment on the higher-yielding foreign bonds. To the extent that purchasers are risk-averse, $(\nu - \bar{p})/(1 + \nu)$ overstates their expectation of capital losses and instead reflects their aversion to the asset with the higher contracted yield.

^aTwo unsuccessful conversion loans to Mexico in 1943 (valued at £293,000) have been included in the 1850–1914 sample, to make them part of the aggregate prerevolutionary experience here as in table 2.3. Including them causes a very slight understatement of the ex ante contracted returns on prerevolutionary bonds.

^bTwo dollar loans to the Czarist government in 1916 have been included in the prewar totals.

^cThe three interwar Egyptian bonds are actually Ottoman debt settlements loans, not true market loans.

^dOur sample excluded bonds issued in the 1970s and 1980s, except for those issued by Australia and Canada. We sought to follow all external bond issues up to about 1970. The general inactivity of the postwar bond market meant that our bond populations stopped with bonds issued in the following final years: Argentina, 1968; Australia, 1978; Brazil and Chile, 1930; Canada, 1982; Egypt, Japan, and Turkey, 1965; Mexico, 1966; and Russia, 1916. All subsequent flows were followed through 1983, after which the remaining small balances were assumed to be paid off.

^eThe 1965 Egyptian bond issued in Kuwait has been excluded for want of sufficient information.

The 488 Canadian bonds have been handled differently from others. To save time developing computer routines for these well-behaved bonds, we aggregated their payment flows on separate spreadsheets, one for each province or the Dominion and each of the two currency categories

Table 2.2 (continued)

(US-dollar and non-dollar). Each Canadian "loan" entered into the ten-country data processing is therefore a set of aggregate payments streams resulting from many loans issued and maturing at different times. For the period breakdown of parts B, C, and D of this table, the accumulated Canadian balances were assumed to be paid off at the ends of 1914, 1945, and 1983. The different treatment of Canada causes understatement of the value of Canadian loans relative to those issued by other countries, but should not affect the rates of return greatly.

The total numbers of loans are often below those of table 2.3 below, because table 2.2 is supposed to focus only on bonds accepted by the marketplace, not conversion loans forced on dissatisfied holders of problem debt.

Reminder: nominal values from periods of very different commodity price levels have been aggregated together. This otherwise inappropriate aggregation facilitates comparison with the more relevant real-value aggregations in table 2.3 below.

Real realized returns are summarized in Table 2.3, first for all bonds, then for the largely-sterling prewar bonds, then for the largely-dollar interwar bonds, and finally for a few postwar bonds, with values in sterling at 1913 prices converted into 1913-price dollars at \$4.86. The results in table 2.3 are best understood by surveying individual-country results first, before discussing possible inferences about the efficiency of the overall sovereign-debt portfolio.

2.2.3 Repayment Experience for Individual Borrowing Governments in the Bond Era

The credit histories summarized in table 2.3 cover the whole spectrum from perfectly faithful repayers to governments that have defaulted massively enough to give their foreign creditors negative rates of return. Let us scan the spectrum, from the best repayers to the worst.

Some governments have repaid all their foreign bond debts faithfully since the mid-nineteenth century. One in particular ended up having no choice in the matter. By 1879 Egypt had been teetering on the brink of default for several years. On 22 April that year the Khedive Ismail, in a final defiance of his European creditors, issued a decree amounting to a unilateral partial default on outstanding bonds. In response the British and French governments pressured the Ottoman sultan to depose Ismail and replace him with Tewfik, his more compliant son. British and French officials took over control of Egyptian government revenue, managing it in the interests of the private creditors (Wynne 1951, 598–611; Landes 1958, 302–18; Feder and Just 1984). Egypt lost national sovereignty, which was not regained until after World War II.

It cost her dearly. Egypt fully repaid at a high interest rate reflecting her *ex ante* ability to default. She obtained a few more loans before World War I, but none thereafter until midcentury. Table 2.3 shows the premium she paid, in the form of a real realized rate of 6.41 percent

on prewar bonds, well above the 3.49 percent realized on the alternative streams of consol loans. The combination of ex ante sovereignty and ex post nonsovereignty brought Egypt's private creditors an extra 2.92 percent per annum.⁵

Three other governments were faithful repayers, at less cost than Egypt bore because the market trusted them a bit more from the start. Australia, Canada, and Japan have faithfully serviced their sterling and U.S. dollar bonds, with the exception of Japan's nonpayment of any debt service between Pearl Harbor and the end of the occupation in 1952. Perhaps in exchange, Australia and Canada were also heavy gross borrowers, able to return to the market repeatedly since 1850. Each of these governments had slight limitations on its sovereignty before World War I, though none to the degree of Egypt's subjugation under

Table 2.3 Realized Real Returns on Bond Lending to Ten Foreign Governments, 1850–1983

Borrowing Nation	n	Rates of Return (%)			(\$ mill. at 1913 prices)	
		ν	\bar{p}	$\nu - \bar{p}$	NPV	L_0
<i>A. All marketed bonds and conversion bonds, 1850–1983</i>						
Argentina	187	3.52	1.56	1.96	405.9	1,943.4
Brazil	143	2.97	2.14	0.83	156.5	1,278.5
Chile	60	1.66	1.88	-0.22	-3.9	501.3
Mexico	52	-0.21	1.72	-1.92	-140.1	564.6
Four Latins	442	2.65	1.79	0.86	418.4	4,287.7
Australia	439	3.00	1.97	1.03	669.6	4,873.6
Canada	488	1.91	0.35	1.56	512.3	969.1
Egypt	21	6.21	3.68	2.53	219.5	408.8
Japan	60	2.90	1.33	1.58	290.3	1,346.5
Russia	48	1.31	2.94	-1.63	-691.1	3,340.9
Turkey	54	1.29	2.58	-1.29	-174.0	919.1
These six	1,110	2.40	2.14	0.26	826.6	11,858.0
All ten	1,552	2.47	2.05	0.42	1,245.0	16,145.8
<i>B. Bonds issued, 1850–1914 (or outstanding in 1850)</i>						
Argentina	113	3.52	1.81	1.71	251.6	928.1
Brazil	79	2.27	1.38	0.89	1223.5	841.8
Chile	32	2.79	1.31	1.48	55.0	249.7
Mexico ^a	37	-0.74	1.98	-2.72	-157.3	475.7
Four Latins	261	2.21	1.65	0.57	272.8	2,495.0
Australia	232	3.02	2.01	1.01	319.2	1,525.2
Canada	62	4.77	3.50	1.27	39.9	65.7
Egypt	18	6.41	3.49	2.92	222.4	367.9
Japan	32	1.85	0.60	1.25	190.3	914.9
Russia ^b	48	1.31	2.94	-1.63	-691.1	3,340.9
Turkey	42	1.61	3.17	-1.56	-166.9	695.4
These six	434	2.09	2.48	-0.39	-86.1	6,910.0
All ten	695	2.12	2.26	-0.14 ^c	186.6 ^c	9,405.0

Table 2.3 (continued)

Borrowing Nation	n	Rates of Return (%)			(\$ mill. at 1913 prices)	
		ν	$\bar{\rho}$	$\nu - \bar{\rho}$	NPV	L_0
<i>C. Bonds issued 1915–1945</i>						
Argentina	70	3.34	1.39	1.95	135.3	928.0
Brazil	64	4.31	3.61	0.70	32.9	436.7
Chile	28	0.54	2.44	-1.90	-58.9	251.6
Mexico	0	0	0	0	0	0
Four Latins	162	3.17	2.15	1.01	109.3	1,616.3
Australia	114	4.18	2.97	1.21	279.3	2,165.1
Canada	243	3.41	2.76	0.65	93.9	379.1
Egypt ^d	3	4.41	5.41	-0.73	-2.9	40.9
Japan	9	5.89	3.62	2.26	83.2	340.2
Russia	0	0	0	0	0	0
Turkey ^e	3	-3.16	-2.27	-0.88	-3.4	47.2
These six	372	4.16	2.97	1.20	450.2	2,972.5
All ten	534	3.81	2.68	1.13	559.5	4,588.8
<i>D. Bonds issued after 1945</i>						
Argentina	4	5.51	0.81	4.70	19.0	87.3
Brazil	0	0	0	0	0	0
Chile	0	0	0	0	0	0
Mexico	15	2.67	0.35	2.31	17.2	89.1
Four Latins	19	4.08	0.58	3.50	36.2	176.4
Australia	93	0.81	0.09	0.72	71.1	1,183.3
Canada	183	0.47	-1.78	2.25	378.5	524.3
Egypt	0	0	0	0	0	0
Japan	19	2.32	0.06	2.25	16.8	91.4
Russia	0	0	0	0	0	0
Turkey	9	1.21	1.55	-0.34	-3.7	176.5
These six	304	0.83	-0.28	1.10	462.6	1,975.5
All ten	323	1.09	-0.21	1.30	498.8	2,151.9

Notes: The algebraic symbols are defined as in table 2.2, except that real rates replace nominal. The rates of return ν and $\bar{\rho}$ now contain subtractions for the ex post rate of consumer-price inflation in the lending country, and every flow is deflated by a lending-country consumer price index.

^aAs in table 2.2, two unsuccessful Mexican conversion loans from the 1915–45 period have been shifted to the pre-1914 period.

^bTwo dollar loans to czarist Russia in 1916 have been shifted to the pre-1914 period.

^cThe aggregate rate spread ($\nu - \bar{\rho}$) for the ten countries is negative, despite a positive NPV, because it is artificially calculated as an L_0 -weighted average from the rates for the ten countries. If the rates of return had been properly derived from a computer run specific to the ten-country total, ($\nu - \bar{\rho}$) would have been positive.

^dThree loans unsuccessfully aimed at settling Egypt's Ottoman debt.

^eThree bonds issued by Turkey in 1933–35, just before commodity prices rebounded from their trough. Hence the negative $\bar{\rho}$.

The present figures are based on a larger set of bonds than in table 2.2. Conversion bonds, aimed at reviving payments on previous problem bonds, are now included. In some cases these were attached to the records of the previous problem bonds, while in other cases they were entered as separate bonds, possibly in a later period.

the British occupation. The imperial and Commonwealth tie presumably restrained Australian and Canadian temptation to avoid repayment. Japan feared heavy borrowing, especially early in the Meiji reign, and repaid faithfully until 1941 out of fears that arrears would be used as a pretext for foreign intervention.

Argentina also compensated foreign creditors for the tangible risk of her default. The federal government did refuse full repayment in the 1820s and again in the early 1890s, and provincial and municipal governments defaulted in the 1930s. Yet the defaults of the nineteenth century were never complete, and the federal government retired all its debt on time through the 1930s and 1940s. On balance, foreign bondholders got an average real interest premium of 1.96 percent per annum on all Argentine bonds since 1850.

Brazil's record was mixed, though positive on balance. She repaid her sterling (and franc) debts very faithfully, most of them being retired before the crisis of the 1930s. Her dollar debt, however, was largely repudiated in that crisis. Brazil unilaterally offered partial repayments later, leaving an *ex post* interest premium of 0.83 percent as bond-era legacy.

Chile is the marginal case. Until 1930 she was a perfect repayer, at an elevated interest rate. But her default in the 1930s was so complete, with so little offered creditors out of later nitrate revenues, that her overall repayment only about matched what lenders would have received by lending to their home governments.

Turkey, by contrast, declined repayment on two major occasions, the default of 1876–81 and the refusal of the Nationalist government to repay Ottoman debts after World War I and Versailles. The former episode well illustrates what Fishlow has called "revenue default" (Fishlow 1985; Wynne 1951, 393–453). Turkey's default was virtually assured by a pattern of overspending, corruption and inefficiency of tax collection dating back at least to the Crimean war loan of 1854. Turkey's creditors received only some of the generous interest rates initially offered them, with the result that the whole package of Turkish bonds has yielded a lower present value than the corresponding amounts of less risky consols, as shown in table 2.3.

The net gain from lending to Mexico was clearly negative. Table 2.3 shows, in fact, that even the *gross* realized internal rate of return was negative in the case of Mexican bonds since 1850, ignoring the net default on bonds before our 1850 starting point.

Mexican experience pitted the default incentive against gunboats, with default the ultimate victor, after an interlude of financial health. Throughout her first half-century of independence, a series of Mexican governments borrowed desperately and defaulted regularly. The crisis peaked during 1859–61, when the governments of Britain, France, and

Spain intervened in an attempt to seize control of the customs collections previously promised to private creditors. In the shuffle France installed Maximilian, who floated new loans, part of which financed partial repayments on old debt.⁶ After Maximilian fell, the government of Benito Juárez refused to repay debts or honor customs-revenue pledges, from Maximilian or earlier. Later, in 1885–86, favorable negotiations with Porfirio Díaz ushered in a whole generation of financial rehabilitation and renewed foreign borrowing, to be stopped by the revolution in 1911. Thereafter, the old pattern returned: tentative debt agreements, each promptly breached (Lill 1919; Turlington 1930; Wynne 1951, 3–108; Bazant 1968). Thus ended Mexico's bond era, her credit not restored until the famous 1974–82 wave of bank lending.

The most negative experience was that tied to the government that borrowed from foreigners the most before World War I. By some outward indicators, czarist Russia might have seemed creditworthy. The imperial government had repaid loans faithfully, even to the extent of paying out more in debt service than it received in fresh loans between 1900 and 1913. Her trade and production were also growing apace (Fishlow 1985, table 3). Not far under the surface, however, the Russian government bonds were used in ways that did not promise repayment to the bondholders, revolution or no revolution. The investors, particularly those in France, were the ones who lost sovereignty in this case, deceived by the French and Russian governments in concert. Russia was building railways, to be sure, but at least from 1888 on the routes were being chosen for military purposes in consultation with the French government and French armaments suppliers (Feis 1930, 218–23). The main form of repayment was thus the political-military benefit reaped by the Allied governments, as Hawtrey has stressed:

[T]he investor . . . was induced to hand over his money directly to pay for an allied country by way of preparation. The investor lost his money, because when the war came, the ally could not stand the strain. The strategic railways were not finished, the munitions were inadequate, the government was inefficient and corrupt. Still the investment was not wholly fruitless. Russia, at any rate, kept seventy divisions occupied for three years (as cited in Feis 1930, 220–24).

Other parts of the loan proceeds were also used by the imperial government to manipulate the lending governments and the investors. The French financial press was bribed by the czar's agents to give glowing descriptions of Russia's financial prospects on the eve of new bond flotations (Raffalovich 1931). Russian officials also maneuvered their large deposits among foreign banks so as to embarrass any bank or central bank squeezing the flow of credit to Russia. In the monetary tightness of the Moroccan crisis of 1911, for example, banks that tried

to shut off their ordinary trade credits to Russian firms found that the Russian government pulled out still other deposits in large amounts, payable to other banks for new loans to the inconvenienced Russian firms (Lindert 1969, 29–31). Thus in a variety of ways, Russia made any attempt to stop lending costly to her creditors.

2.2.4 Global Returns to Lenders, in the Bond Era and since 1973

Combining the ten countries' diverse experiences, table 2.3 shows that investors made more on bond lending to foreign governments than on safer home governments, despite the revolutions and the Great Depression.⁷ Foreign bondholders got a net return premium of 0.42 percent per annum on all bonds outstanding anytime between 1850 and 1970 (with payments carry-over traced through 1983). Curiously enough, the bonds issued in the troubled years between 1915 and 1945 fared better (for creditors) than those issued back in the prewar golden age. The bonds issued between 1850 and 1914 barely broke even with home-government bonds in the *ex post* measures used here, while those from 1915–45 realized a premium of 1.13 percent.

Were the realized returns on foreign bonds better or worse than those on lending to private domestic corporations? The only suitable comparison at hand is with W. Braddock Hickman's landmark study of U.S. corporate bonds (1958, 75–138; 1960). Our ten foreign governments repaid a nominal interest rate of 4.68 percent, versus 3.85 percent on home-government bonds, between 1850 and 1983 (table 2.10). In the troubled era 1900–43, Hickman's large U.S. corporate bonds repaid a lifetime return of 5.4 percent, versus an average return on home-government bonds somewhere near the 1850–1983 average. At face value, this would suggest that foreign government debt paid a bit less well than gambling on the fortunes of U.S. corporations. But Hickman's measures may be too optimistic about U.S. corporate bonds. He gives them generous subsequent-market valuations, both by following bonds across an era of declining nominal interest rates and by assuming that defaulted bonds were later redeemed at the favorable prices that only some of them fetched in the 1940s. For now, pending more detailed research, one should say only that there is no clear evidence of a systematic difference in the realized returns on foreign-government and domestic-corporate bonds.

Have creditors fared better or worse on loans to foreign governments since 1973? We must first note that lending institutions have changed. Bond lending has been very modest, even in the 1974–82 wave of optimism. Far more important are direct bank loans to governments. The maturities are generally shorter than those on the earlier bonds, and interest rates are quoted as premia over the variable London Interbank Offer Rate (LIBOR). The quoted interest rates ran a little over

1 percent above LIBOR (as table 2.6 will show below), but LIBOR is not the most relevant alternative rate. More appropriate are rates on U.S. government bonds of the same maturity. The contracted (ex ante) premium on Third World loans, like the earlier bond-era premia, was about 2 percent over interest rates on U.S. government bonds.

Are the loans of the 1974–82 wave being fully repaid? So far, despite the landmark Brazilian suspension of payments in February 1987, the answer is “maybe.” The flurry of reschedulings in the period 1982–86 has had little effect on the realized rates of return. Borrowers repaid private creditors on contract, and were given little relief. To be sure, financial markets have come to *expect* a breakdown of debt service. As of mid-1987, the informal secondary market for banks’ loans to problem debtors tended to discount these loans by about one third in most cases, with a much steeper discount on Bolivian debt. Top U.S. banks have posted over \$16 billion in reserve-addition loss, much of it an expected loss on foreign debt. Similarly, the initial fears after the Mexican crisis of 1982 and later shocks depressed bank stocks (Kyle and Sachs 1984, Ozler 1986). Yet these expectations have not yet been reflected in any great shortfall of realized debt service.

How much default would it take to make the realized returns on recent loans match the realized return on bonds between 1850 and 1970? Table 2.4 quantifies the real rates of return realized on Third World debt since the end of 1973, under various assumptions about the extent of default. The three rate-of-return columns show the rates implied by actual experience up to the end of the year in question and by full repayment at the end of that year. The two columns at the far right measure the percentages of default that would bring the overall rate of return down to meet two norms. The first norm is simply the real rate of return on U.S. Treasury bonds of about the same maturities. The second is “history,” or the historical premium of 0.42 percent a year over home-country bonds that was derived from table 2.3 above.

Had debtor countries fully repaid their public external debts at the end of 1982, private creditors would have reaped a premium of 2.81 percent a year over the (negative) real returns on having lent to the United States over the previous nine years. As of 1982, table 2.4 further implies, they could have collectively lost 15.3 percent of the total balance and still have earned the historical-average premium over loans to a creditor-nation government. This did not happen, of course. Instead, the debtors made partial net transfers to private creditors, while most of the debt was rescheduled and enlarged. Curiously, the net transfers to creditors of 1983–86 have been offset by a growing inconvenience to them. By being locked into rescheduled debts, instead of investing in now-more-competitive U.S. bonds, creditors have experienced a drop in their maximum possible premium on loans to the

Table 2.4 Private Real Rates of Return and Possible Default Losses on Public External Debt of Developing Countries, 1973–86, under Various Assumptions about Repayments in the 1980s

Outstanding Debts Paid or Defaulted at End of Year	Default Variations					
	If All Debts were Fully Repaid			Percent Capital Loss to Make Returns Match		Complete Default → Internal Rate $v_o =$
	Internal Rate of Return (v_f)	Real Rate of Return on U.S. Bonds ($\bar{\rho}$)	Spread ($v_f - \bar{\rho}$)	U.S. Bonds ($v = \bar{\rho}$)	“History” ($v = \bar{\rho} + 0.42$)	
1982	0.77%	-2.04%	2.81%	17.9%	15.3%	-54.16%
1983	1.56	0.06	1.50	11.8	8.6	-39.69
1984	1.97	0.47	1.50	13.6	10.0	-28.25
1985	2.34	1.44	0.90	10.4	6.0	-20.96
1986	2.66	2.05	0.61	9.2	4.0	-15.68

Notes: We followed the actual performance of all public and publically-guaranteed external debt for all the 97 Third World nations included in World Bank, *World Debt Tables*, latest available estimates deflated by the U.S. consumer price index. Each row in the table represents a different year in which the debts were assumed to be completely settled, with the indicated degrees of default. Rates of return were defined as in table 2.3 above. All estimates refer to rates earned by private creditors, with initial loan fees apparently netted out of the amounts lent.

The internal rates of return (v_t) were calculated using the end-of-1973 disbursed debt outstanding as the initial flow to the borrowing country. For the purpose of calculating v_t , the debt outstanding at the end of the stated year was assumed to be repaid in full.

The alternative rate of return (\bar{p}) is the average of the real rates of return on seven-year U.S. Treasury bonds (p_t) held, and rolled over, from year t to the end of the year listed above, as an alternative to the net transfers to the developing country in year t . The average \bar{p} thus corresponds to its formula in appendix A, except that discounting is forward to the end of a final year between 1982 and 1986, rather than backward to an initial loan date. (More precisely, \bar{p} was calculated from the p_t 's for 1973–81 only, leaving alone the p_t 's unaveraged for the net-repayment years from 1982 on.)

The amount of default at the end of 1982 (or 1983, . . . , 1986) that would bring the internal rate of return (v) down to match the alternative rate of return (\bar{p}) equals the end-of-1982 value gained by capitalizing, at the p_t real rates, all actual flows between the private foreign creditors and the debtor country. The same procedure is repeated to calculate how much default would make the ex-post returns match a premium earned by earlier generations of international investors. Table 2.3 found that premium to be on the order of 0.42 percent per annum.

An additional technicality had to be addressed for correct use of the data in *World debt tables*. The starting point was the set of tables on “long-term public and publically guaranteed” (hereafter “PG”) debt to private foreign creditors. Dealing with these data alone would have given a biased picture of the returns to lenders. It seems that each year’s flow data (new lending, repayments, and interest) refer to the population of loans classified as PG at the start of that year. Unfortunately, that population kept changing from year to year. The key to adjusting for this inconsistency was to note that the change in the amount outstanding failed to match the difference between new loan disbursements and principal repayments. The discrepancy equalled (apart from small exchange-rate adjustments and rare write-downs) a net inflow of loans into the PG category from other categories (short-term or non-guaranteed), on which we lack detailed data. The data discrepancy made it possible to sketch a profile of the earlier loans that became converted into PG loans, and to include both the earlier loans and the PG loans in the results shown here.

Third World ($v_f - \bar{p}$). As of the end of 1986, everything still hung in the balance: the creditors would suffer great losses if they received only the secondary-market discounted values for their loans, but if they were eventually bailed out, they would have received a better return than their pre-1973 bondholding predecessors got.

2.2.5 No Systematic Creditor Errors?

Despite the positive ex post returns overall, those recurring waves of international debt crisis tempt us to look for irrationality in investors' behavior. We take only a few steps in that tempting direction here. Like persons trying to pose for an interesting photograph in front of Niagara Falls, we want to get close enough to a subject of general interest to attract the viewer. But not too close.

Even if table 2.3 had shown overall returns below the safe-asset rate, economists are not willing to infer irrationality from ex post bad results. We generally insist on a tougher test of asset-market inefficiency. The market is inefficient—it is guilty of *systematic* forecasting errors—only to the extent that one can prove that some information available to investors could have improved their forecasts beyond their revealed valuations of assets in competitive asset markets. The appropriate test, then, is a regression test in which other available information significantly improves rate-of-return or asset-price forecasts from a sample when it is added to a regression already including the whole history of the market price of the asset. Could the holding of foreign government bonds “pass” this inefficiency test? No such test has been run. An obvious point to pursue in later regression-based research is: should not investors have noted the level of lending itself? The periods of highest gross lending, in relation to macro-aggregates, were the periods just before returns dropped. In this respect, the time pattern resembles the cross-sectional significance of debt ratios noted by Edwards (1986).

Indirect clues can be gained by exploring some circumstantial evidence. Note, in particular, the consistency in the identities of the defaulters. The set of borrowing countries defaulting (wholly or partially) before World War I had a higher probability of default in the 1930s than did other countries receiving loans in the 1920s. Again, the set of borrowing countries defaulting either before 1930 or in the 1930s had a higher probability of needing concessionary “rescheduling” of loans since World War II.

Figure 2.2 and table 2.5 summarize the historical consistency in the identities of the defaulters and reschedulers. The shares of countries falling into problem-debtor status (default, arrears, or, in the 1980s, signing rescheduling agreements) are contrasted between two kinds of countries: those with and those without such status in an earlier period. We chose periods long enough so that a wave of defaults had time to

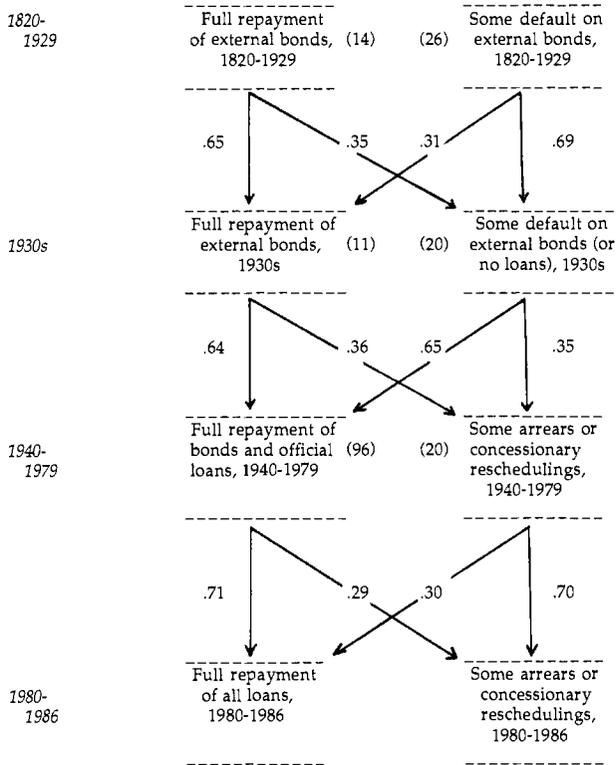


Fig. 2.2

Historical transition rates between repayment behaviors, governments of developing countries only, 1820–1986. *Notes:* Figures in parentheses are the numbers of countries at each starting point. The numbers are affected by historical changes in whether a country is considered less developed. For more detail, see tables 2.5 and 2.8. Countries listed in table 2.8 as “no loans” in the starting period of a transition are not counted. Russia/USSR is included in the first transition, but not in later ones.

abate, allowing a renewal of lending. There is a striking pattern of statistical significance. In either worldwide lending crisis (the 1930s and 1980–86), the problem debtors tended to be those who had had problems earlier. The pattern holds whether one looks across all countries or just across large samples of developing countries. We can reject the notion that repayments breakdown in crises is uncorrelated with the same nation’s distant debt history. Two questions immediately arise: Why should such patterns exist, and have international lenders taken due note of them?

We can only begin to suggest reasons for the significant legacy left by a country’s history of repaying, or not repaying, foreign creditors.

Table 2.5 Historical Rates of Transition into Problem-Debtor Status, among Five Periods, 1820–1986

Earlier → Period	Later Period	Among Earlier Full Repayers		Among Earlier Problem Debtors		Difference in Transition Rates	
		n	δ_r	n	δ_d	$\delta_d - \delta_r$	(Signif.)
<i>A. All debtors</i>							
1820–79 →	1880–1929	19	.105	23	.696	.591	**
1880–1929 →	1930s	32	.313	20	.800	.487	**
1820–79 →	1930s	23	.217	26	.692	.475	**
1930s →	1940–79	22	.182	22	.364	.182	
1940–79 →	1980–86	118	.237	21	.666	.429	**
1820–1929 →	1980–86	24	.167	25	.640	.473	**
1930s →	1980–86	25	.200	24	.625	.425	**
<i>B. Developing-country debtors only</i>							
1820–79 →	1880–1929	9	.222	23	.696	.473	*
1880–1929 →	1930s	22	.409	20	.800	.391	*
1820–1929 →	1930s	14	.357	26	.692	.335	*
1930s →	1940–79	11	.364	20	.350	.014	
1940–79 →	1980–86	96	.292	20	.700	.408	**
1820–1929 →	1980–86	8	.500	23	.696	.196	
1930s →	1980–86	9	.556	22	.682	.126	

Notes: “Sovereign debtor governments” are national or local governments in those countries whose national government was recognized as sovereign in budget setting and contract law in both the earlier and the later period, and which actually received foreign loans within both periods. Excluded (as nondebtors) are four usually-creditor nations: U.S., U.K., France, Germany. “Problem debtors” are those whose national or local governments did not repay contracted external debt in full, whether through repudiation or through recorded arrears lasting more than a year or (1980–86 only) signing rescheduling agreements with creditors. See Table 2.8.

n = number of countries covered.

δ = share of sovereign debtor governments becoming problem debtors in the later period.

* = difference is significant at the 5% level with a two-tailed test.

** = difference is significant at the 1% level with a two-tailed test.

To avoid sloppy references to “national character,” later research on this issue should stick to exploring four paths. One argues that certain countries, by dint of economic history and geography, continue to be vulnerable to external shocks that trigger frequent debt crises. Another stresses the transmission of political forces from one regime to another causing such macro-policy distortions as hyperinflation, repeatedly triggering general financial crises. A third is that the very experience of not having repaid all debts in the past adds to the national political legitimacy of nonrepayment in the future. Finally, creditor jitters may

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{p} , defined by the equation

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

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 $v - \rho_i$. Starting from the initial rates v and \bar{p} , 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

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

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

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

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

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

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						
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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