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DEBT AND DEFAULT IN THE 1930s:
CAUSES AND CONSEQUENCES

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ABSTRACT

This paper analyzes the "debt crisis" of the 1930s to see what light this historical experience sheds on recent difficulties in international capital markets. We first consider patterns of overseas lending and borrowing in the 1920s and 1930s, comparing the performance of standard models of foreign borrowing in this period to the 1970-80s. Next, we analyze the incidence and extent of default on sovereign debt, adapting models of debt capacity to the circumstances of the interwar years. We consider the choices available to investors in those foreign loans which lapsed into default in the 1930s, emphasizing the distinction between creditor banks and bondholders. Finally, we provide the first estimates of the realized rate of return on foreign loans floated between the wars, based on a sample of dollar and sterling bonds issued in the 1920s.

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1. Introduction

Observers familiar with the history of international lending approach the "debt crisis" of the 1980s with a sense of *deja vu*. The debt-servicing difficulties experienced in recent years by many Latin American and Eastern European nations represent only the latest in a series of similar episodes stretching back over a period of centuries. Not infrequently did the problems encountered by sovereign borrowers culminate in default, the widespread defaults of the 1930s being merely the most dramatic and generalized instance of a repeated phenomenon. Quite often, defaulting debtors were able to re-enter the international capital market only to default again, occasioning criticism of creditors for engaging in reckless lending ascribed to myopia or excessive competition.

The widespread defaults of the 1930s offer the most suggestive precedent for recent difficulties. In the 1930s as in the 1980s, illiquidity was not confined to any one country or region. In neither instance can the problems experienced by external debtors be attributed exclusively to domestic economic and political developments rather, they must be linked to disturbances to the world economy including, in

each instance, real interest rate shocks, commodity price fluctuations and exceptionally severe recessions in industrialized regions. The extent of the parallels has tempted many observers to see in recent developments the potential for a replay of the collapse of international capital markets witnessed in the 1930s.

Skeptics object that institutional arrangements governing international lending have changed so fundamentally that interwar experience contains few meaningful lessons for the 1980s. Perhaps the most prominent institutional innovation is the switch from bond to bank finance, a development which, by changing the provisions of loan contracts and reducing the number of creditors party to negotiations, is said to facilitate rescheduling of debt as an alternative to outright default. The International Monetary Fund now provides illiquid borrowers an external lender of last resort which at the same time serves the capital market in a signaling capacity, providing information on domestic adjustment programs. Analogous to the foundation of an international lender of last resort, the establishment of domestic lenders of last resort, the spread of deposit insurance and the implementation of macroeconomic stabilization policies are said to have diminished significantly the likelihood of a business cycle downturn on the scale of the Great Depression, thereby reducing the danger that borrowing countries will again be so severely affected by vicissitudes in the industrialized world.

In the absence of a systematic analysis of the interwar record with which recent developments might be compared, it is difficult to determine the relevance of this historical experience to recent difficulties in international capital markets. To provide a basis for

comparison, this paper sets out to analyze the pattern of borrowing, the incidence of default and the returns realized by foreign lenders. Its first part describes the contours of international lending in the 1920s and 1930s. Drawing on work by Eaton and Gersovitz (1981) and other investigators of the experience of the 1970s, we use regression analysis to summarize cross-section variations in the pattern and magnitude of sovereign indebtedness. The next part of the paper considers the incidence and correlates of default, estimating variants of modern models of debt capacity to explore the extent of association between standard measures of economic structure and performance and subsequent interruptions to debt service. In the final part of the paper we provide a long-run perspective on default and on the remedies available to creditors. The provisions of loan contracts are reviewed with an eye toward analyzing the scope for renegotiation. We then present new estimates of the rate of return on foreign loans floated in the 1920s, disaggregating these estimates between loans in default and loans in good standing as a way of constructing a measure of the costs of default as incurred by lenders, and comparing realized rates of return on loans made in different years, to different countries and to different classes of borrowers.

We are conscious that this paper only skims the surface of a topic with many additional dimensions deserving exploration. Our defence is that establishing the quantitative dimensions of international borrowing and lending in the 1920s is a necessary precondition for analyzing other quantitative and qualitative aspects of the problem certain to be of interest. In the concluding section to this paper, we therefore indicate the most promising directions for research.

2. Who Were the Lenders?

Between the wars, international lending remained the almost exclusive preserve of the United States and a few countries of Northwest Europe. Of the long-term foreign investments outstanding in 1938, the vast majority were assets of the United States, United Kingdom, Netherlands, France, Switzerland and Belgium. The U.S. and U.K. alone accounted for nearly 2/3 of the gross value of long-term foreign investments (inclusive of foreign loans, corporate securities and direct investments but excluding war debts and reparations).^{1/} Hence interwar trends and fluctuations in foreign investment are largely trends and fluctuations in American and British lending.

No country had as illustrious if controversial a history of foreign lending as the United Kingdom. The traditional figures suggest that more than 55 per cent of total British investment in the period 1871-1913 was directed overseas.^{2/} World War I occasioned a considerable liquidation of Britain's external assets, and in the second half of the 1920s the share of new capital issues for overseas borrowers declined from its prewar range in excess of 50 per cent to 37-44 per cent before slumping to very much lower levels in the 1930s. Nonetheless, in 1938 Britain's gross-external-asset-to-gross-national-product ratio remained an impressive 79%.^{3/} Of these investments, half were placed in Empire countries and 15 per cent in each of North and South America, with the remainder split evenly between Europe and Asia-Oceania. 58% of total overseas new issues floated between 1920 and 1934 was comprised of public borrowing and 7% of railway bonds, with the remainder allocated to sundry industrial and commercial ventures. British imperial lending

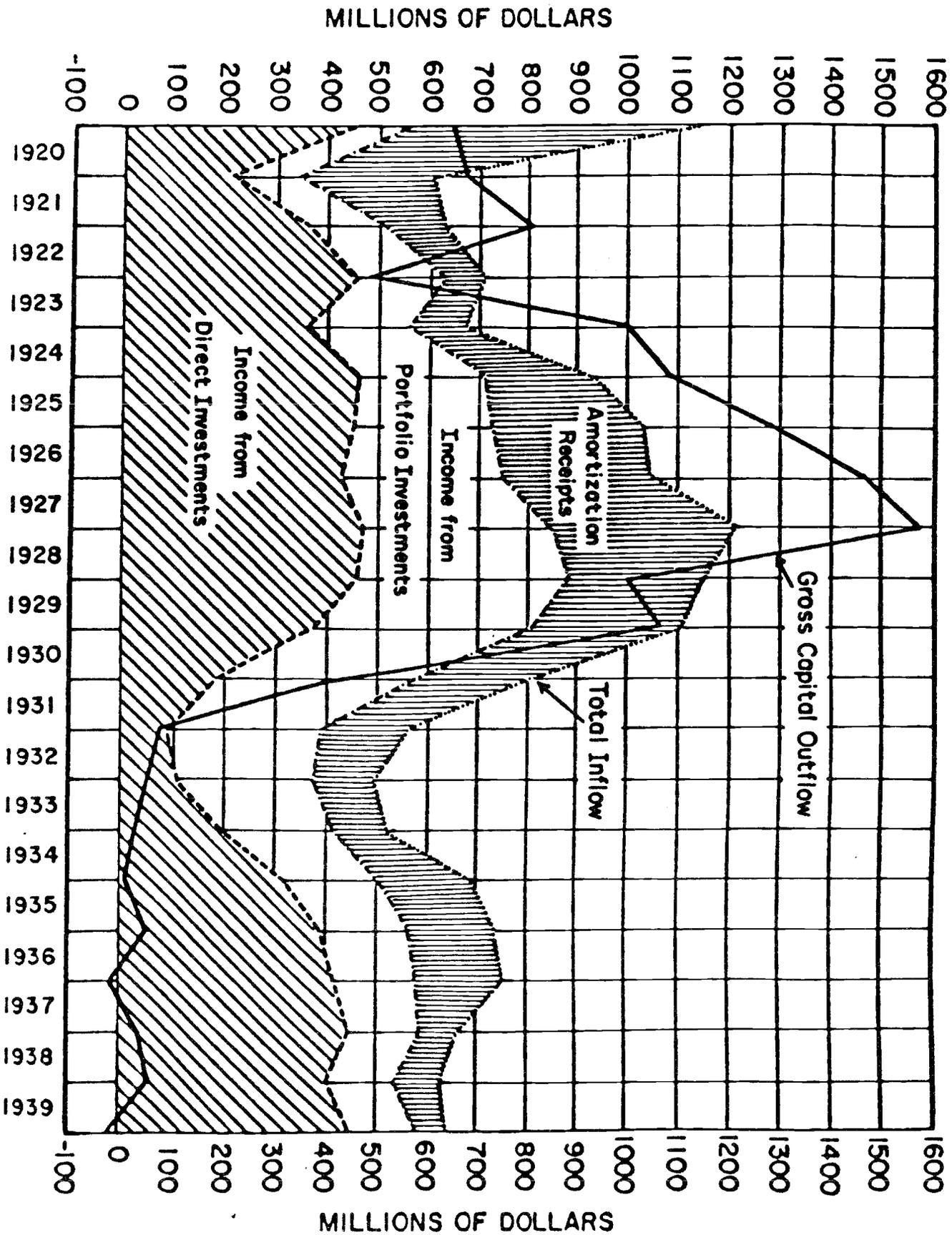


Figure 1. Income and Amortization Receipts from United States Long-Term Foreign Investments and Gross Capital Outflow, 1920-40

was disproportionately concentrated in government bonds, foreign lending in other assets.4/

Tight credit conditions in London and official restrictions on the export of capital combined to encourage foreign borrowers who had traditionally floated new issues in Britain to turn increasingly to the United States. Except for British Dominions and colonies upon whose borrowing the Colonial Stock Act of 1900 conferred preferential treatment or who continued to borrow in London for political as much as economic reasons, for much of the 1920s London and New York were in very real competition in the flotation of overseas loans.5/ For the United States, large-scale foreign lending was a recent development. The long-term-foreign-asset/national-income ratio of the United States was still less than 9 per cent on the eve of World War I.6/ In contrast to Britain, America's foreign assets doubled over the course of the war and, after fluctuating in the immediate postwar years, soared in the mid-'twenties. Compared to their British counterparts, American investors exhibited a stronger preference for direct over portfolio investments. Still, some 40% of American long-term foreign assets took the form of portfolio investment, of which 2/3 were government securities.7/ In contrast to Britain, where considerations of empire dominated, the geographical distribution of American investment seems to have been influenced if not governed by considerations of proximity. Nearly 40% of total American foreign investment was in Canada, 30% in Latin America and the West Indies and 20% in Europe, with the residual scattered across Africa, Asia and Oceania.8/

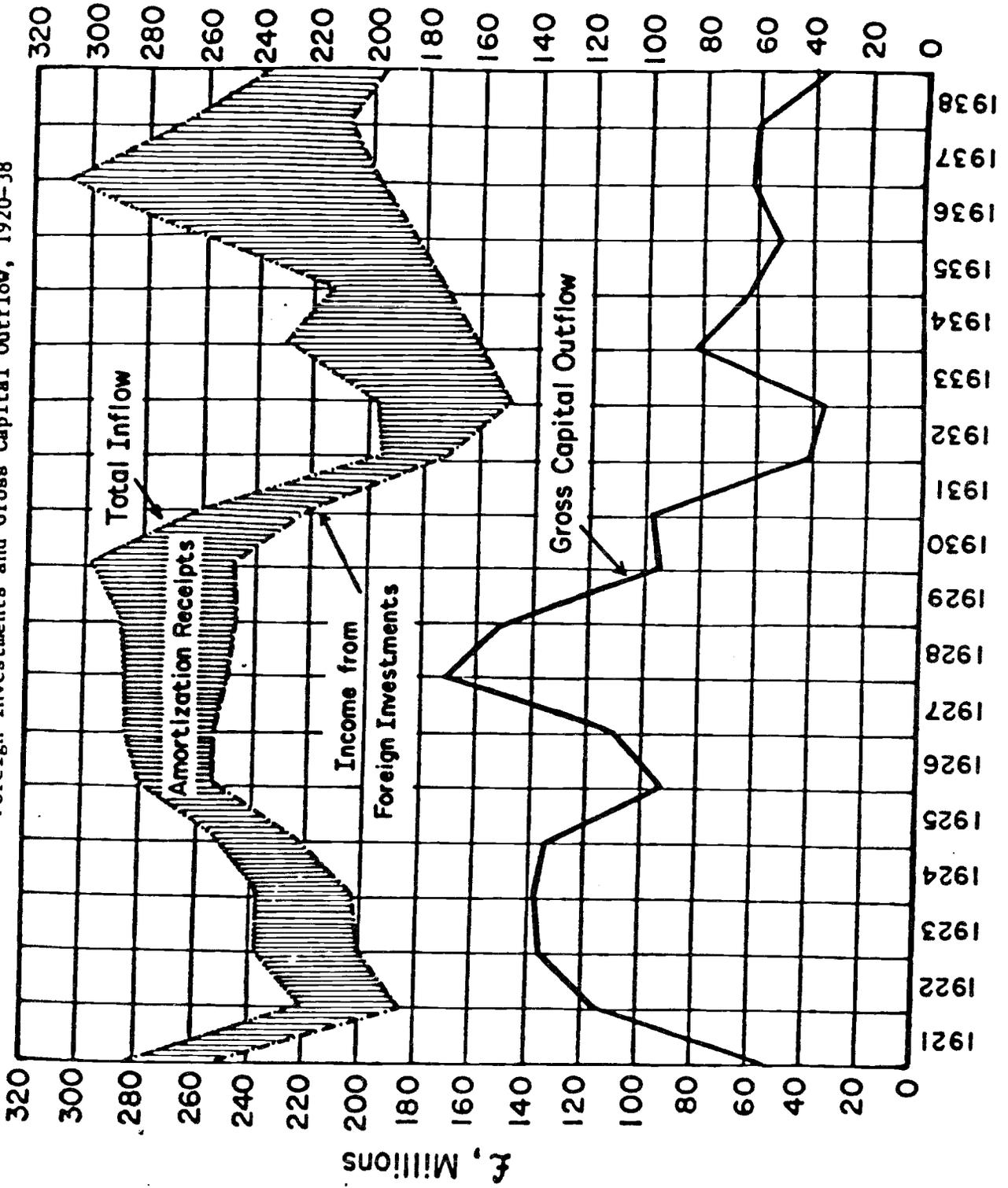
Figure 1 depicts the pattern of American foreign lending in the interwar years. [Figure 1 here] In the 1920s it is dominated by the

steady increase in new lending, which was maintained in each year between 1920 and 1927 with the exception of 1923, when France's occupation of the Ruhr and attendant political uncertainties increased the perceived riskiness of foreign investment. Conclusion of the Locarno Pact and successful placement of the Dawes Loan in 1924 signalled full recovery of the international capital market, which continued to expand until 1928 when its growth was stifled by the portfolio shift toward domestic assets associated with the Wall Street boom. By 1929 new foreign lending had fallen back to 1924 levels, before recovering slightly in 1930 following the collapse of the stock market. In 1931, with the further deterioration of economic conditions and the first defaults abroad, lending slumped to near-negligible levels, with Canada the only remaining major foreign borrower. By 1932 even Canadian loans had dried up, and lending remained depressed for the duration of the 1930s.

While long-term capital continued to flow out of the U.S. on balance until the second half of 1931, as early as the beginning of 1929 the U.S. was draining liquidity from borrowing regions; in other words, from 1929 new lending fell short of the sum of interest and amortization receipts.^{9/} To the extent that timing conveys information about the direction of influence, the curtailment of lending cannot be seen simply as passive response to unanticipated default.

Figure 2 indicates that U.K. foreign investment generally moved in step with American capital exports, but it also shows that U.K. lending exhibited certain distinctive characteristics. [Figure 2 here] Unlike American lending, which rose steadily throughout the 'twenties, British lending was marked by a mid-decade slump, leveling off in 1922-23 and

Figure 2. Income and Amortization receipts from United Kingdom
Foreign Investments and Gross Capital Outflow, 1920-38



Source: Sayers (1976), vol. III, pp. 312-313.

declining through 1925 before recovering through 1927. As in the U.S., overseas lending peaked in 1928 and fell thereafter, though not as precipitously or to such low levels. While it is tempting to ascribe the mid-decade slump in lending to tight credit conditions associated with Britain's return to gold, government policy toward new capital issues for overseas borrowers probably played the dominant role. The fluctuations in Britain's gross capital outflow depicted in Figure 2 closely mirror the changing intensity with which informal controls on capital export were enforced.^{10/}

Together, the two figures suggest that the U.K. contributed less than the U.S. both to the rise in the gross indebtedness of borrowing regions and to the pronounced cyclical movements in their liquidity position. In fact, the U.K. contributed nothing at all to the former during the interwar years. While the gap between the total capital inflow and outflow of the U.S. swings from large positive numbers in the late 1920s to large negative numbers in the 1930s, British interest and amortization receipts exceed the value of the new lending throughout the interwar years, albeit by a smaller margin in the 1920s than in the 1930s.

3. Who Were the Borrowers?

In contrast to foreign lending, which remained the preserve of a small number of industrialized economies, a wide range of countries engaged in foreign borrowing between the wars. According to Lewis's (1945) estimates of total long-term foreign indebtedness, the regions with the largest gross international obligations in 1938 were North

America and Asia. North American debts were almost entirely offset by foreign assets, since the U.S. was by this time a net creditor, but Canada's foreign assets of US\$2 billion were dwarfed by foreign liabilities three times that size. Whether one considers gross or net foreign liabilities, Canada rather than the countries facing highly-publicized debt-servicing difficulties was the world's most heavily indebted nation by the end of the interwar years.^{11/}

The leading debtors of the Asia-Oceania group, Australia and India, were like Canada members of the British Empire. The foreign obligations of both countries, owed predominantly to the United Kingdom, largely took the form of sovereign and government-guaranteed debt. However, the foreign obligations of these two debtors were only marginally in excess of those of China and the Netherlands East Indies. Chinese debts were inflated by Japanese claims against the portion of China it occupied in 1938 and otherwise concentrated in the form of British direct investment in Shanghai. The debts of the Netherlands East Indies were half in the form of Dutch-owned and controlled tin mines and smelters, oil wells and refineries and plantations, and half government bonds and industrial debentures.

After North America and Asia-Oceania, Continental Europe was the most heavily indebted region. Even excluding war debts and reparations, more than a quarter of Europe's gross foreign obligations was comprised of Germany's external liabilities. After having attained creditor status in the decades preceding World War I, some 90% of German foreign assets had been liquidated during the war or as part of the postwar settlement. Germany then received extensive capital inflows between the time of the Dawes Loan in 1924 and the imposition of exchange control in

1931. The countries of Eastern Europe were also external debtors; the bulk of their external obligations took the form of sovereign debt, although western investment in extractive industries such as Romanian oil, Polish zinc and Yugoslav copper and bauxite achieved significant levels.

Given the attention devoted to Latin American debt, it is interesting to note that the value of Latin America's gross external obligations was smaller than the obligations of these other continents. Concern may have been heightened by the fact that Latin American debt was heavily concentrated in certain countries. Thus, Argentina ranked behind only Canada and Australia in terms of the value of gross external debt. However, only 1/6 of this total was public debt; the rest took the form of direct foreign investment, of which British investment in Argentine railways and private enterprise comprised the majority. Brazil, the second largest Latin American debtor, contrasts sharply with Argentina. Nearly 2/3 of Brazil's gross external debt represented the obligations of federal, state and local governments. The finance of railway construction is indicative of the two national strategies: where Argentine railways were largely British owned and controlled, Brazilian railways were owned by the state but financed by foreign borrowing.

4. Cross-Section Analysis of International Borrowing

To summarize the pattern of international indebtedness between the wars in a fashion which facilitates comparisons with studies of recent decades, we estimate variants of the borrowing models advanced by such recent investigators as Eaton and Gersovitz (1981), Edwards (1984) and

Riedel (1983). While these authors each provide a theoretical rationale for their favored specification, we do not justify or defend their estimating equations. The results of estimating their equations are reported here only as a way of providing a basis for comparison between the 1930s and 1970s.

With the exception of consumption and investment, reliable estimates of which are simply unavailable, we have assembled information on the major variables used in recent empirical analyses.^{12/} Table 1 reports estimates of the equation proposed by Eaton and Gersovitz to explain the stock of debt held by borrowing countries. Total external central government debt is related to GDP, population, openness, a measure of export variability and the rate of growth of GDP. Eaton and Gersovitz use export variability to proxy for income variability and argue that it should be positively related to desired borrowing. They use openness to proxy for the magnitude of the penalty incurred with retaliation against default, which they argue should be positively related to desired lending. The sign of the coefficient on income growth is theoretically ambiguous. Eaton and Gersovitz suggest that the rate of income growth should be positively related to the demand for borrowing, since some consumption out of future income is desired now, but that it may be negatively related to the willingness to lend, since "rapidly growing countries may have less to fear from the future effects of a credit embargo..."^{13/} If borrowers are on their demand-for-debt schedules, this variable's coefficient should therefore have a positive sign; but if they are credit-rationed, as it is reasonable to assume was the case after 1930, the sign should be negative.

Ordinary least squares estimates like those reported in Table 1

Table 1

Determinants of Stock of Debt, Annual Cross Sections, 1930-8
(dependent variable is LDEBT)

Years	n	Constant	SDX	MD	LGDP	LPOP	GRP	R ²
1930	20	-3.71 (2.10)	-0.43 (11.04)	2.25 (2.14)	1.03 (0.15)	0.22 (0.28)	-0.22 (2.12)	0.89
1931	21	-3.55 (1.59)	0.80 (2.40)	3.10 (1.66)	1.10 (0.11)	0.14 (0.21)	0.00 (0.001)	0.94
1932	21	-1.23 (1.81)	0.80 (1.92)	-0.75 (3.22)	1.04 (0.12)	0.03 (0.24)	-0.06 (0.48)	0.92
1933	18	-1.31 (2.01)	0.13 (1.94)	-1.20 (2.72)	0.97 (0.12)	0.12 (0.25)	0.38 (0.77)	0.93
1934	23	-2.17 (1.84)	4.41 (4.74)	1.57 (1.65)	1.02 (0.10)	0.11 (0.21)	0.29 (0.48)	0.92
1935	23	-2.25 (1.77)	4.06 (17.35)	1.44 (1.76)	0.94 (0.12)	0.24 (0.24)	-2.58 (1.26)	0.93
1936	22	-0.26 (2.07)	21.50 (15.68)	0.77 (2.24)	0.85 (0.11)	0.16 (0.22)	-6.15 (0.85)	0.94
1937	19	-3.24 (4.33)	13.37 (15.30)	3.23 (3.94)	0.74 (0.38)	0.48 (0.45)	-2.26 (1.53)	0.67
1938	16	-1.64 (2.27)	28.52 (21.35)	3.78 (2.85)	0.77 (0.20)	0.18 (0.29)	2.14 (4.16)	0.81
1930-8	184	-3.36 (0.70)	1.85 (1.33)	1.72 (0.71)	1.01 (0.05)	0.24 (0.09)	-0.001 (0.001)	0.84
1931-8	163	-3.36 (0.79)	1.83 (1.38)	1.78 (0.86)	1.01 (0.05)	0.24 (0.10)	-0.001 (0.001)	0.83

Notes: Equations estimated by ordinary least squares. Standard errors in parentheses. n denotes the number of observations. Variable definitions include:

LDEBT: log of total external central government debt.

SDX: standard deviation of exports (over years T-2, T-1, T), scaled ($\times 10^{-4}$)

MD: import/GDP ratio.

LGDP: log of GDP

LPOP: log of population.

GRP: growth rate of GDP (over years T-2, T-1, T).

should be interpreted cautiously for a number of reasons, not the least of which is potential simultaneity bias. The general impression conveyed by these estimates is that the Eaton-Gersovitz model provides a less adequate account of international indebtedness in the 1930s than in the 1970s. While the results are consistent with the notion that the level of debt is positively associated with export instability and degree of openness, the coefficients are not statistically well determined. The only coefficient which differs from zero at standard confidence levels in every year considered is that on the log of GDP; in no case can we reject the hypothesis that this coefficient equals unity. However, there is some tendency for the coefficient of GDP to shrink in size as the 1930s progress, indicating that relatively high-income countries had the greatest tendency to repay previously-acquired debts. By the end of the decade relatively low-GDP countries were left most heavily indebted. The predominantly negative coefficient on GDP growth can be taken as indicative of credit rationing.

The results from pooling the time-series and cross-section data are quite satisfactory and give a somewhat clearer picture, with positive coefficients on all regressors except the growth rate of GDP, all significant at the 5 per cent level except that on export instability. The coefficient on the log of GDP is so close to unity and so well determined that it seemed sensible to try debt per unit output as the left-hand variable. The consequence of deflating the stock of debt in this way is to give predominantly better determined coefficients on the remaining regressors, with no qualitative changes. The results from the pooled equation for 1930-38 are characteristic:

$$\begin{array}{cccccc} \text{LDG} = & -3.37 & + & 1.86 & \text{SDX} & + & 1.74 & \text{MD} & + & 0.24 & \text{LPOP} & - & 0.001 & \text{GRP} \\ & (0.69) & & (1.32) & & & (0.71) & & & (0.07) & & & (0.0007) \end{array}$$

$$n = 163, \quad R^2 = 0.10, \quad F = 5.02$$

LDG = log (debt/GDP)

Other variables defined as in Table 1.

Standard errors in parentheses.

All this uses Eaton and Gersovitz's explanatory variables for the purposes of comparative description of the data. We have not sought at this stage to use on our data the disequilibrium modelling approach which they employ. This is not because we think it inappropriate - quite the contrary, as our verbal discussion above suggests. We believe, however, that it requires a tighter theoretical specification and perhaps better data than we have developed so far. Although from a quantity-rationing modeller's standpoint we might criticize the "quasi reduced form" underlying Table 1 (see Portes and Winter, 1980), it still provides interesting information about the data we do have.

Edwards (1984) has suggested that the stock demand for debt is better viewed in terms of the government's problem of selecting its optimal portfolio of assets and liabilities. Hence stocks of international reserves and foreign debt should be simultaneously determined, and the latter will depend in general not only on the variables suggested by Eaton and Gersovitz but also on the value of reserves. We have estimated a variant of Edwards's reserve demand function, using gold reserves as our dependent variable, and obtained

Table 2

Flow of Borrowing, Cross-Sections for Three-year and Four-Year

Averages 1928-1935

(dependent variable is BOR/GDP)

Years	n	Constant	RES/IMP	SRV/XP	DEF/GDP	GDP/POP	LA	AUS	R ²
1928-30	20	-0.01 (0.02)	0.11 (0.07)	-0.06 (0.09)	0.19 (0.42)	0.51 (0.61)	0.02 (0.02)	0.84 (0.06)	0.93
1928-31	21	-0.03 (0.02)	0.00 (0.01)	0.06 (0.06)	1.06 (0.37)	0.70 (0.48)	0.07 (0.03)	0.89 (0.05)	0.96
1932-35	22	0.23 (0.15)	-0.48 (0.12)	0.33 (0.11)	-0.14 (2.00)	-6.80 (3.39)	-0.02 (0.20)	-0.26 (0.35)	0.46

Notes: Equations estimated by ordinary least squares. Standard errors in parentheses. n is number of observations. Variable definitions include:

BOR/GDP: Flow of external central government borrowing as a share of GDP.

RES/IMP: Reserves/imports *

SRV/XP: Total debt service/exports *

DEF/GDP: Central government budget deficit/GDP *

GDP/POP: GDP/population *

LA: Dummy variable for Latin American countries

AUS: Dummy variable for Australia

where * denotes an average for the period.

results remarkably similar to his, as reported in Appendix Table A1. We then added reserves to the equation reported in Table 1, but neither OLS nor instrumental variables estimates indicated that reserves had any impact on the level of debt.^{14/}

Another attempt to permit balance-of-payments developments as reflected in reserves to influence the accumulation of external debt is provided by Riedel (1983), who analyzes flow supplies and demands for new borrowing rather than stocks of debt. Riedel relates the flow of borrowing to the following ratios: reserves to imports, debt service to exports, the government budget deficit to GDP, investment to national income, and income per capita. Results of estimating this equation are reported in Table 2, where we have added dummy variables for Latin America and British Empire countries (where the latter include only Australia in our sample) to flag any differences in their experiences and have dropped the investment ratio due to absence of data. The overwhelming impression is, as anticipated, one of pronounced shifts in the relationship of net lending to its determinants between 1928 and 1935. The coefficients on per capita income suggest that high income countries had the greatest tendency to borrow before 1932 and, consistent with Table 1, to repay thereafter. Although the regional dummy variables are unstable across periods, they suggest on balance that both Australia and the Latin American countries had unusually high propensities to borrow until the total collapse of international capital markets after 1931.

Whether countries experiencing the initial effects of the Great Depression were able to use foreign funds to help finance the shock is sensitive to whether or not 1931 is included in the sample. The

positive coefficient on the reserve ratio for the period prior to 1931 suggests that even at this early date countries experiencing balance-of-payments difficulties found it relatively difficult to borrow abroad. This coefficient becomes negligible, however, when the period is extended through 1931. Similarly, when 1931 is included in the sample, the positive coefficient on the fiscal deficit suggests that countries which chose to run deficits in response to the impact of the Great Depression initially had some ability to finance them through foreign borrowing. This evidence dissipates when 1931 is excluded from the sample. Whether the sensitivity of the results to inclusion of 1931 is due to the appearance that year of the first defaults, to the increasing inadequacy of our reserve measure given pronounced shifts between gold and foreign exchange, or to some other peculiar feature of 1931 remains to be determined.

5. Factors in Default

Part of the explanation for the incidence of default lies in special national circumstances, including particular primary commodity endowments, domestic economic policies and the uses to which borrowed funds were put. Yet in the 1930s as in the 1980s, developing countries were subjected to common external shocks which affected both the costs and benefits of interruptions to debt service. The list of common external disturbances - recession in the industrialized world, declining relative prices of primary products, rising real interest rates and resurgent protectionism - will have a familiar ring to those who follow the current situation. It is important therefore that observers struck

by the resemblance of the 1930s to the 1980s should not lose sight of the greater severity of the earlier shocks.

A severe business-cycle downturn in the United States could not but exercise a powerful influence over the liquidity and solvency of sovereign debtors. The obvious indicator of this influence is size: in 1929 the U.S. accounted for more than half of the industrial output and nearly 40% of the primary product consumption of the 15 leading industrial economies.^{15/} Another indicator is the magnitude of the contraction: one need only note that the Harvard Economic Society index of the volume of manufacturing fell by 25% between October 1929 and October 1930 and that real GDP fell at twice the rate typical for the first year of a recession.^{16/}

One of the principal channels through which these deflationary pressures were transmitted to developing regions was via primary commodity prices. In 1929, the most important agricultural goods in world trade were, in declining order of importance, cotton, wheat, sugar, coffee, silk and rubber.^{17/} Countries were variously affected by their luck in the "commodity lottery," to use Diaz-Alejandro's (1983) term. Between 1929 and 1930 the fall in average annual dollar prices ranged from nearly 20% for wheat and tin to 30% for cotton, sugar and silk and 40% for rubber.^{18/} In many cases the fall in export prices understates the impact on primary commodity exports. Export volumes declined with export prices as foreign demand curves shifted inwards and domestic producers moved back down their supply curves. The decline in foreign demand attributable to the depression was reinforced by protectionist initiatives which heavily affected foreign food producers. Ironically, the measures which created special difficulty for foreign

debtors - tariff and nontariff barriers to imports of foodstuffs - were adopted by industrial countries to bail out another class of debtors, namely farmers hit by falling agricultural prices. Together, recession and protection depressed the export revenues of 41 primary product exporting countries by some 50% between 1928/29 and 1932/33, an unprecedented shock by recent standards.

Another way of gauging the shock to indebted regions is in terms of the change in real interest rates. The fall in U.S. prices that got underway in the final quarter of 1929 raised ex post short-term real interest rates to more than 15%.^{19/} While the real interest rate shocks of recent years are by no means to be dismissed, they pale in comparison with the shocks experienced after 1929.

6. Cross-Section Analysis of the Incidence of Default

Existing accounts tend to portray decisions in the 1930s of whether to default on sovereign debt in one of three ways: (i) as the result of idiosyncratic national circumstances about which it is difficult to generalize, (ii) as a function of "bandwagon effects" that proved irresistible even to basically solvent debtors once the initial defaults occurred, and (iii) as the only feasible alternative available to developing countries given the magnitude of the shock to the world economy. Yet the incidence and extent of sovereign default varied enormously across countries. None of these approaches provides much help in understanding that incidence or that extent. This is in contrast to modern models of debt capacity, in which the incidence of rescheduling is assumed to be systematically related to a vector of

national characteristics proxying for its costs and benefits, such as the ratio of debt to GNP and various measures of trade performance.20/ In this section, we adapt these debt-capacity models to the circumstances of the 1930s to examine the extent to which country-specific variables associated with the costs and benefits of default help to explain its incidence. If these variables possess explanatory power, then it will be necessary to supplement if not replace existing characterizations with an analysis of the incidence of sovereign default in the 1930s couched in terms of its differential costs and benefits across countries.

As in modern studies of rescheduling, empirical analysis is complicated by the fact that the variable of interest - in this case sovereign default - can take on a number of forms of varying severity. Least serious was to be in default on sinking fund payments only. The Dominican Republic, for example, while continuing to service faithfully its dollar debt, temporarily fell into default on sinking fund early in the 1930s, before making a proposal in 1934 concerning readjustment of amortization which received the endorsement of the Foreign Bondholders Protective Council.21/ More serious was to be in default on all or a portion of interest payments. Most serious of all was repudiation, a rare event in the interwar years.22/ The best available indicator would appear to be the share of dollar- and sterling-denominated government and government-guaranteed debt in default as to interest or sinking fund.23/

Our measure of default is constructed from data covering national, state and provincial, municipal and government-guaranteed debt. The share of dollar- and sterling-denominated debt in default as to interest

or sinking fund is calculated for the period from 1934, the first year for which the newly-established Foreign Bondholders Protective Council published information on arrears, through 1938. The explanatory variables include proxies for the burden of the debt, the degree of openness, the severity of the external shock and the stance of domestic economic policy. Given their significance in Table 2 above, dummy variables for Latin America and Australia are added to test whether political or economic factors not otherwise accounted for help to explain the incidence of default. The external-government-debt-to-national-income ratio is used as a measure of debt-servicing requirements - in other words, the burden of the debt. We proxy openness by the ratio of exports to GDP and the severity of the external shock by the percentage deterioration in the terms of trade after 1929. It is likely that simultaneity will affect any attempt to estimate the impact of the current export share on the incidence of default, since countries which defaulted may have run policies or experienced sanctions which subsequently influenced their reliance on trade. Therefore, we use the lagged export share as a proxy for openness, employing two alternative formulations: the 1928 export share and the export share six years prior to the year for which the dependent variable is defined. It is similarly possible that simultaneity may contaminate the coefficient on the change in the terms of trade after 1929, since countries which defaulted may then have run policies or experienced sanctions which influenced the evolution of relative prices. As an alternative to the change in the terms of trade between 1929 and the year under consideration, we employ the change in the terms of trade between 1929 and 1931.

The next two variables are indicators of the stance of fiscal and monetary policies. To avoid problems of simultaneity, both variables are measured as percentage changes between 1929 and 1931, since countries which defaulted thereafter subsequently had available different policy options than countries that continued to service their external debt. The fiscal policy variable is defined as the percentage change in the central government budget deficit. Data on other levels of government, while desirable, are not available on a consistent basis. The monetary policy variable is defined as the percentage change in the ratio of gold reserves to note circulation. Almost all the countries in the sample remained on the gold standard into 1931; in the long run, therefore, their money supplies were endogenously determined. In the short run, however, governments could attempt to influence money supply and any domestic economic conditions it affected through domestic credit creation which would have as its eventual consequence a loss of international reserves. Therefore, the greater the rise in the ratio of reserves to money supply, the more restrictive was monetary policy. While it would be desirable to include other foreign assets in addition to gold and to use a broader measure of money supply than notes and coin in circulation, adequate data are not available for the range of countries included here.

Two-limit probit analysis is used to analyze the incidence and extent of default in light of the fact that the observed dependent variable is obtained as zero for countries which did not default, as unity for countries in default on all their obligations, and as a range of intermediate values for countries partially in default.^{24/}

Pooled time-series cross-section results are reported in Table

3.25/ The results are striking for their conformance with basic economic intuition. First, the most heavily indebted countries, as measured by the debt/income ratio, appear to have had the greatest tendency to default. Second, countries which experienced relatively severe deteriorations in their terms of trade also had a tendency toward default. This is true regardless of the terms-of-trade measure used. Thus, the commodity lottery looms as important not only for explaining the impact of the Depression on primary-producing countries but also in explaining their response.

These results seem quite inconsistent with the notion that all developing countries experiencing the Great Depression had no alternative but simply to opt for default. Rather, they suggest that the magnitude of the debt burden and severity of the external shock influenced the extent to which countries fell into arrears. At the same time, they are inconsistent with the view that non-economic factors, such as political ties to the principal creditor countries, provide the entire explanation for the incidence of default. This is not to say that the regional dummy variables can be dismissed. That for Australia has a negative sign which differs significantly from zero at any reasonable confidence level, indicating that the extent of default was significantly less than predicted by the economic variables included in the equation, a result tempting to interpret in terms of Australia's political and cultural ties to the United Kingdom. In contrast, the incidence of default among Latin American countries is sufficiently well predicted by the economic variables in the equation that the coefficient on the Latin American dummy retains no residual explanatory power.

Table 3

Two-Limit Probit Regressions of Covariates of Default: Pooled Time-Series
Cross-Section Results, 1934-1938
 (dependent variable is percentage of dollar and sterling
 debt in default as to interest and/or amortization)

<u>Variable</u>	(i)	(ii)	(iii)	(iv)
Constant	0.519 (0.054)	0.521 (0.047)	0.003 (0.190)	0.026 (0.136)
Debt/income ratio	0.328 (0.164)	0.345 (0.182)	0.659 (0.298)	0.931 (0.258)
Percent deterioration, terms of trade, 1929-31	0.223 (0.083)		0.567 (0.266)	
Percent deterioration, terms of trade, 1929- current year		0.271 (0.089)		0.822 (0.260)
Lagged export/GDP ratio		0.062 (0.044)		-0.326 (0.480)
1928 export/GDP ratio	0.071 (0.207)		0.159 (0.770)	
Percent increase in budget deficit, 1929-31	0.005 (0.002)	0.005 (0.003)	0.005 (0.005)	0.004 (0.003)
Percent increase in reserve ratio, 1929-31	0.169 (0.049)	0.185 (0.047)	0.305 (0.195)	0.386 (0.186)
Latin America	-0.001 (0.033)	-0.006 (0.052)		
Australia	-1.253 (0.251)	-1.289 (0.223)		
Log-likelihood	-139.67	-143.06	-84.23	-81.23

Notes: Coefficient estimates are accompanied by standard errors in parentheses. Number of observations = 95. Variable definitions include:

Debt/income ratio: total external central government debt/GDP.

Percent increase in budget deficit: central government deficit only.

Percent increase in reserve ratio: ratio of gold reserves to notes and coin in circulation.

For further details, see the text and data appendix.

The coefficient on the change in the budget deficit is positive and differs significantly from zero at the 90 per cent confidence level or better when the dummy variables for region are included. In other words, governments which ran austere budgetary policies in response to the Great Depression were best able to avoid debt-servicing difficulties. Those which engaged in what were by the standards of 1929-31 relatively heterodox fiscal policies had the greatest tendency to default. The obvious interpretation of this result is in terms of the absorption approach to the balance of payments - that, ceteris paribus, deficit spending raised domestic absorption of imports and exportable goods, reducing the foreign-exchange receipts available for servicing external debt.

The coefficient on the monetary policy variable indicates that countries experiencing relatively large increases in the ratio of gold reserves to currency circulation had the greatest tendency to default. This result is inconsistent with the notion that countries engaging in expansionary monetary policies were driven to default by any balance of payments difficulties that resulted. Similar results have been found when estimating debt capacity models for the 1970s and interpreted to indicate that sovereign debtors anticipating eventual default hoarded reserves to finance subsequent import purchases whose expense could no longer be defrayed by additional foreign borrowing.

An alternative explanation for this result would appear to be the inadequacy of gold as a proxy for international reserves and of note circulation as a proxy for money supply. Consider for example the first of these problems. Countries in our sample held gold and convertible foreign exchange in various proportions. The use of gold reserves as a

proxy for the total would not be a problem if those proportions remained constant. However, Nurkse (1944, p.41) notes that the share of foreign exchange in the gold and exchange reserves of 18 debtor countries for which he has information fell from 33 to 15 per cent between 1929 and 1931. Yet certain countries swam against this tide; Australia, for example, liquidated a major share of its gold reserves and replaced them with foreign exchange. Hence eliminating the dummy variable for Australia, as in columns (iii) and (iv) of Table 3, alters the coefficient on the monetary variable, which no longer differs uniformly from zero at the 95 per cent confidence level.^{26/}

The mystery of the monetary variable should not be permitted to detract from the other conclusions. Overall, the results suggest that basic economic intuition and simple economic variables go a long way toward explaining the incidence and extent of sovereign default in the 1930s.

7. The Scope for Renegotiation

To understand the scope for renegotiation, it is necessary to consider the mechanics of foreign borrowing. Procedures in London and New York were quite similar. The first step for a sovereign borrower wishing to obtain funds on the London market was to issue a prospectus. Typically, the terms of the offer and solvency of the debtor had already been examined by a reputable issuing house, which endorsed the loan by attaching its name to the prospectus.^{27/} In New York, specialized marketing houses played an analogous role. The revenues accruing to the managing houses took the form of the spread between the bonds' purchase

price (the price received by the foreign borrower) and the sales price (the price paid by the ultimate bondholder).

Flotation might be undertaken by a syndicate of issuing houses and banks. Since different institutions might have a comparative advantage either in negotiating an acceptable loan contract with the borrower or in marketing the bonds, it was not uncommon for one syndicate to resell a loan to another before making the bonds available to the public. Short-term advances were often extended to the foreign borrower in anticipation of successful placement of the loan. To market the securities, issuing houses based primarily in New York and Chicago employed itinerant bond salesmen and established branch offices across the United States and Canada. Some New York banks established special security affiliates which could directly serve in this capacity without violating American branch banking laws. If at first observers hailed the verve with which these travelling salesmen trumpeted the virtues of foreign bonds, after the first defaults they accused these same promoters of a variety of excesses.^{28/} The facility with which these securities were marketed is evidenced by the extent of sales to persons of relatively moderate means. Although the available statistics are incomplete, they suggest that in the 1920s the mean value of lots of foreign bonds was less than \$5000. Since this figure is inflated by a small number of very large purchases, the typical lot would appear smaller still had we an estimate of the median. For example, the face value of the average holding of Chilean bonds in the 1930s appears to have been no more than \$800 when the 4% of largest holdings is eliminated.^{29/} The small size of holdings and large number of bondholders is often credited with creating a severe free-rider problem

in the event of default and negotiation.

There was little scope for litigation as an avenue for obtaining satisfaction from defaulting debtors. American and British courts had no jurisdiction over foreign sovereigns, who could be sued in their own courts only with their consent.^{30/} One way in which lenders attempted to protect themselves was by writing into loan contracts provisions which earmarked certain revenues for debt service. Unfortunately, nothing prevented a foreign government from also breaching these provisions if it fell into default on interest or amortization. Bondholders therefore tried to enlist the aid of their governments. Government involvement could range from informal negotiations through diplomatic representations and economic sanctions to armed force. The U.S. State Department maintained a policy of official noninterposition in negotiations between American bondholders and foreign governments, although diplomats and officials did not hesitate to express their interest in a settlement. The British, in contrast, permitted the bondholders to delegate a British minister to the foreign country, or his consul-general, as their local agent, a practice certain to raise questions in the debtor's mind about the capacity in which the minister was negotiating.^{31/} The use of armed force, however nostalgically viewed by bondholders, was basically a thing of the past. The U.S. Securities and Exchange Commission advised bondholders to eliminate from their consideration the use of force as a means of debt collection.^{32/}

This left economic sanctions. The threat of sanctions in response to Germany's 1933-34 default illustrates the use of this instrument. In the summer of 1933 the German government declared a moratorium on the overseas transfer of interest payments.^{33/} Negotiations between the

head of the Reichsbank and foreign creditors ensued, yielding a compromise under which Germany agreed to meet a portion of its obligations. The Dutch and Swiss rejected the pact, however, and threatened to impose sanctions. The credibility of their threat was enhanced by the fact that both countries ran trade deficits against Germany, implying that the costs of German retaliation were likely to exceed the benefits. The Germans settled separately with both countries, with Dutch and Swiss nationals ultimately receiving full interest on their Dawes and Young plan bonds and cash payments of 3 1/2 to 4 1/2 per cent on most other German bonds.

Similar threats were then issued by and agreements reached with Sweden, France and Belgium. The mere opening of debate over sanctions in the British Parliament was sufficient to prod Germany into action. Before the measure could be passed into law, a German delegation arrived in London, and within a month an agreement was reached providing for full interest payments to British nationals on Dawes and Young plan bonds.^{34/} In contrast, the nationals of countries whose governments maintained their policy of official noninterposition received less favorable treatment. The U.S. State Department protested such discrimination against American bondholders, but to little effect.^{35/}

Bond finance and the associated free-rider problem are blamed for the difficulty of negotiating settlements when debt-servicing difficulties arose. Under bank finance, illiquid debtors can turn to their creditors, who are relatively few in number, for bridging loans, while insolvent debtors can negotiate a mutually-acceptable sharing of losses. Under bond finance, creditors were allegedly too many and bond covenants too inflexible for illiquidity to result in anything but

default or for insolvent debtors and their creditors to achieve a mutually-acceptable sharing of losses. In fact, there existed a number of mechanisms for internalizing the externalities that gave rise to free riding. The major difference between the interwar and postwar periods lies not in the prevalence of negotiations designed to achieve an equitable sharing of losses, since negotiations were commonplace in both eras. Rather, the difference is the extent to which some form of default was a necessary prerequisite for getting negotiations started.^{36/}

The fact that bond issues were floated by issuing houses and banks meant that there existed agents sufficiently few in number and large in size to have in principle provided bridging loans. Such short-term loans and advances had been common in the 1920s (see de Cecco, 1984). Moreover, it was in the banks' interest to tide over illiquid debtors, since they suffered embarrassment from default on bonds with whose issue they had been associated. It is troubling, therefore, that little such lending occurred after 1929. It could be that the debt crisis was quickly recognized as a problem of insolvency rather than illiquidity, and that money center banks rationally refused to throw good money after bad. This hypothesis imputes considerable foresight to the lending institutions. Moreover, it overlooks the possibility that their very unwillingness to provide short-term credit may have been directly responsible for transforming what remained a problem of illiquidity into one of insolvency. The banks' unwillingness to provide short-term loans preceded by a year the onset of default. For example, in 1930 Bolivian officials confronted with debt-servicing difficulties visited New York to "treat with" American banks. Negotiations to obtain short-term loans

were unavailing, and in 1931 Bolivia became the first Latin American debtor to default, setting off a chain reaction.^{37/} The alternative hypothesis is that, with only the goodwill of their customers rather than their own assets at stake, financial institutions had little incentive to bear the risk that what might appear to be illiquidity was really insolvency. If so, then a major difference between bank and bond finance is that under the latter, default was a necessary precondition to the successful restructuring of a loan. It does not follow, however, that under bond finance there was little scope for serious negotiation.

If default ensued, a readjustment program might be negotiated by the issuing house or by a committee it organized. Issuing houses characterized themselves as "moral trustees" obliged to protect the bondholders' interests.^{38/} Bondholders recognized, however, that the issuing house was likely to be torn between the interests of two sets of customers: bondholders and foreign borrowers. Moreover, the indebted government was the issuing house's single largest customer, with whom the lender was likely to have established a valued long-term relationship. Given the potential for conflict of interest, most readjustments were therefore negotiated not by issuing houses but by independent committees. The legal status of these committees varied: some obtained the physical deposit of bonds which they were authorized to use at their discretion; others took a proxy or power of attorney from bondholders who retained possession of their certificates; and still others received no legal authorization from bondholders, who they could claim to represent only informally.

The British Corporation of Foreign Bondholders (known less formally as the British Council and less favorably as the "conscience of the

loanmongers") was the oldest such organization, having been founded in 1868.^{39/} With six of its 21 members appointed by the British Bankers' Association, six by the London Chamber of Commerce and nine by the Council as a whole, it could claim to represent the interests of both the City of London and the bondholding community. Until the end of 1933 there existed no comparable organization in the United States.^{40/} American practice was to form ad hoc committees in response to individual defaults. The shortcomings of the method were notorious. Administrative expenses were inflated by the inability to exploit the scale economies offered by simultaneous negotiations with various debtors. Ad hoc committees could not bring the same pressure to bear as so august an institution as the British Council. Moreover, rivalry among competing committees undermined the credibility of each. Multiple committees might be formed for various reasons, including competition for profits, since the organizers typically received a commission paid out of debt service charges upon the conclusion of a settlement. More often, rival committees were formed when issuing houses established one and disenchanted bondholders another. The two then competed for support, employing newspaper publicity and agents who were paid on a commission basis to secure the deposit or registration of bonds. Not only did this encourage committees and their agents to make extravagant promises, but a debtor government was faced with the problem of determining which committee best represented its creditors. In 1933 the Foreign Bondholders Protective Council was finally established in the U.S. on a nonprofit basis. It proved a popular vehicle for subsequent readjustment negotiations, although its critics continued to suggest that it was unduly influenced by the banks.

Readjustment plans were signalled by the publication of a decree or simply an announcement that bond covenants were henceforth modified. If the plan was a result of successful negotiations, its acceptance would be recommended by the bondholders' committee involved. A new coupon was specified and the principal might be adjusted. A new date by which the loan would be called was specified. Bondholders indicated their acceptance of the arrangement by cashing a coupon and, when requested, by exchanging an old certificate for a new one. If acceptance of the offer was recommended by a prominent agency such as the Foreign Bondholders Protective Council, few options remained for dissident bondholders. In theory, they could withhold their coupons and form another committee to negotiate a better settlement. In practice, foreign governments had little further interest in negotiations once their good standing had been restored by the seal of approval of the Foreign Bondholders Protective Council. Only the possibility of widespread dissatisfaction with the terms negotiated by the councils provided a check on the process.

How the bondholders fared under these arrangements is an empirical question, to which we now turn.

8. The Impact of Default and Bondholders' Ability to Recover

Little is known about the realized rate of return on foreign bonds purchased during the 1920s. Madden et al. (1937) estimated the current rate of return on foreign dollar bonds (excluding Canadian issues) on an accrual basis; as shown in Table 4, they took interest as it accrued plus or minus gain or loss on redemption as a percentage of the amount

Table 4

Previous Estimates of the Rate of Return on Overseas Loans
(rate of return is measured in percentage points)

<u>Year</u>	<u>Foreign Dollar Bonds</u>	<u>Sterling Bonds in Latin America</u>
1920	7.67	
1921	7.78	
1922	7.58	
1923	7.03	3.8
1924	7.30	3.9
1925	7.28	4.1
1926	7.24	4.5
1927	7.07	4.2
1928	7.25	4.4
1929	7.03	4.5
1930	6.90	4.3
1931	5.81	3.2
1932	4.47	2.0
1933	3.67	1.7
1934	6.17	1.6
1935	3.54	1.8
1936		1.9
1937		2.2
1938		1.7
1939		1.6

Notes: Rate of return on foreign dollar bonds (exclusive of Canadian issues) is from Madden et al. (1937), p.154. This is interest paid in cash as a percentage of the amount invested adjusted for principal repaid in cash. Rate of return on Latin American securities quoted on the London Stock Exchange at the end of each year is from the South American Journal (January 20, 1940), p. 44. This is dividends, interest, arrears of interest and bonus as a percentage of the book value of investment.

of bonds valued at the original purchase price.^{41/} The figures reveal that over the decade of the 1920s the current rate of return on dollar bonds fluctuated in the range of 7-8 per cent. The highest rates of return occurred at the beginning of the decade; then between 1923 and 1929 the rate of return exhibited no obvious trend. With the onset of the Depression, that rate declined to 6.90 per cent in 1930, and in 1931 the first defaults combined with the repurchase of bonds for cancellation at prices below par reduced the yield further. Additional defaults continued to depress the yield until 1934, when the redemption of Netherlands East Indies, Swiss and French issues on a gold basis, in conjunction with the depreciation of the dollar, temporarily raised the return.^{42/}

The rate of return on a class of sterling assets, sterling bonds in Latin America, was calculated on a similar basis in 1940 by the South American Journal. These estimates appear in the second column of Table 4. One is struck first of all by the fact that throughout the 1920s the required rate of return on sterling bonds in Latin America was below the rate of return on foreign dollar bonds, perhaps reflecting the greater perceived riskiness of American loans. With the onset of default, the rate of return falls by roughly 50 per cent, not unlike the percentage decline in the current return on dollar bonds. Yet it is not known whether the returns on Latin American bonds are representative of British investments abroad.

The inevitable limitation of estimates constructed in 1937 or 1940 is that they have no way of incorporating the impact on the rate of return of subsequent interruptions to debt service, notably those associated with World War II, or of subsequent settlements between

creditors and defaulting debtors. Many Italian dollar bonds, for example, went into default in the autumn of 1940, and no additional interest was paid until 1947. Most German bonds which fell into default in 1933 or 1934 were only validated in 1955 as part of the London Agreement, after which service was resumed. Several early Latin American defaults, such as Bolivia's in 1931, were not settled until after World War II.

We have therefore constructed new estimates of the realized rate of return on bonds issued on behalf of overseas borrowers in the United States and United Kingdom during the 1920s. Tracking these bonds, sometimes for more than half a century, proves to be a daunting task. Rather than attempting to follow all overseas issues, we took random samples of 50 dollar bonds for foreign borrowers issued in the United States in the period 1924-1930 and 31 colonial and foreign government loans offered for subscription in London in the period 1923-1930.

Dominick and Dominick, in their annual reviews, provide a listing and brief report on all foreign dollar issues.^{43/} Out of approximately 300 bonds, we selected every sixth one listed by this publication to form our sample of 50. The source for information on sterling bonds was the publications of the London Stock Exchange.^{44/} Our procedure for selecting sterling bonds was the same as with dollar bonds except for the sampling factor and the treatment of Australian loans. Since Australian issues were so heavily represented in sterling loans offered on behalf of overseas governments, to insure adequate geographical coverage we included one in five rather than one in six of the colonial and foreign government issues listed by the Stock Exchange and stratified the sample by including only half the Australian loans which

would have otherwise been selected.^{45/}

We then collected information on interest and principal paid, as reported on dollar bonds by Dominick and Dominick through 1937 and by the Foreign Bondholders Protective Council thereafter. Comparable information on sterling loans was extracted from the Stock Exchange Yearbooks and the Stock Exchange Daily Official List. Since amounts paid fluctuated by year, as our measure of the yield we calculated the internal rate of return.

Assumptions had to be adopted in order to estimate these rates of return. For example, in many cases no information was provided on the share of bondholders who accepted a plan offered by a foreign government in settlement of its default. Lacking evidence to the contrary, we assumed that bondholders accepted the plan. When two options were offered in settlement of default, it was straightforward to construct the overall rate of return by weighting the rates under the alternative plans by the shares of bondholders which accepted each. When no such information was provided, we were forced to assume that half the bondholders accepted each alternative. Only interest paid in cash is included. Interest paid in scrip or blocked balances is not counted as a component of the rate of return until the year it actually accrued to the lender in sterling or dollars.

Our estimates of the internal rate of return on the two samples of bonds, weighted by the value of the initial issues, are 0.72 per cent for the entire sample of dollar bonds and 5.41 per cent for sterling loans. If we restrict the sample of dollar bonds to those issued by governments or with government guarantees (all the sterling loans in our sample are in this category), the IRR is 3.25 per cent, much closer to

the comparable sterling loan figure.

The first observation to be made is that these numbers are positive, a fact not previously known. A second observation is that investors in sterling and dollar bonds appear to have fared differently in the long term. While the internal rate of return on sterling issues is quite close to the statutory rate under the bond covenants, the return on the full sample of dollar issues is small relative to the statutory rate. The latter is only ten per cent of the average rate of return on foreign dollar bonds for the period 1924-1930 as it appears in Table 4. Moreover, the 1924-30 returns in Table 4 underestimate the yield to maturity since they deflate interest payments by the initial sales price of the bond.⁴⁶ Similarly, our internal rate of return calculations may overstate the return received by typical American investors, some of whom may have resold their bonds to the defaulting government at deep discounts in transactions of which we have no record.

On the other hand, converting the time series of returns on each sterling loan into dollars at the applicable exchange rates and recalculating the IRR gives somewhat lower IRRs, reflecting the secular depreciation of sterling. The average IRR falls by 0.6 per cent and therefore comes closer to the figure for dollar bonds. The pattern does not change much, however, nor would any of the results reported here.

By themselves, the adequacy of these yields is difficult to gauge. Comparisons with the yields on other bonds may be helpful; these are provided in Table 5. Note that no correction for default has been made to the municipal, railroad and corporate bond yields in the table; doing so would require another extensive calculation. However, the yield on high grade municipals was not dissimilar from the yield on U.S. Treasury

Table 5

Rates of Return on Alternative Dollar and Sterling Bonds
(in percentage points)

<u>Dollar Bonds</u>		<u>Sterling Bonds</u>	
<u>Bond</u>	<u>Yield</u>	<u>Bond</u>	<u>Yield</u>
High Grade Municipals	4.11	Treasury Bills	3.84
10 Railroad Bonds	4.45	Short Dated Gilts	4.46
Aaa Corporate Bonds	4.71	Consol Rate	4.48
Aa Corporate Bonds	4.97	31 Government and Government-guaranteed Overseas Bonds	5.41
A Corporate Bonds	5.31		
Baa Corporate Bonds	5.97		
33 Government and Government-guaranteed Foreign Bonds	3.25		
50 Foreign Bonds (including corporate issues)	0.72		

Notes: All figures except for foreign and overseas bonds are average yields to maturity over the periods 1924-30 for dollar bonds and 1923-30 for sterling bonds. For foreign and overseas bonds, the internal rate of return is reported.

Source: For foreign and overseas bonds, see text. Railroad bond yields are from Tinbergen (1930), pp. 211-212. Other dollar-bond yields are from Federal Reserve Board (1935), p. 185. British consol rate is from Mitchell and Deane (1926). Other sterling-bond yields are from London and Cambridge Economic Service (1970).

bonds, a default-free asset. In comparison, the realized rate of return on foreign dollar bonds is disappointing. Note that the same cannot be said of sterling loans: their internal rate of return exceeds the average yield on consols over the period.

One way to gauge the impact of default on the realized yield is to regress the internal rate of return (IRR) on a constant and a dummy variable for default. Since all the sterling bonds in our sample are government-issued or government-guaranteed, for comparability here we use only the subsample of dollar bonds which are government or government-guaranteed (although in fact a regression for the full sample of 50 dollar bonds gives results almost identical to those for the subsample of 33). Weighted least squares (WLS) is used where the weights are the value of the bond issue relative to the mean value of issues in the sample. This yields:

$$\begin{array}{rcll} \text{IRR (dollar bonds)} & = & 6.74 & - & 11.02 & \text{DEFAULT} & & n = 33 \\ & & (2.08) & & (2.87) & & & \text{S.E.} = 12.17 \end{array}$$

$$\begin{array}{rcll} \text{IRR (sterling} & = & 5.82 & - & 1.68 & \text{DEFAULT} & & n = 31 \\ \text{bonds)} & & (0.06) & & (0.48) & & & \text{S.E.} = 0.98 \end{array}$$

with standard errors in parentheses. The constant terms can be interpreted as the internal rate of return for issues on which there was no default. It is clear that differences in the return to bonds on which there was no default do not account for the very different experiences of British and American investors; rather, the greater cost

of default on American issues more than accounts for the difference. That differential in constant terms which exists is, however, consistent with the information on the rate at which interest accrued in the 1920s as summarized in Table 4.

In each case, the internal rate of return on foreign bonds that fell into default was significantly less than the rate of return on bonds which continued to be serviced despite the best efforts of the bondholders' protective committees and the American and British governments. However, according to the point estimates of the dummy variables for all issues experiencing some form of default, an interruption to debt service on dollar bonds reduced the internal rate of return by, on average, 11 per cent. On sterling bonds the cost of an interruption to debt service averaged in contrast less than 2 per cent. That the return on continuously serviced sterling loans was lower than that on comparable dollar loans while the cost of the average default on dollar loans was higher reinforces the hypothesis that this differential default risk was recognized in the 1920s and incorporated into the required rate of return on the two categories of assets.

As an accounting exercise, the weighted rates of return can be regressed on vectors of dummy variables for year of issue, location, or type of borrower. In this way the returns realized by investors in different types of bonds can be compared. Table 6 reports WLS regressions of the internal rate of return against a constant term and a vector of dummy variables for year. The first year in the sample - 1923 for sterling loans and 1924 for dollar loans - is the omitted alternative, and its average rate of return is the constant term. It has been argued that the quality of loans deteriorated as the decade

progressed and that this should have been reflected in the realized rate of return. There is weak evidence to this effect in the case of dollar bonds. Realized rates of return are lower for loans issued in most years after 1924, but only the return on 1927 issues is significantly less than the return on 1924 issues at standard confidence levels. The variation in the internal rate of return on sterling bonds by year of issue is quite different. For reasons that are not obvious, that rate is significantly lower for loans issued in the period 1924-1926 than either before or after.

Table 7 shows regressions of the internal rate of return on a vector of geographical dummy variables. The omitted alternative is Germany, so the rate of return on German bonds is picked up by the constant term. The positive coefficients suggest that investors in non-German bonds did relatively well; the returns on Central American, South American, Western European, Eastern European and Japanese bonds are all significantly greater than the returns on German bonds at the 90 per cent confidence level or better. It is not surprising that the rate of return on German bonds proved particularly low, since most of them fell into default in 1933-34 after which no interest was paid for two or even three decades. Nor is it surprising that the return on West European bonds was significantly higher, since most of those in the sample were continuously serviced, the Italian bonds providing a notable exception. However, the difference between Germany on the one hand and Japan, Latin America and Eastern Europe on the other is intriguing since default occurred on all the Japanese and East European dollar bonds and most of the South American dollar bonds in the sample. However, while the German bonds remained in default for two or three decades, the Japanese

Table 6

Realized Rates of Return on Overseas Loans by Year of Issue
(dependent variable is rate of return in percentage points)

	<u>Dollar Loans</u>	<u>Sterling Loans</u>
<u>Variable</u>	(i)	(ii)
Constant	4.815 (4.76)	6.408 (0.39)
1924		-3.243 (0.85)
1925	-0.330 (5.39)	-1.285 (0.52)
1926	-0.776 (5.37)	-1.623 (0.71)
1927	-14.980 (5.45)	-0.581 (0.39)
1928	-5.139 (5.75)	-2.877 (2.804)
1929	-0.201 (16.54)	0.962 (15.90)
1930	0.138 (46.54)	-0.633 (0.50)
SE of regression	13.151	0.923
R ²	.34	.99
number of obs.	50	31

Note: Equations are estimated using weighted least squares. Standard errors in parentheses. In column (i), the omitted alternative is 1924; in column (ii) it is 1923. Note that the entire sample of 50 foreign dollar bonds is used in these estimates.

Source: see text.

Table 7

Realized Rates of Return on Overseas Loans by Country
or Continental Group
 (dependent variable is rate of return in percentage points)

<u>Variable</u>	<u>Dollar Loans</u>	<u>Sterling Loans</u>
	(i)	(ii)
Constant (Germany)	-14.451 (1.49)	3.021 (2.42)
Central America	19.087 (10.23)	
South America	19.231 (2.01)	-1.752 (3.11)
Australia	19.911 (13.31)	2.804 (2.42)
Japan	20.876 (4.16)	2.429 (2.50)
Western Europe	21.171 (2.01)	-0.053 (2.54)
Eastern Europe	13.491 (5.50)	1.483 (2.88)
SE of regression	7.644	0.928
R ²	.76	.99
number of obs.	50	31

Note: Equations are estimated using weighted least squares. Standard errors in parentheses. The constant term is a point estimate of the return on bonds floated for the omitted borrower, Germany. The point estimate of the return on bonds issued on behalf of borrowers in other regions is the sum of the constant and the relevant slope coefficient. The entire sample of 50 dollar bonds is used for these estimates.

Source: see text.

Table 8

Realized Rates of Return on Dollar Loans by Category of Borrower
(dependent variable is rate of return in percentage points)

<u>Variable</u>	(i)	(ii)
Constant	5.706 (1.09)	5.706 (1.08)
State	-3.129 (5.59)	
Provincial	-0.093 (29.19)	
State or Provincial		-3.03 (5.43)
Municipal	-0.951 (3.29)	-0.951 (3.27)
Nationally Affiliated Bank	-23.54 (2.33)	-23.54 (2.31)
Other Bank	-5.004 (7.22)	-5.004 (7.13)
Corporate	-10.93 (2.48)	-10.93 (2.46)
S.E. of regression	8.208	8.110
R ²	.72	.72

Note: Equations estimated by weighted least squares. Standard errors in parentheses. The constant term is the point estimate of the return on loans to the omitted borrowers, national governments. The point estimate of the return on loans to other types of borrowers is the sum of the constant and the relevant slope coefficient. The entire sample of 50 dollar bonds is used in these estimates.

Source: See text.

Table 9

Realized Rates of Return on Sterling Loans by Category of Borrower
(dependent variable is rate of return in percentage points)

<u>Variable</u>	(i)	(ii)
Constant	4.260 (0.52)	4.260 (0.51)
British Funds	0.650 (2.45)	0.650 (2.40)
Dominion, Provincial or Colonial Government Securities	1.559 (0.524)	1.559 (0.51)
Dominion, Provincial or Colonial Corporation Stocks	0.979 (12.79)	
Foreign Corporation Stocks	-0.470 (2.19)	
All Corporation Stocks		-0.431 (2.13)
S.E. of regression	1.045	1.026
R ²	.99	.99

Note: Equations estimated by weighted least squares. Standard errors in parentheses. The constant term is the point estimate of the return on loans to the omitted borrower, national governments. The point estimate of the return on loans to other types of borrowers is the sum of the constant and the relevant slope coefficients.

Source: See text.

bonds in the sample fell into default only in 1942 and service was resumed as early as 1952. Partial interest continued to be paid on many of the South American bonds, and readjustments, involving conversions to new principal and interest amounts, were offered on the South American bonds in our sample between 1936 and 1948.

In contrast, there is little statistically significant variation by borrowing country or continent in the rate of return on sterling bonds. It appears that British investors, perhaps due to their government's anticipated threat of trade sanctions, were able to secure a positive rate of return on their German investments which did not fall significantly short of the return on other overseas loans.

In a similar accounting exercise, Tables 8 and 9 show regressions of the weighted internal rate of return on a vector of dummy variables for type of borrower, where national government is the omitted alternative. Despite the preoccupation of many commentators with sovereign default, it appears that investors who lent to national governments ultimately received respectable rates of return. According to Table 8, concerned with dollar bonds, only returns on loans to corporations and to banks affiliated with national governments (which include in this sample the Mortgage Bank of the Kingdom of Denmark, the German Central Bank for Agriculture, the National Bank of Panama, the Mortgage Bank of Chile, and the Mortgage and Agricultural Mortgage Banks of Colombia) fell significantly short of the returns on loans to national governments at the 95 per cent confidence level. Table 9 shows for sterling bonds that the rate of return on loans to national governments was virtually indistinguishable from the return on to corporations and on British Funds. (British Funds was the name given to

loans insured or guaranteed by the British government itself.)

Contemporary preoccupation with defaults by national governments may have been justified insofar as sovereign default encouraged or provided a rationale for defaults by the country's other foreign borrowers. But the settlements provided by national governments which defaulted on their sterling obligations, such as Italy, Chile, and Colombia, appear to have been relatively favorable to the creditors, yielding internal rates of return in the range of 3 to 5 per cent.

9. Directions for Research

In this paper we have focussed exclusively on three aspects of interwar experience with external debt and default: the pattern of borrowing, the incidence of default, and the returns realized by the lenders. Despite conscious efforts to circumscribe the range of issues considered, important aspects of each question have been left untouched. Thus, we have not considered the role of the League of Nations in the League Loans of the 1920s and their relationship to the expansion of the international capital market. Nor have we considered the similarities and differences between the Kemmerer Missions to Latin America and IMF conditionality. A further omission especially relevant to our analysis of default is the treatment of war debts and reparations generally and the 1931 Hoover Moratorium in particular.

Another intriguing issue which we have not yet begun to address is the relationship of default to the subsequent economic performance of the borrowing countries. Whether default disrupted trade and capital

flows in ways with serious implications for the subsequent growth of the capital-importing economies is a question with obvious implications for our assessment of the management of recent debt-servicing difficulties.

Table A1

Demand For International Reserves, Annual Cross Sections, 1930-38
(dependent variable is LGOLD)

Year	n	Constant	LGDP	LMD	LCVX	R ²
1930	22	-4.53 (0.91)	1.17 (0.10)	0.16 (0.29)	0.14 (0.18)	0.91
1931	21	-1.32 (2.20)	0.23 (0.18)	0.36 (0.71)	0.51 (0.13)	0.52
1932	21	-3.53 (1.32)	1.13 (0.10)	0.39 (0.44)	-0.06 (0.07)	0.85
1933	18	-3.90 (1.34)	1.17 (0.14)	0.42 (0.76)	-0.06 (0.08)	0.84
1934	23	-3.13 (1.35)	1.17 (0.16)	0.86 (0.34)	-0.09 (0.09)	0.73
1935	23	-3.04 (1.56)	1.14 (0.16)	0.79 (0.46)	-0.02 (0.10)	0.69
1936	22	-2.22 (1.73)	1.11 (0.19)	1.16 (0.62)	0.06 (0.12)	0.60
1937	19	-3.11 (3.27)	1.23 (0.29)	1.58 (0.68)	0.16 (0.15)	0.59
1938	16	-2.35 (3.92)	1.20 (0.36)	1.65 (0.81)	0.15 (0.19)	0.51
1930-8	185	-2.87 (0.52)	1.16 (0.05)	0.76 (0.13)	0.26 (0.12)	0.75

Notes: Equations estimated by ordinary least squares. Standard errors in parentheses. Variable definitions include:

LGOLD: log of gold reserves.

LGDP: log of GDP

LMD: log of the import/GDP ratio.

LCVX: log of the coefficient of variation of exports for the three years T-2, T-1, T.

Table A2

List of Foreign Dollar Bonds used in Rate of Return Calculation

1. Alpine Montan Steel Corporation (Austria, 1926, \$5m, 5.92%)
2. Kingdom of Belgium Stabilization Loan (Belgium, 1926, \$50m, 7.89%)
3. Kingdom of Denmark (Denmark, 1925, \$30m, 5.49%)
4. Mortgage Bank of the Kingdom of Denmark (Denmark, 1927, \$4.3m, 5.33%)
5. Finnish Guaranteed Municipal Loan of 1924 (Finland, 1924, \$7m, 8.66%)
6. International Power Securities Corp., Delaware Corp., Collateral Trust "B" (France, 1924, \$4m, 7.57%)
7. Free State of Oldenburg (Germany, 1925, \$3m, 4.99%)
8. City of Berlin (Germany, 1928, \$15m, 3.0%)
9. City of Hanover Convertible Bond (Germany, 1929, \$3.5m, 4.49%)
10. German Central Bank for Agriculture (Germany, 1927, \$50m, -19.41%)
11. General Consolidated Municipal Loan of German Savings Banks and Clearing Associations (Germany, 1928, \$17.5m, 3.67%)
12. Saxon State Mortgage Institution (Germany, 1925, \$5m, -8.58%)
13. Brandenburg Electric Company (Germany, 1928, \$5m, 2.49%)
14. Gelsenkirchen Mining Corp. (Germany, 1928, \$15m, 6.53%)
15. Hamburg Electric Company (Germany, 1925, \$4m, -8.95%)
16. Leipzig Overland Power Companies (Germany, 1926, \$3m, -3.52%)
17. Oberpfalz Electric Power Corp. (Germany, 1926, \$1.25m, -11.97%)
18. Rhine-Westfalia Electric Power Corp. (Germany, 1925, \$10m, -8.68%)
19. Siemens and Halske A.G. Siemens Schuckertwerker G.m.b.H. (Germany, 1926, \$24m, -14.20%)
20. United Industrial Corp. Hydro-Electric First Mortgage (Germany, 1925, \$6m, -9.49%)
21. Westphalia United Electric Power Corp. (Germany, 1928, \$20m, -24.12%)
22. Hungarian Consolidated Municipal Loan (Secured) (Hungary, 1925, \$10, -6.36%)
23. Hungarian-Italian Bank, Ltd. Mortgage Loan "AC" (Hungary, 1928, \$1m, -20.01%)
24. Irish Free State (Ireland, 1927, \$15m, 5.23%)
25. Fiat (Italy, 1926, \$10m, 7.73%)
26. Italian Credit Consortium for Public Works (Secured "B") (Italy, 1927, \$7.5m, 4.82%)
27. Terni First Mortgage for Hydro-Electric "A" (Italy, 1928, \$12m, 4.57%)
28. City of Bergen (Norway, 1930, \$1.9m, 5.71%)
29. Norwegian Hydro-Electric Nitrogen Corp. (Refunding "A") (Norway, 1927, \$20m, 6.19%)
30. Land Mortgage Bank of Warsaw Guaranteed First Mortgage (Poland, 1924, \$15m, 0.76%)
31. Swedish Government (Sweden, 1924, \$30m, 5.57%)
32. Republic of Cuba Public Works Certificate (Cuba, 1929, \$9.75m, 4.63%)
33. National Bank of Panama (Panama, 1926, \$1m, 5.19%)
34. Government of the Argentine Nation (Argentina, 1925, \$45m, 6.57%)
35. Province of Buenos Aires (Argentina, 1930, \$3m, 4.65%)
36. Province of Tucuman (Argentina, 1927, \$2.1225m, 7.54%)
37. Pan-American Independent Corp. First Lien Collateral Trust Loan (Argentina, 1927, \$3m, -26.45%)

38. State of Parana (Brazil, 1928, \$4.86m, 1.93%)
39. State of Sao Paulo Secured Loan (Brazil, 1925, 15m, 3.61%)
40. Republic of Chile (Chile, 1925, \$27.5m, 2.52%)
41. Mortgage Bank of Chile Guaranteed Agricultural Notes (Chile, 1926, \$10m, 2.37%)
42. Republic of Colombia (Colombia, 1928, \$35m, 3.92%)
43. Department of Caldas Secured Loan (Colombia, 1926, \$10m, 2.98%)
44. City of Baranquilla Secured Loan "C" (Colombia, 1926, \$0.5m, 5.04%)
45. Agricultural Mortgage Bank Guaranteed Loan (Colombia, 1927, \$3m, 3.50%)
46. Mortgage Bank of Colombia (Colombia, 1927, \$4m, 5.18%)
47. Republic of Uruguay (Uruguay, 1926, \$30m, 4.96%)
48. City of Brisbane (Australia, 1927, \$7.5, 5.46%)
49. City of Tokio (sic) (Japan, 1927, \$20.64m, 5.82%)
50. Toho Electric Power Corp. Ltd. First Mortgage "A" (Japan, 1927, \$15m, 7.57%)

Borrowing country, year of issue, face value of issue in millions (m) of dollars, and estimated internal rate of return appear in parentheses.

Table A3

List of Colonial and Foreign Government Sterling Bonds

Used In Rate Of Return Calculation

1. 1923 Sudan Govt 4 1/2% Guarant. Stk [R 1/1/73]
3,763,400 IP 93 LT 1 IRR 4.91 (4.97)*
2. 1923 Roumanian 4 % External Loan of 1922
[R 1980] 2,500,000; IP 67 LT 5 IRR 4.68
3. 1923 Rangoon (City of) 5 1/2% Debentures [R 1/9/53]
300,000 IP 98 1/2 LT 3 IRR 5.784
4. 1923 Union of South African Govt. 5% Inscribed Stk
[R 15/1/34] 13,000,000 IP 99 1/2; LT 2 IRR 8.14
5. 1923 South Australia Govt. 5% Registered Stk
[C 15/3/34] 5,650,300 IP 99; LT 2; IRR 5.08
6. 1924 Amsterdam (City of) 5 1/2% Strlng Loan 1924
[R 1/10/35] 2,500,000; IP 96 1/2; LT 4; IRR 6.13
7. 1924 Czechoslovak 8% Strlng Loan of 1922 (series B)
[R 31/12/60] 2,050,000; IP 96 1/2; LT 5; IRR 8.41
(8.49)*
8. 1924 (L) Greek Govt. 7% Refugee Loan of 1924
[Serviced] 10,000,000; IP 88; LT 5; IRR 2.76
9. 1925 (L) Danzig (Municipality) 7% Strlng Bonds of 1925
[R 1/8/76] 1,500,000; IP 90; LT 4; IRR 4.79 (6.32)*
10. 1925 South Africa (Union of) 5% Inscibd Stk
[R 10/10/41] 23,000,000; IP 99 1/2; LT 2; IRR 5.14
11. 1925 Gold Coast Govt. 4 1/2% Inscribed Stk
[R 1/1/56] 4,628,000; IP 94; LT 2; IRR 4.75
12. 1926 Chilean Govt. 6% Loan 1926
[R 1/2/78] 2,809,000 IP 94; LT 5 IRR 1.03 (2.70)*
13. 1926 New Zealand Govt. 5% Inscribed Stk 1946
[R 1/1/46] 12,893,925 IP 98 1/2; LT 2; IRR 5.01
14. 1926 Westphalia (Province) 7% Strlng loan of 1926
[R 15/7/71] 835,000 IP 98 1/2; LT 5; IRR 4.08
15. 1926 Hamburg (State of) 6% Strlng Bonds of 1926
[R 1/10/71] 2,000,000 IP 93 1/2 LT 5; IRR 2.89
(3.25)*

16. 1926 Newfoundland Govt. 5% Bonds 1951
[C 19/11/34] 1,027,300; 99; LT 2; IRR 5.218
17. 1927 Port Elizabeth Corp. 5% Redeemable Stk 1962
[R 30/6/62] 350,000; IP 99; LT 3; IRR 5.27
18. 1927 State of Rio de Janeiro 7% Strlng Bonds
[Serviced] 1,891,000; IP 97; LT 5; IRR 1.14
19. 1927 (L) Free City of Danzig 6 1/2% Twenty-Year Strlng
Bonds [R 1/8/76] 1,900,000; IP 91; LT 5; IRR 1.94
(4.05)*
20. 1927 City of Santos (Brazil) 7% Consolidated
Strlng loan [Serviced] 2,260,000; IP 97; LT 4
IRR 1.73
21. 1927 Govt. Commonwealth of Australia 5% Registered Stk
[C 1/5/45] 72,114,734; IP 97 1/2; LT 2; IRR 5.83
22. 1928 City of Wellington 5% Debentures
[R 1/3/50] 63,000; IP 98; LT 3; IRR 5.29
23. 1928 Govt. New Zealand 4 1/2% Inscribed Stk
[R 1/11/47] 11,224,998; IP 94 1/2; LT 2; IRR 4.91
24. 1928 Govt. Newfoundland 5% Bonds 1953
[C 19/11/34] 2,055,400; IP 100; LT 2; IRR 5.0
25. 1928 City of Cologne 6% 25-Year Strlng Bonds
[R 31/10/73] 1,150,000; IP 95 1/2; LT 4; IRR 2.35
(3.10)*
26. 1928 City of Munich 6% Strlng Bonds
[R 1/12/73] 1,625,000; IP 94; LT 4; IRR 1.77 (4.02)*
27. 1929 City of Abo (Finland) 30-Year 6 1/2%
Strlng Bonds [R 1/4/39] 500,000; IP 94 1/2; LT 4;
IRR 7.37
28. 1930 City of Hobart 6% Debentures 1940
[R 1/5/40] 85,000; IP 100; LT 3; IRR 6.19
29. 1930 Japanese Govt. 5 1/2% Conversion loan 1930
[R 1/1/70] 12,500,000; IP 90; LT 5; IRR 5.45 (5.83)*
30. 1930 Austrian Govt. International Loan 1930 7% Strlng
Bonds [R 1/7/79] 3,500,000; IP 95; LT 5; IRR 3.83
(4.05)*
31. 1930 City of Bloemfontein 5% Inscribed Stk 1960
[R 31/12/60] 500,000; IP 101; LT 3; IRR 4.92

Each loan is accompanied by the following information:

Date of issue

Title

Redemption date [R...] or date of conversion [C..] or still
being serviced [Serviced]

Total face value of issue in pounds sterling

Issue price IP (par value always 100)

Loan Type (LT)

(1) British Funds

(2) Dominion, Provincial and Colonial Govt. Securities

(3) Corporation Stocks- Dominion, Indian and Colonial

(4) Corporation Stocks-Foreign

(5) Foreign Stocks, Bonds, etc.

Internal rate of return, in %

* Repayments of principal outstanding can be undertaken by purchases at or under par or by drawings at par. The figure within brackets assumes annual repayments, of principle, are made at par. The other assumes repayments at market price, if less than par, otherwise at par.

Data Appendix

The macroeconomic data used in our cross-section analysis are drawn from a variety of sources. While problems of comparability between the statistics of different countries will be familiar to many readers, who are used to interpreting the results of international cross sections with special care, an additional cautionary word is in order. A number of the series used here, notably the national income accounts and price deflators, must be regarded as approximations. We have attempted therefore to maintain a provisional tone in interpreting the results. Major series are as follows.

National Income Gross domestic product is used wherever possible. For Europe estimates are drawn from Mitchell (1976). Data for South America can be found in CEPAL (1978) and for Central America in Thorp (1984). Constant price series for Latin America were adjusted to current prices using Wilkie (1974). The series for Japan is from Mitchell (1982) and for Australia from Butlin (1977).

Balance of Trade Special trade, which excludes gold and silver bullion and specie. The value of imports and exports for the majority of European countries is from Mitchell (1976). For Austria, Hungary, Czechoslovakia, Poland, Latin America, Australia and Japan, figures are from the League of Nations publications on trade and payments listed at the end of this appendix.

Terms of Trade Import unit values divided by export unit values, normalized to 1929=100 and drawn from sources described above.

Population From League of Nations Statistical Yearbooks.

Central Government Revenue and Expenditure For Europe, from Mitchell (1976). For other countries, from League of Nations Statistical Yearbooks.

Exchange Rates From League of Nations Statistical Yearbooks. Where both market rates and official rates were reported, market rates were used. For Spain, the Burgos rate was used because it exhibited more variability than the Madrid rate.

Prices Few reliable consumer price indices are available for this period. The wholesale price index was used where available while composite price indices were used for certain Latin American countries. These indices are drawn from League of Nations Statistical Yearbooks, except for Central America, data for which is from Thorp (1984).

Money Supply and Gold The only comparable monetary measure is total central bank note (and, where available, coin) circulation, from Mitchell (1976), except for Austria, Hungary, Czechoslovakia, Poland, Latin America, Australia and Japan, in which cases it is drawn from League of Nations Statistical Yearbooks. Gold reserves are drawn from these same sources.

Debt and Debt Service Domestic and external debt, along with total and, where available, external debt service (interest plus amortization) were drawn from League of Nations Statistical Yearbooks. These are end-of-year figures. Where Statistical Yearbooks provide no information, data are drawn from the League's Memoranda on Public Finance.

Default and Arrears Data on these variables are found, for sterling bonds, in the Reports of the Council of the Corporation of Foreign Bondholders and, for dollar bonds, in the Annual Reports of the Foreign Bondholders Protective Council.

The following countries were included in the cross-section analysis of borrowing: Hungary, Czechoslovakia, Poland, Brazil, Colombia, Mexico, Australia, Japan, Honduras, Ecuador, Bulgaria, Denmark, Finland, Germany, Greece, Italy, the Netherlands, Norway, Spain, Sweden, Guatemala, and El Salvador.

The following countries were included in the cross-section analysis of default: Austria, Hungary, Czechoslovakia, Argentina, Brazil, Colombia, Mexico, Australia, Japan, Chile, Bulgaria, Denmark, Finland, Germany, Greece, Italy, the Netherlands, Norway, Spain, Sweden, Costa Rica, and El Salvador.

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Footnotes

1. 65.1% to be exact. These figures are from Lewis (1945), pp. 48-50. Note that foreign investment in the U.S. and U.K. has not been netted out from the totals. Since the ratio of long-term liabilities to assets was 61% for the U.S. but only 5% for the U.K., netting out inward investment would change the picture somewhat for the U.S. but not the U.K. While these statistics are the best available, they are not without their limitations. The most serious is the omission of short-term lending, on which adequate information is not available. Although Lewis (1945, p.7) warns that some direct investments may simply have been missed in compiling the totals, a more serious source of bias is likely to be the fact that bonds are valued at par. This is problematic for bonds in default which traded at a considerable discount. On the other hand, the market value of many direct investments was considerably above book value in 1938. For Britain at least, Lewis suggests, the two sources of error roughly cancel out.

2. These traditional figures have been criticized by Platt (1984) for making unduly conservative assumptions about the repatriation of foreign funds and hence for overestimating the value of outstanding stocks. But if the required adjustments would moderate the apparent dominance of overseas assets in British portfolios, they would still fail to alter the picture of Britain's prewar dominance in international capital markets.

3. Long-term assets only, from Lewis (1945), are included in the numerator, while Feinstein's (1972) estimate of GNP at market prices comprises the denominator.

4. In the case of nongovernmental lending, just over half the total took the form of bonds and slightly under half the form of shares. These figures from Royal Institute (1937) are based on calculations by Robert Kindersley, published annually in the Economic Journal.

5. The Colonial Stock Act enabled certain trusts to invest in the bonds of colonial but not foreign governments. If a trust was not governed by specific instructions about assets in which to invest, statute limited foreign investments to East India stock, English corporations with direct foreign investments, guaranteed Indian railways, and registered and inscribed stocks of colonial governments. The importance of these restrictions has been questioned on the grounds that the vast majority of trusts were in fact governed by specific instructions and defended on the grounds that in the 1920s foreign governments and municipalities which attempted to borrow in London were forced to pay at least 1 1/2% and up to 2 1/2% more than comparable entities within the Empire. See Edelstein (1981), p.83.

6. Foreign asset estimates are those of Lewis (1945), while GNP is from U.S. Department of Commerce (1976). If Dunn's (1926, p.3) estimates of foreign assets are preferred, the ratio is still lower.

7. For information on the composition of U.S. portfolio investment circa 1930, see Royal Institute (1937), p.189.

8. Considerations other than proximity also influenced the international distribution of American loans. Before the War, for example, investment in the West Indies and northern portions of Latin America was actively promoted by the State Department as a way of minimizing European financial influence in the region. See Angell (1933).

9. This "cross-over point," after which the debt-service obligations of foreign borrowers exceed the value of new lending, is given considerable emphasis in recent accounts of sovereign borrowing in the 1980s. According to Kaletsky (1985, Table 2.1), the recent cross-over point was 1982-83. Note that the reason the gross outflow in Table 1 appears to turn negative in 1937 and 1940 is that American direct foreign investment is included on a net basis, since these are the only estimates available.

10. Of course, the two explanations for the stagnation of British capital exports are not incompatible, since restrictions on capital exports were imposed largely to strengthen the exchange rate and ease the transition back to the prewar parity. See Moggridge (1971). Short descriptions of these regulations and their changing nature are provided by Richardson (1936) and Cairncross and Eichengreen (1983).

11. Her liabilities were split approximately 60-40 between the U.S. and U.K. and between portfolio and direct investment. See Lewis (1945).
12. These data are described in the appendix.
13. Eaton and Gersovitz (1981), p.302.
14. Before dismissing Edwards's hypothesis, one should note the possibility that gold stocks are an inadequate measure of reserves.
15. This 40% figure refers to consumption of nine major commodities. See Lewis (1949), p.57. While the share of imports in GNP was not high by modern standards, the sheer size of the American economy still permitted changes in an import share which was low on average to affect world markets powerfully on the margin. See the discussion in Dornbusch and Fischer (1984).
16. Industrial production figures are from Tinbergen (1934), while GDP estimates are those reported in U.S. Department of Commerce (1976).
17. Taylor and Taylor (1943), pp. 10-12.
18. These figures overstate the change in the terms of trade, since U.S. wholesale prices were falling as well (by 9% on average between 1929 and 1930, according to Tinbergen (1934), p.212).
19. These are the calculations of Summers and Delong (1984), p.53.

20. See for example the well-known studies of Feder and Just (1977) and Feder, Just and Ross (1981). The debt-capacity literature is surveyed by McDonald (1982). A recent discussion of the costs and benefits of default from the policymaker's perspective is provided by Diaz-Alejandro (1984).

21. For details, see the Foreign Bondholders Protective Council's Annual Report for 1934.

22. The two notable instances of repudiation in this period are a partial repudiation by the Mexican government in 1914 and the Soviet government's repudiation of debt contracted by the Czarist and Kerensky regimes.

23. These two denominations of debt comprise the very great majority of the total. Only dollar- and sterling-denominated debt are considered because, while the Foreign Bondholders Protective Council provides information on the former and the British Corporation of Foreign Bondholders on the latter, information on the status of debt denominated in other currencies is much more difficult to obtain. Details on these data can be found in the Data Appendix.

24. The two-limit probit model is a generalization of the Tobit model to the case where the data is censored at both tails. Rosett and Nelson (1975) provide a description of the estimator.

25. Estimates based on data for individual years are entirely consistent with the pooled time-series cross-section results discussed in the text, although statistically less well defined, due presumably to limited degrees of freedom.

26. For further discussion of Australian policy toward gold reserves in this period, see Eichengreen (1985). Another possible explanation for the sign of the monetary variable is simultaneity bias - that countries which defaulted then capitalized on the opportunity to promote recovery via monetary expansion. However, most of the movement in this variable takes place before the second half of 1931, when the serious defaults began. Moreover, replacing this variable with the gold/currency ratio over the period 1928-30 does not alter the result.

27. To maintain their good reputations, the issuing houses supposedly had an interest in insuring that the prospectus contained accurate information. Committee on Finance and Industry (1931), paragraph 387.

28. "These agents for the first time taught the small investor in a hundred small provincial towns, and in the countryside of the Middle and Far West, to link their fortunes with those of the Governments and enterprises of distant lands whose very names he often scarcely knew. It was an astonishing achievement of modern organisation, and for its first purpose of inducing the investor to lend his money, and making this money available in the continents which most needed capital, it was extremely successful. But, as we shall see, at the other end of the operation, namely the examination of the character and purposes of the

loan, the capacity of the borrower and the likelihood of his using the money productively, the methods adopted were less satisfactory. There was too much competition and too little caution." Salter (1933), pp.99-100. Compare the anecdotal accounts of lending in the 1980s reported in Darity (1985).

29. Similarly, 80 to 90% of dollar bond purchasers in the 1920s took no more than \$5000, with 45 to 65% of the total value of an issue typically taken by this category of buyer. These amounts need to be multiplied by six to express them in mid-1980s prices. The figures reported are based mainly on a survey of 24 representative American bond houses conducted in 1924-26. See Morrow (1927) for details. Estimates of the average value of holdings of Chilean bonds are from the Annual Report for 1935 of the Council of Foreign Bondholders, p.99.

30. In the 1970s, this situation was altered. The U.S. Foreign Sovereign Immunities Act of 1976 and the U.K. State Immunity Act of 1978 distinguished a nation's commercial activities from its acts as a sovereign power. This legislation established the legal liability of foreign governments for purely commercial acts and permitted such governments to waive their immunities from litigation. The effect of these acts has, however, been questioned. See Kaletsky (1985), chapter 4. Even in the 1920s, the situation was different for loans to nongovernmental entities. Loan contracts for private foreign bond issues were nominally subject to the laws of place of performance, not those of foreign debtor. Disputes over private loans floated in New York or London were therefore heard in American or British courts.

Thus, when in 1934 two German shipping companies contended that they were precluded from complying with the terms of their loan contracts by German exchange control, the U.S. District Court in New York ruled that "...As the contracts were made here and were to be performed here, the German law relative to performance is of no legal significance in the courts of this country." Madden et al. (1937), p.282. However, such jurisdiction as American or British courts claimed over foreign private debtors was usually of little significance. In practice, creditors could use a legal decision to obtain satisfaction only if the defendant had attachable assets abroad. Not surprisingly, the notable instances where arrears were paid in full or an acceptable readjustment plan was offered involved shipping companies, like those cited above, with attachable assets anchored in American ports.

31. See Securities and Exchange Commission (1936), vol. IV, pp. 28-29.

32. Securities and Exchange Commission (1936), vol. IV, p.25. This new restraint was ascribed to the adoption of a more balanced attitude by the major powers. Royal Institute (1937), p.99. A more pragmatic interpretation is that, however effective against an isolated debtor, gunboat diplomacy was an impractical response to (geographically) widespread default.

33. See Harris (1935).

34. Madden et al. (1937), pp. 267-268.

35. The treatment of these bondholders is described in the Fifth Annual Report of the Bank for International Settlements. On State Department protests, see Securities and Exchange Commission (1936), vol IV, p.24. Whether American restraint is attributable to principle or to the fact that the U.S. ran trade deficits against few of the defaulting nations (Brazil, Colombia and Cuba being the notable exceptions), U.S. policy of delinking the trade and debt issues clearly influenced the course of negotiations. In its negotiations with Colombia, for example, the bondholders' representatives threatened that failure to settle would cause the adoption of increased tariffs on Colombia coffee. (See the 1934 Annual Report of the Foreign Bondholders Protective Council, p.95.) Knowing U.S. policy, the Colombians appear to have discounted the threat. As Colombian President Lopez put it, "this threat does not modify in any way the intent of the Colombian Government to study quietly the best plan to meet the external obligations of the Republic..." Securities and Exchange Commission (1936), vol. IV, pp. 378-379.

36. See also Sachs (1983).

37. U.S. Senate (1932), vol. II, pp. 749-750.

38. U.S. Senate (1932), vol. II, pp. 288-289.

39. Jenks (1927), pp. 288-289.

40. There had been two notable attempts to form central protective agencies in the United States: the nonprofit Latin American Bondholders Association incorporated in New York in 1931, which failed after managing to secure only \$515 in membership fees, and the for-profit American Council of Foreign Bondholders, which was only slightly more successful in attracting subscribers.

41. Madden et al. speculate that inclusion of Canadian dollar bonds would reduce somewhat the average yields shown in the table. According to U.S. Department of Commerce (1932), p.14, the average annual yield offered on new Canadian issues floated in the U.S. ranged from 7.03 in 1920 to 4.19 in 1931, and averaged 5.32 over the period.

42. American loan contracts, both domestic and foreign, typically contained provisions which specified repayment in terms of "gold dollars of the standard weight and fineness." When Roosevelt issued an Executive Order in June 1933 abrogating the gold clause provisions of all U.S. government bonds, setting the stage for the devaluation of the dollar, questions arose about the treatment of analogous clauses in other bond contracts. In following months, many foreign debtors chose to continue to honor the gold clauses in their liabilities. Most, however, quickly followed the American government's lead, making payment in depreciated dollars. In this they were encouraged by the attitude of the American Executive itself. Creditors whose assets contained gold clauses were characterized by the U.S. Attorney General as "a privileged class...squatters in the public domain, and when the Government needs the territory they must move on." (Cited in Feuerlein

and Hannan, 1941, p.23.) Various steps were taken to relieve domestic debtors, principally farmers, of the obligation to make repayment in gold. Most foreign debtors took this as justification for their decisions to make payment in current dollars.

43. Dominick and Dominick (1924-1937).

44. Issues of the Stock Exchange Yearbook were supplemented as necessary by the Stock Exchange Daily Official List.

45. In the calculations to follow, the return on individual issues is weighted by the value of the loan. To adjust for stratification, we doubled the weight on each Australian issue included in the final sample of sterling loans.

46. Most of the bonds in the sample sold at considerable discounts and were expected to yield capital gains when redeemed at par. The most dramatic case is the German United Industrial Corporation's Hydro-Electric First Mortgage, a 20 year bond which sold at 84.5 per cent of par due to its relatively low 6 per cent coupon.

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