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Are Sovereign Debt Secondary Market Returns Sensitive to Macroeconomic Fundamentals? - Evidence from the Contemporary and Interwar Markets -

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Abstract

The insensitivity of sovereign loan secondary market returns to macroeconomic fundamentals has been attributed to market illiquidity and the absence of publicly reported transactional prices. During the 1920s and 1930s sovereign bonds were traded in an active market and weekly transactional prices were publicly available. This paper shows that price changes from both eras are insensitive to unexpected changes in key external and country-specific macroeconomic aggregates, but that returns are moved by individual agent announcements that presage changes in future lending. The results, which contrast with studies of U.S. equities, indicate that the sovereignty of the issuer matters more than the type of debt contract.

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Summary

Illiquidity in the secondary market for sovereign loans and the absence of prices for individual securities imply a possible wedge between debt appraisals by investors and reported prices. These factors could account for market returns being insensitive to macroeconomic news about individual debtors and the world economy. The present market contrasts with that of the 1920s and 1930s, when sovereign bond contracts were traded on an active secondary market and transaction prices were reported weekly.

Comparison of the impact of economic news on market returns from the contemporary and interwar eras suggests that the unresponsiveness of returns in the contemporary sovereign loan market to macroeconomic fundamentals is not an artifact of market imperfection. Sovereign debt returns during both periods were generally not sensitive to unexpected changes in key external macroeconomic aggregates, such as U.S. interest rates and inflation. Nor did unexpected changes in country-specific trade and reserve indicators move returns during either era.

In contrast, returns from both markets responded to announcements of decisions by individual agents that influence changes in expected future lending.

The results of this paper contrast with those of equity return studies based on the same methodology. The results provide evidence that the unique characteristics of sovereign securities make returns on these obligations less sensitive to observable macroeconomic indicators. Similarities between the interwar bond and contemporary loan markets suggest that the sovereignty of the issuer matters more than the form of the contract.

I. Introduction

Sovereign debt secondary market prices have been used to evaluate the costs and benefits of the debt restructuring proposals of Sachs (1990) and Robinson (1988), and are being employed as indicators of debt values in several of the individual country schemes being implemented under the umbrella of the Brady Plan. These applications of foreign loan market prices are based on the assumption that they are reliable indicators of debt values. However, if market imperfections drive a wedge between investor debt appraisals and reported prices, then the valuations of debt restructurings based on market quotes may not be capturing investor expectations.

Evidence suggests that changes in sovereign debt market values are not sensitive to macroeconomic news about individual debtors and the world economy. 1/ This may be a consequence of the low number of market transactions, and the absence of publicly reported price series for individual securities--the indicative country prices reported by dealers encompass a variety of contracts. Alternatively, the insensitivity of changes in government debt values to macroeconomic aggregates may simply be a characteristic of any portfolio of sovereign securities.

This paper examines whether the unresponsiveness of sovereign debt returns to macroeconomic fundamentals is an artifact of market imperfections by comparing the secondary markets of the 1980s with that of the interwar period, 2/ when sovereign debt contracts were traded on an active secondary market, and transaction prices were reported on a weekly basis.

We estimate the sensitivity of contemporary and interwar market returns to three classes of economic news: unexpected changes in worldwide economic aggregates, unexpected changes in country-specific balance of payment indicators, and announcements of major decisions by individual agents. The results indicate that sovereign debt returns do not respond strongly to unexpected changes in key economic aggregates external to the borrower.

1/ See World Bank (various issues) for comprehensive qualitative analyses of the sovereign debt secondary market, and Stone (1990), which presents a more detailed econometric analysis of the contemporary market than that of this study.

2/ The foreign debt crises of the 1930s and 1980s have much in common. Exogenous events--the Dawes loan of 1924 and the recycling of petrodollars in the 1970s--induced a wave of lending to sovereigns who, in many cases, did not use the funds to enhance debt-servicing capacity. In both episodes a worldwide economic downturn reduced the foreign exchange earnings of debtor countries and ultimately led to a lending cutoff and widespread debt repayment interruption. Contracts formed during the 1920s were settled over a long period of time, in some cases not until the 1950s. Fishlow (1985) compares sovereign debt repayment problems of different eras, and Lindert and Morton (1987) and Eichengreen and Portes (1986) analyze the interwar era.

Innovations in observable and widely understood country balance of payment indicators, which according to economic theory determine the debt payment capacity of a country, do not move market returns for the debt of most countries. However, debt prices respond to announcements of third party decisions that are associated with changes in expected future lending.

Similarities between the estimated return generating process for each market provides further support for inferences regarding the contemporary secondary debt market, and, in comparison to studies of equity returns, 1/ provides evidence concerning the disparate impacts of macroeconomic fundamentals on sovereign debt and corporate equity returns. 2/

The next section describes the interwar and contemporary secondary sovereign debt markets and the price sets used in the analysis. The theoretical framework, the arbitrage pricing theory, is presented in section III. The first empirical task--estimating the sensitivity of sovereign debt returns during the two eras to innovations in pervasive factors--is taken up in the next section. The model is extended in section V to control for the impact of unexpected changes in country-specific indicators on debt returns. The effect of key policy announcements are presented in section VI. The concluding section compares secondary bond markets during the two eras, contrasts the impact of economic news on sovereign and corporate obligations, and discusses the implications of the results for the increased use of bond financing by LDCs.

II. Secondary Sovereign Debt Markets

1. The contemporary secondary sovereign debt market

The contemporary secondary sovereign debt market emerged in 1983, primarily in order to facilitate bank loan swaps undertaken to concentrate portfolio exposure in preferred countries (Vatnick, 1987; Alexander and Kawash, 1988). Trading volume rose from $4 billion in 1986 to $12 billion the following year as more countries implemented debt conversion schemes. Large scale commercial bank selloffs in 1988 contributed to a quadrupling of volume to $50 billion in 1988. Trading in the obligations of Argentina, Brazil, Chile, and Colombia accounted for most of the volume. Most transactions were in the form of informal conversions, debt repurchases, and prepayments at a discount (World Bank, various issues).

In addition to portfolio realignment and debt conversion, trades are motivated by tax considerations; for example, a profitable commercial bank can reduce tax liabilities by writing down LDC debt. The secondary market

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1/ For example see Chen, Roll, and Ross (1986) and McElroy and Burmeister (1988).

2/ See Eaton and Gersovitz (1981) and Bulow and Rogoff (1987) for two views of sovereign debt contracts.

has also been used by debtor countries to buy back debt. Trading is dominated by a small number of New York and London brokers, who match buyers and sellers and trade for their own accounts.

The returns used in the analysis are defined as month-over-month changes in the average of dealer bid and ask price quotes. According to the World Bank (1988), "The prices quoted by market participants are benchmark prices and refer to the most often traded debt", implying that contemporary sovereign debt prices may be a less accurate measure of the expected discounted value of payment streams compared with transaction prices reported from more liquid markets.

The 21 return series used in this study include all but three of the countries that traded continuously over the March 1986 (when quotes were first reported) to October 1989 interval. 1/ 2/ The summary statistics shown in Chart 1 indicate two major breaks in the unweighted market index: in the early summer of 1987, after the loan loss provisioning decision of Citicorp, and in the spring of 1989, when a greater degree of third party involvement was announced.

The different price behavior for the obligations of debtor countries is shown in Table 1. The average inter-bond correlation (defined as the average of the 420 independent off-diagonal elements of the correlation matrix of bond prices) is 0.68, and there is surprisingly little evidence of regional patterns.

2. The interwar secondary sovereign bond market

An active foreign government bond secondary market was centered at the New York Stock Exchange during the 1920s and 1930s. The number of foreign government issues listed by the Commercial & Financial Chronicle (CFC), a financial weekly published in New York, rose from 127 in January 1929 to 249 by year end 1930. The number of transactions per week ranged up to 1,000 bonds sold, with a median of approximately 75.

The 1926 to 1935 sample interval was chosen to provide inferences regarding returns before and after the onset of debt payment interruption in

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1/ Debt for Côte d'Ivoire, Nicaragua and Senegal were not included in the data set because of the limited number of transactions and the lack of available macroeconomic data.

2/ Monthly price series were obtained by first converting the irregularly dated price series to a daily frequency (based on the midpoints of actual reporting intervals), then averaging the daily series to monthly. Returns are calculated as simple monthly price changes. According to Lessard "Debt rescheduling has effectively transformed the obligations of most LDCs into perpetuities." (Lessard, 1988, p. 7). This paper follows Vatnick (1987) and others in viewing sovereign LDC loan claims as perpetuities.

Table 1

SECONDARY SOVEREIGN DEBT MARKET PRICES AND RETURNS

MARCH, 1986 TO OCTOBER, 1989

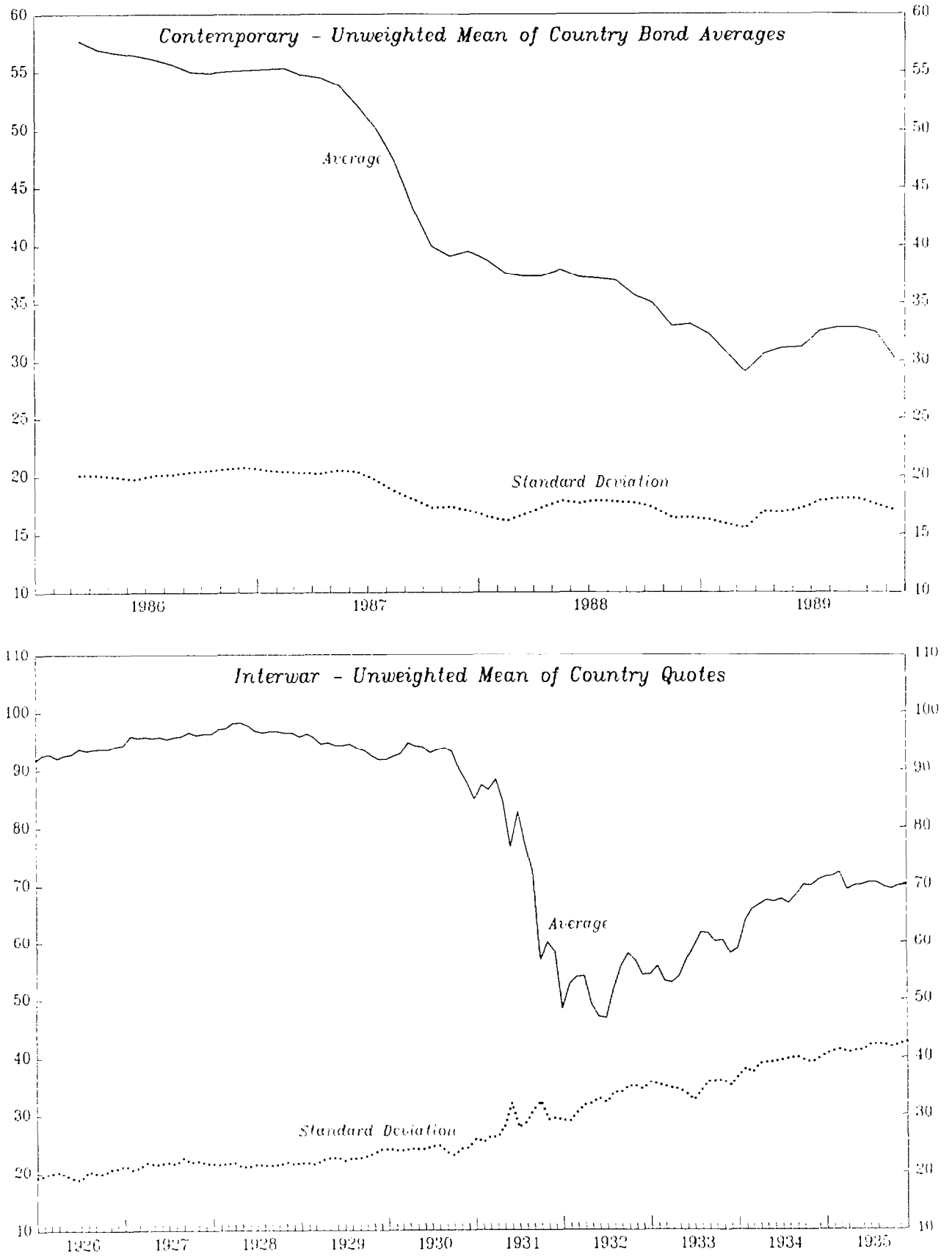
SUMMARY STATISTICS

	PRICES			RETURNS[1]		
	Avg	Min	Max	St Dv	Min	Max
AFRICA[2]	37.5	7.3	51.2	0.0280	-0.1030	0.0280
Morocco	57.5	42.3	71.5	0.0253	-0.0873	0.0277
Nigeria	32.1	21.0	57.5	0.0675	-0.2731	0.1229
Zaire	22.8	18.6	28.5	0.0519	-0.1315	0.1736
CENTRAL AMERICA[2]	36.8	23.7	53.3	0.0260	-0.0830	0.0530
Costa Rica	25.3	12.0	54.0	0.0706	-0.2290	0.1194
Dominican Republic	31.9	16.5	46.0	0.0607	-0.2509	0.1119
Honduras	29.7	10.5	41.5	0.1282	-0.3855	0.6154
Jamaica	41.9	34.5	47.5	0.0395	-0.1285	0.1270
Mexico	50.4	36.0	60.6	0.0457	-0.1031	0.1149
Panama	41.5	10.4	71.3	0.0842	-0.2482	0.1849
SOUTH AMERICA[2]	45.0	29.7	59.3	0.0349	-0.0970	0.0730
Argentina	39.0	13.6	67.0	0.0860	-0.1612	0.3181
Bolivia	10.1	6.9	13.0	0.0684	-0.1559	0.2537
Brazil	52.3	26.3	76.0	0.0784	-0.1860	0.2325
Chile	62.9	52.1	70.8	0.0379	-0.1054	0.0924
Colombia	72.1	50.5	86.5	0.0343	-0.1152	0.0877
Ecuador	37.5	11.1	66.3	0.0794	-0.2038	0.1592
Peru	10.8	3.7	21.0	0.1078	-0.3924	0.2534
Uruguay	63.0	55.3	74.6	0.0197	-0.0589	0.0490
Venezuela	57.5	32.2	77.7	0.0550	-0.1297	0.1630
EUROPE[2]	51.0	38.5	67.9	0.0281	-0.1080	0.0648
Poland	41.2	33.0	52.1	0.0376	-0.1100	0.1408
Yugoslavia	60.8	43.9	83.7	0.0377	-0.1572	0.0677
Philippines	57.5	38.2	73.5	0.0515	-0.1249	0.2020

1 - Return interval is April 1986 to October 1989

2 - Unweighted regional averages

Chart 1. Indices of Sovereign Debt Secondary Market Prices



January 1931. 1/ The bottom panel of Chart 1 displays the weakening of the sovereign bond market in early 1929, perhaps as a result of investor substitution toward the surging U.S. equity market. 2/ Average bond prices recovered in early 1930, implying that the U.S. stock market crash of October 1929 did not immediately impact sovereign bond values. The deterioration of world trade and rush toward liquidity in late 1930 contributed to the beginning of the bond market collapse. Widespread defaults beginning in Latin America in 1931 3/ further reduced the average market price, which, because many currency currencies were tied to sterling, was brought to its nadir by the abandonment of the gold-exchange standard by the United Kingdom in September 1931. The price of several bonds (Mexico, Greece, Belgium) dropped to the single digits, and market volatility increased sharply.

The shift in aggregate bond price and return movements after the onset of defaults suggests that a structural change occurred in early 1931. The different behavior of secondary market prices and returns 4/ over the five- year sub-intervals is shown in Table 2. Note that in every case return volatility increased over the post-default regime compared to the prior five-year period.

The data exhibit another interesting break: average inter-bond price correlation rose from 0.23 over the 1926 to 1930 interval to 0.54 during the subsequent five years. Thus prices exhibited both greater variance after the beginning of debt payment interruptions, and market returns converged. The degree to which these intercorrelations are accounted for by unexpected changes in external aggregates that impact all debtors is examined in the arbitrage pricing theory model framework, which is presented next.

1/ Of the 63 bonds that traded continuously over the ten-year sample period, the obligations of nine countries without macroeconomic data were excluded, as were several issues of countries that issued a large number of individual bonds. The 39 sample bonds, issued by 21 countries, turn out to be a fairly representative sample of issues in the world market: they include the four most highly indebted countries at year-end 1930 (Lindert and Morton, 1987, Table 1), and are drawn from five continents. Twenty of the twenty-eight countries most indebted to the United States (Lewis, 1938, Appendix E, Table 5) are included. Payments on four of the European issues and eight of the Latin American bonds were interrupted prior to maturity (Moody's, 1931 and 1936).

2/ The Standard and Poors index of ninety common stocks rose from 184 in January 1929 to 254 by early September (Department of Commerce, 1929).

3/ Bolivia was the first to default in January, 1931 (Moody's, 1932).

4/ Bond returns are defined as $(P_t+C_t-P_{t-1})/P_{t-1}$ where P_t denotes price and C_t denotes coupon payments in period t.

Table 2

Interwar Sovereign Debt Secondary Market Descriptive Statistics

		January 1926 - December 1931						January 1931 - December 1935					
		PRICES			RETURNS			PRICES			RETURNS		
		Avg	Min	Max	St Dev	Min	Max	Avg	Min	Max	St Dev	Min	Max
Mexico	*4s of 1904*	97.6	75.0	101.0	0.1297	-0.3633	0.2650	51.3	21.3	87.5	0.3932	-0.8238	1.7727
Argentina	*6s of 1925*	102.5	100.8	105.3	0.0110	-0.0343	0.0318	95.4	68.0	107.0	0.1054	-0.2782	0.2634
	6s of 1925	20.7	9.5	30.5	0.0114	-0.0346	0.0300	4.7	1.6	9.3	0.1079	-0.2920	0.2205
	6s of 1920	109.9	90.3	115.4	0.0152	-0.0462	0.0622	94.2	55.5	110.7	0.1382	-0.3345	0.3802
Brazil	*8s of 1921*	103.0	77.5	108.5	0.0285	-0.1550	0.0758	87.0	39.8	110.0	0.2241	-0.4676	0.7625
	8s of 1922	102.2	76.0	107.4	0.0353	-0.1541	0.0586	25.5	10.0	84.5	0.1998	-0.5119	0.5900
	8s of 1921	107.5	67.0	119.0	0.0165	-0.0458	0.0517	25.5	9.7	92.0	0.1958	-0.4783	0.9485
	8s of 1925	103.1	85.0	107.5	0.0353	-0.1437	0.1164	34.9	19.9	92.0	0.2578	-0.6115	1.2037
Chile	*6s of 1925*	94.9	77.0	101.8	0.0209	-0.1043	0.0600	35.7	14.8	92.3	0.2801	-0.4500	1.4500
Uruguay	*8s of 1921*	98.6	91.1	100.4	0.0241	-0.0861	0.1171	69.5	37.1	98.3	0.1598	-0.3617	0.6930
	7s of 1922	98.9	91.4	101.3	0.0193	-0.0821	0.0276	69.5	36.3	98.3	0.1981	-0.4340	0.4700
Austria	*7s of 1923*	108.1	100.6	115.0	0.0120	-0.0309	0.0445	97.7	76.5	110.3	0.0519	-0.1729	0.1537
Belgium	*6s of 1924*	97.8	90.0	105.5	0.0133	-0.0236	0.0497	62.8	39.0	94.0	0.0357	-0.1260	0.1028
	6s of 1925	99.2	91.9	102.0	0.0126	-0.0198	0.0484	83.5	44.9	102.0	0.0328	-0.0698	0.1204
	7s of 1925	22.6	10.4	34.2	0.0117	-0.0244	0.0423	5.3	2.1	12.1	0.0317	-0.1072	0.0820
Czechoslovakia	*8s of 1922*	101.0	96.8	103.0	0.0115	-0.0362	0.0560	89.6	60.0	104.0	0.0560	-0.1912	0.1223
	8s of 1924	104.4	102.3	109.7	0.0103	-0.0285	0.0351	107.9	81.8	138.6	0.0590	-0.2265	0.1510
Finland	*6s of 1923*	101.7	66.5	108.8	0.0225	-0.0638	0.0712	24.3	10.5	77.0	0.0866	-0.3141	0.2710
	6s of 1924	95.4	73.0	100.1	0.0186	-0.0669	0.0535	37.7	17.0	87.8	0.0739	-0.1990	0.2980
France	*7s of 1921*	100.9	78.0	107.8	0.0153	-0.0271	0.0578	25.6	9.0	90.8	0.0286	-0.0784	0.0835
	7s of 1924	98.9	46.0	106.3	0.0153	-0.0277	0.0528	10.8	3.6	47.0	0.0276	-0.0604	0.0803
Germany	*6s of 1925*	103.8	73.0	113.0	0.0233	-0.0881	0.0628	33.5	15.4	89.5	0.1657	-0.3804	0.5046
	7s of 1925	107.8	90.0	113.0	0.0125	-0.0402	0.0282	57.8	22.0	105.1	0.1258	-0.3896	0.2808
Great Britain	*5s of 1917*	93.4	85.8	99.4	0.0059	-0.0107	0.0230	81.3	41.1	107.5	0.0270	-0.0899	0.1098
Greece	*7s of 1924*	95.7	88.5	100.3	0.0152	-0.0298	0.0558	78.5	43.6	100.9	0.1889	-0.4649	0.8800
Holland	*6s of 1924*	112.9	95.3	125.6	0.0101	-0.0407	0.0448	147.0	111.5	189.4	0.0605	-0.1155	0.1984
Hungary	*7s of 1924*	104.5	101.8	106.5	0.0252	-0.1018	0.1161	109.1	93.3	123.0	0.1671	-0.5464	0.5156
Italy	*7s of 1925*	95.8	85.0	102.6	0.0157	-0.0479	0.0450	42.7	12.5	101.5	0.0549	-0.1964	0.1099
Norway	*6s of 1922*	98.6	94.0	101.5	0.0068	-0.0107	0.0195	78.3	56.5	95.0	0.0455	-0.1657	0.1348
	6s of 1924	100.4	89.0	104.5	0.0208	-0.0762	0.1214	46.0	17.9	101.3	0.0495	-0.1215	0.1811
	6s of 1925	100.9	93.8	105.3	0.0123	-0.0486	0.0386	85.7	48.0	107.0	0.0652	-0.2749	0.2304
Poland	*6s of 1920*	22.0	8.5	34.1	0.0296	-0.0532	0.1061	5.2	1.6	15.3	0.0804	-0.3083	0.3478
	8s of 1925	100.4	78.1	104.0	0.0336	-0.0859	0.1331	35.9	7.0	90.0	0.0872	-0.3674	0.2983
Canada	*5s of 1922*	100.2	96.0	103.0	0.0078	-0.0172	0.0210	90.6	65.5	103.3	0.0286	-0.1078	0.0866
Australia	*5s of 1925*	102.8	89.9	109.5	0.0255	-0.1254	0.0725	100.3	84.5	110.7	0.0878	-0.3219	0.3556
	7s of 1921	97.6	83.1	104.8	0.0243	-0.1040	0.0972	97.2	81.0	108.8	0.0848	-0.2428	0.2895
	6s of 1922	106.0	92.5	114.6	0.0267	-0.1675	0.0410	105.5	92.5	118.6	0.1143	-0.4128	0.5069
Japan	*6s of 1924*	100.9	90.0	103.0	0.0088	-0.0153	0.0277	91.9	82.5	100.3	0.0599	-0.1544	0.2172
	5s of 1912	102.5	100.0	105.4	0.0332	-0.1086	0.1828	95.2	68.0	106.8	0.0826	-0.2996	0.2004

III. External Shocks and Sovereign Debt Returns

The arbitrage pricing theory has been used extensively to test whether returns on groups of securities, usually U.S. equities, are sensitive to innovations in a small number of economic fundamentals, or factors. A brief review of the arbitrage pricing theory is presented next, which is followed by a description of the factors and presentation of the empirical tests of the responsiveness of sovereign debt returns to the factors.

1. The arbitrage pricing theory

The arbitrage pricing theory 1/ begins with the assumption that investors agree the asset return generating process obeys

$$r_{it} = E_i + b_i F_t + \epsilon_{it} \qquad (1)$$

$$i = 1,\ldots,n \quad t = 1,\ldots,T$$

where r_{it} is the return on asset i, E_i is expected asset return, b_i is a k row vector of return factor sensitivity parameters, F is a k element column vector of mean zero factors, ϵ_{it} is a disturbance term, and n and T are the numbers of assets and time periods. 2/ The factors are the source of systematic risk while ϵ_{it} captures non-systematic risk, and b_i measures the sensitivity of the return on asset i to the factors. Factors are defined here as innovations in important macroeconomic aggregates that impact all returns to some degree. The theory does not provide a structural explanation for the return generating process (1).

According to the arbitrage pricing theory, if risk-averse investors maximize utility in a frictionless market, security-specific risk will be diversified away and the expected security returns will be an approximate linear function of the riskless rate p 3/ and a k-dimensional vector of factor risk premia τ

$$E_i = p_t + b_i \tau. \qquad (2)$$

1/ The arbitrage pricing theory was developed in Ross (1977). See also Connor (1984).

2/ The distributional assumptions are that the elements of ϵ and F have zero expected value (all expectations are conditional on information at the beginning of the period) and are contemporaneously correlated but independent over time, and the expectation of ϵ conditional on F is zero.

3/ The riskless rate is defined as the one month holding period return for a one-bill portfolio that is the shortest term bill not less than 31 days in maturity. The source is Ibbotson and Associates (1990).

The risk premium τ_j is the excess return (over p) per unit of factor j risk. 1/

Substitute (2) into (1) to derive the empirically testable relationship

$$R_{it} = b_i\tau + b_iF_t + \epsilon_{it} \qquad (3)$$

where R_{it} is defined as r_{it}-p_t. Each of these n equations includes the factor matrix F_t, and each is nonlinear in τ. The disturbances terms are assumed to be serially independent and correlated between securities within the same time period. Given this theoretical and distributional structure, equation (3) can be estimated as a non-linear seemingly unrelated regression (NLSUR) system with cross-equation restrictions. The restrictions are that the k τ_j's have the same value in each of the n equations. This approach was first used by McElroy and Burmeister (1988).

A large number of significant factor sensitivity parameter (b_{it}) estimates would be evidence that innovations in a small number of pervasive macroeconomic indicators move secondary market sovereign debt returns.

The factors that determine returns are assumed to impact all security returns to some degree, have zero expected value at the beginning of each period, and span return space. Factors, or innovations in key macroeconomic aggregates, are defined here as VAR model in-sample residual errors. Estimation of equation (3) involves first estimating a VAR model of the k prespecified macroeconomic factors, then using the sample errors from these regressions as exogenous variables in the arbitrage pricing theory framework. Since VAR models have a well-known tendency to overfit sample data (cf. Doan, Litterman and Sims, 1984)), the methodology used here is based on very optimistic assumptions regarding investor knowledge of the dynamic processes that generate the factors. If investors did use these factors when forming debt price expectations, then the approach used here would predispose the results toward greater factor explanatory power.

2. The sensitivity of contemporary sovereign debt returns to pervasive factors

We now turn to estimation of the sensitivity of contemporary sovereign debt market returns to unexpected changes in external indicators. U.S.

1/ Suppose an investor formed a portfolio that has unit sensitivity to factor j and zero sensitivity to all other factors. The return on such a portfolio is

$$p_t + \tau_j + f_{jt}$$

with expected value $p + \tau_j$. The parameter τ_j is the expected value over p of assuming a unit of factor j risk. Note that elements of τ can be negative.

macroeconomic indicators were chosen over developed country or worldwide measures, with the specific choices based on the explanatory power of aggregates widely cited as determinants of the level of debt servicing 1/ 2/.

NLSUR estimates of the following equation 3/ are summarized in the top panel of Table 3

$$R_{it} = \tau_1 b_{i1} + \tau_2 b_{i2} + \tau_3 b_{i3} + \tau_4 b_{i4} + \tau_5 b_{i5}$$
$$+ b_{i1}\ EUSEQ_t + b_{i2}\ EINDPROD_t + b_{i3}\ ECPI_t + b_{i4}\ EGOVBOND_t$$
$$+ b_{i5}\ ECORPPREM_t + \epsilon_{it}. \qquad (4)$$
$$i = 1,\ldots,21 \quad t = 1,\ldots,43$$

EUSEQ = innovations in Standard and Poor's equity return index
EINDPROD = innovations in U.S. industrial production
ECPI = innovations in U.S. consumer price index
EGOVBOND = innovations in U.S. government bond yield
ECORPPREM = innovations in the spread of Moody's average corporate yield over the average U.S. Treasury bond yield

In addition to comparing the contemporary and interwar sovereign debt markets this analysis provides evidence concerning differences in the impact of pervasive macroeconomic fundamentals on sovereign debt and corporate equity returns. McElroy and Burmeister (1988) regressed a sample of 70 equity returns on univariate innovations in five factors and found that four of the five risk premia (τ_j) and 215 of the 350 factor sensitivity estimates (b_{ij}) were significant. The five factors, which included univariate innovations in four macroeconomic indicators and the S&P 500 index (which may have included some of the dependent variables as components) explained between 30 percent and 50 percent of return variance.

As shown in Table 3, two of the five risk premia estimates, those for U.S. industrial production and U.S. government bond yields, are negative and significant at the 5 percent level.

1/ See Stone (1990) for a more detailed description of the factors used in this section.

2/ Dornbusch (1988) argues that the impact of the world economy on borrowers operates through inflation, interest rates, aggregate demand, and trade policies, and Sachs (1987) emphasizes interest rates and the dollar value of world trade.

3/ Innovations in U.S. money supply, trade flows, reserves and exchange rates were also tested.

Table 3

Number of Factor Sensitivity Estimates Significant at the 5% Level

April 1986 - October 1989

	U.S. Equity		U.S. Ind. Prod.		CPI		U.S. Gov. Bond Yld		Corp Risk Prem		
	+	-	+	-	+	-	+	-	+	-	R^2
Africa (3)[2]	2										19%
Cent Amer (6)	3		1		1				1		14%
Sth America (9)	2		5		4			1			18%
Europe (2)			2								12%
Philippines			1								23%
TOTAL (21)	7	0	9	0	5	0	0	1	1	0	
Risk Premia[3]	-0.0017 (0.19)		-0.0115 (2.41)		0.0003 (0.80)		-0.0215 (2.10)		-0.0702 (1.53)		

January 1926 - December 1930

	Money		RR Bond Yield		CPI		U.S. Imports		Corp Risk Prem		
	+	-	+	-	+	-	+	-	+	-	R^2
Asia (5)[4]							3				5%
Europe (22)	2	1		1					5		12%
Sth America (10)		2			1		1		1		11%
Mexico (1)											11%
Canada (1)											1%
TOTAL (39)	2	3	0	1	1	0	4	0	6	0	
Risk Premia	.0004 (0.15)		-.6807 (-1.44)		-.0061 (-1.25)		-.0745 (-1.39)		.0289 (0.74)		

January 1931 - December 1935

	Money		RR Bond Yield		CPI		U.S. Imports		Corp Risk Prem		
	+	-	+	-	+	-	+	-	+	-	R^2
Asia (5)[4]					2					2	12%
Europe (22)	1		1		11			1		11	17%
Sth America (10)					3			1		4	17%
Mexico (1)										1	21%
Canada (1)					1						16%
TOTAL (39)	1	0	1	0	17	0			0	18	
Risk Premia	.0030 (2.96)		.0032 (0.27)		.0014 (1.39)		.0026 (0.48)		-.0008 (-0.06)		

1/ Proportion of return variance explained by factors.
2/ Number of countries per region in parentheses.
3/ Risk premia parameter estimates and absolute value of t-statistics.
4/ Number of bonds per region in parentheses.

Sovereign debt returns are not sensitive to unexpected changes in U.S. bond yields or the corporate bond risk premium. Only one of the 21 factor sensitivity estimates corresponding to each of these factors is significant at the 5 percent level. The positive and significant response of debt returns for five countries to U.S. inflation is another unforeseen result, given that inflation increases debt payments and erodes the real value of the debt. 1/

Seven and nine of the U.S. equity return and industrial production factor sensitivity estimates are positive and significant, indicating that changes in investor valuation of sovereign debt prices exhibit some response to pro-cyclical indicators of the U.S. economy. However, the five factors accounted for between 1 percent (Panama) and 35 percent (Brazil) of secondary market debt return variance, with an average of 17.4 percent.

Comparison of these results with those of the next section, which examines the more liquid interwar market, provides evidence as to whether the limited impact of macroeconomic factors on contemporary market returns result may be a consequence of the limited number of transactions and lack of publicly available price information.

3. The sensitivity of interwar sovereign debt returns to pervasive factors

Factors for the interwar period were chosen and constructed using the same methodology outlined in the previous subsection. 2/ Two versions of the following equation were estimated over the 1926 to 1930 and 1931 to 1935 periods

$$R_{it} = r_1 b_{i1} + r_2 b_{i2} + r_3 b_{i3} + r_4 b_{i4} + r_5 b_{i5} + b_{i1}\,\text{EUSMONEY}_t + b_{i2}\,\text{ERRYIELD}_t + b_{i3}\,\text{ECPI}_t + b_{i4}\,\text{EUSIMPORT}_t + b_{i5}\,\text{ECORPPREM}_t + \epsilon_{it}. \qquad (5)$$

$$i = 1,\ldots,39 \quad t = 1,\ldots,60$$

EUSMONEY = innovations in U.S. money supply
ERRYIELD = innovations in railroad bond index
ECPI = innovations in U.S. consumer price index
EUSIMPORT = innovations in U.S. government bond yield
ECORPPREM = innovations in the spread of Moody's average corporate yield over the average U.S. Treasury bond yield

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1/ McElroy and Burmeister (1988) found that 24 of the 70 factor sensitivity estimates corresponding to unexpected inflation were positive and significant, while none were less than zero and significant.

2/ See Stone (1989) for a more detailed description of the factors used in this section.

Consider the results for January 1926 through December 1930, which are summarized in the middle panel of Table 3. 1/ None of the risk premia estimates are significant at the 5 percent level. The corporate risk premium has the most number of significant factor sensitivity estimates--six. These results imply that secondary market sovereign bond returns for the five years prior to the onset of debt payment interruption were not sensitive to unexpected changes in external aggregates.

The lower panel of Table 3 presents the results for the 1931 to 1935 interval, with the U.S. money and railroad bond indicators replaced by innovations in the CPI and corporate risk premium. None of the risk premia estimates are significant at the 5 percent level, and seventeen of the CPI factor sensitivity estimates are positive with p-values less than 0.05, while the corporate risk premia has a negative and reliably estimated impact on 18 of the 30 nine bonds. Although the proportion of explained variance is higher for the latter five year sample period, the fits are in the 10 to 30 percent range, indicating that investors did not respond strongly to unexpected changes in key indicators external to the debtor economies when forming debt price expectations.

The results of this section can be summarized as follows. The only empirical regularity that characterizes the impact of unexpected changes in key pervasive indicators on contemporary secondary market sovereign debt returns is the sensitivity of some bond returns to procyclical U.S. indicators. Pervasive factors had virtually no impact on debt returns over the 1926 to 1931 interval, while the corporate risk premium had a negative impact on many of the bond returns during the 1931 to 1935 period. The optimistic assumptions regarding investor knowledge of the dynamic process that generates the factors, and the similar inferences drawn from return behavior 50 years apart, provide strong support for the conclusion that sovereign debt market returns--most of which are the obligations of the governments of small open economies--do not respond strongly to unexpected changes in a small number of key indicators external to the borrowing countries. This result contrasts with similar analysis of contemporary U.S. equity returns, which are sensitive to innovations in a small number of fundamentals.

The next section examines whether another component of investor information sets accounts for the large proportion of debt return variance unexplained by pervasive factors.

1/ See Stone (1989) for more detailed reporting and summary of these results.

IV. Country-Specific Shocks and Sovereign Debt Returns

Foreign debt repayments are financed by foreign exchange earnings 1/ or by international reserve depletion, implying that returns may be sensitive to innovations in country-specific trade and reserve aggregates. The specification and testing of this hypothesis is presented in this section.

1. The model with an observable idiosyncratic risk component

Connor and Korajczyk (1986, 1988) showed that if the idiosyncratic risk component consists of a random element and a signal observed by a group of informed investors, then equation (3) becomes

$$R_{it} = b_i r + b_i F_t + a_i + u_{it} \qquad (6)$$

where a non-zero a_i indicates that informed investors exploit private asset-specific information when forming portfolios.

This paper extends the empirical literature by testing whether idiosyncratic risk for a set of securities can be decomposed into observable and unobservable components

$$R_{it} = b_i r + b_i F_t + \alpha_i x_{it} + v_{it} \quad 2/ \qquad (7)$$

where x is an M-vector of shocks to observable country-specific determinants of debt returns, α is an M-element row vector of parameters, and v represents non-observable idiosyncratic risk. Since the x is not pervasive, idiosyncratic risk can still be diversified away as the number of debt-issuing entities increases.

Different combinations of trade and reserve measures are modelled in the VAR framework, with the residuals used as x in estimation of equation (7). 3/ The responsiveness of contemporary sovereign debt returns to country-specific indicators is considered next.

2. The sensitivity of contemporary sovereign debt returns to country-specific shocks

The reduced degrees of freedom resulting from the addition of country-specific time series to the five factors would likely lower the efficiency

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1/ Simonsen (1985) bases debtor country "solvency tests" on dollar denominated trade balances.

2/ The distributional assumptions are that v is independent of x_i, x_i is independent of F and v_j, v_i has zero expectation, and the expectation of v and x conditional on F is zero.

3/ See Stone (1990) and Stone (1989) for a more detailed description of the country-specific indicators used in this section.

of parameter estimates. 1/ 2/ Consequently, three factors were dropped from the equation (3) specification (based on the criteria of the number of significant factor sensitivity parameter estimates), leaving innovations in U.S. equity returns and industrial production. The results for the following equation are reported in the top panel of Table 4

$$R_{it} = r_1 b_{i1} + r_2 b_{i2} + b_{i1}\ EUSEQ_t + b_{i2}\ EINDPROD_t + \alpha_{i1}\ ERESERVES_{it} + \alpha_{i2}\ EXRATE_{it} + \alpha_{i3}\ EEXPORTS_{it} + \alpha_{i4}\ EIMPORTS_{it} + v_{it}. \qquad i = 1,\ldots,21 \quad t = 1,\ldots,43 \tag{8}$$

EUSEQ = innovations in Standard and Poor's equity return index
EINDPROD = innovations in U.S. industrial production
ERESERVES = innovations in foreign exchange and gold reserves valued in U.S. dollars.
EXRATE = innovations in local currency to U.S. dollar exchange rate
EEXPORTS = innovations in exports valued in U.S. dollars 3/
EIMPORTS = innovations in imports valued in U.S. dollars

The risk premium for U.S. industrial production is negative and significant at the 5 percent level, while 13 of the associated factor sensitivity estimates are positive and significant at the 5 percent level. Five of the U.S. equity return coefficient estimates are positive with t-statistics exceeding 1.99.

Six of the foreign reserve coefficients are positive and significant, while there does not appear to be a systematic relationship between debt returns and export or import shocks. Six exchange rate shock coefficients are significant with, assuming that a stronger borrower currency enhances debt value, the expected negative sign; however, four exchange rate coefficient estimates are positive and significant.

1/ Regressing equation (3) residuals on country-specific shocks is an alternative to joint estimation of the pervasive factors and the country-specific shocks. However, estimates might be biased as a result of correlation between the two sets of potential return determinants.

2/ However, in the SUR framework efficiency is enhanced by different sets of exogenous variables for each equation (conditional on the true matrix of cross-equation residual covariances), since the Jacobians of different equations will have lower correlation, allowing more precise estimates of the off-diagonal elements of the residual covariance matrix.

3/ Current trade data for Nigeria are not available, and monthly export series for Honduras and Panama are not reported in a timely fashion.

Table 4

Number of Factor Sensitivity and Country-Specific Aggregate
Estimates Significant at the 5% Level

April 1986 - November 1989

	U.S. Equity		U.S. Ind. Prod.		Exchange Rate		Imports		Exports		Reserves		
	+	-	+	-	+	-	+	-	+	-	+	-	R^2
Africa (3)[2]	2		2			3					2		21%
Cent Amer (6)	2		2			2		1	1		1	1	9%
Sth America (9)	1		6		2	1		2		2	3		11%
Europe (2)			2		1								13%
Philippines			1		1								23%
TOTAL (21)	5	0	13	0	4	6	0	3	1	2	6	1	
Risk Premia[3]	0.0000 (0.00)		-0.0046 (3.09)										

January 1926 - December 1930

	U.S. Imports		RR Bond Yield		Exchange Rate		Imports		Exports		Gold Reserves		
	+	-	+	-	+	-	+	-	+	-	+	-	R^2
Asia (5)[4]					1	2	1		1	2	2		8%
Europe (22)	2				9	2	5	5	5	1	4		6%
Sth America (10)	1				2		2	1	2		3		8%
Mexico (1)					1						1		9%
Canada (1)							1						5%
TOTAL (39)	3	0	0	0	13	4	9	6	8	3	10	0	
Risk Premia	0.0704 (1.22)		0.8206 (1.36)										

January 1931 - December 1935

	U.S. CPI		Corp Risk Prem		Exchange Rate		Imports		Exports		Gold Reserves		
	+	-	+	-	+	-	+	-	+	-	+	-	R^2
Asia (5)[4]	1			3	2	2	2		1		3		17%
Europe (22)	5			13	5	3	3	4	7	11	9	1	19%
Sth America (10)	2			10	5	3	3		4	3	5		24%
Mexico (1)	1			1		1	1		1		1		35%
Canada (1)	1				1		1			1	1		33%
TOTAL (39)	10	0	0	27	13	9	10	4	13	15	19	1	
Risk Premia	0.0004 (0.54)		-0.0261 (2.29)										

1/ Proportion of return variance explained by factors.
2/ Number of countries per region in parentheses.
3/ Risk premia parameter estimates and absolute value of t-statistics.
4/ Number of bonds per region in parentheses.

The reserve-import ratio is a widely used indicator of sovereign creditworthiness. 1/ A parsimonious version of the model was tested by including only the two factors and reserve-import ratio shocks for each country. These innovations are based on ARIMA model residuals. 2/ The pervasive factor results are similar to those from previous models, and seven of the reserve-import coefficients are positive and significant.

3. The sensitivity of interwar sovereign debt returns to country-specific shocks

The choice of pervasive factors to include in the 1926 to 1930 sample interval equation was based on the number of five factor parameter estimates significant at the 10 percent level, which yielded the following specification 3/

$$R_{it} = r_1 b_{i1} + r_2 b_{i2} + b_{i1}\,\text{EUSIMPORT}_t + b_{i2}\,\text{ERRYIELD}_{it} + \alpha_{i1}\,\text{ERESERVES}_{it} + \alpha_{i2}\,\text{EXRATE}_{it} + \alpha_{i3}\,\text{EEXPORTS}_{it} + \alpha_{i4}\,\text{EIMPORTS}_{it} + v_{it}. \qquad (9)$$

$i = 1,\ldots,39 \quad t = 1,\ldots,60$

EUSIMPORT = innovations in U.S. imports
ERRYIELD = innovations in railroad bond index
ERESERVES = innovations in borrower foreign exchange and gold reserves valued in U.S. dollars.
EXRATE = innovations in borrower local currency to U.S. dollar exchange rate
EEXPORTS = innovations in borrower exports valued in U.S. dollars
EIMPORTS = innovations in borrower imports valued in U.S. dollars

One-third of the exchange rate coefficients are positive and significant at the 5 percent level, as are ten of the gold reserve parameter estimates. However, this specification generates poor equation fits, indicating that investors did not include country-specific shocks in their information sets during the earlier sample interval.

Equation (9) was re-estimated over the 1931 to 1935 interval with the U.S. CPI and corporate risk premium as factors. These results provide the strongest link between unexpected changes in an economic aggregate and debt returns: two thirds of the corporate risk premium factor sensitivity estimates are significant at the 5 percent level. Many of the significant country-specific coefficient estimates are not of the expected sign; for example 13 of the exchange rate estimates are positive and 15 of the export

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1/ See, for example, McFadden et. al. (1985) and Stone (1988).
2/ See Stone (1990).
3/ The country-specific shocks are described in more detail in Stone (1989).

parameter estimates are negative with p-values less than 0.05. In general, the proportion of return variance explained by unexpected changes in macroeconomic indicators is highest for the 1931 to 1935 interval, although the fits, which are in the 10 to 35 percent range, are around half of those for U.S. equity data as reported by McElroy and Burmeister (1988).

The results of this section indicate that contemporary bond market returns are not responsive to innovations in key debtor balance of payment indicators, even under optimistic assumptions regarding investor knowledge of the structures that generate these shocks. Country-specific shocks had a limited impact on debt returns during the 1926 to 1930 estimation period, while the results are somewhat mixed for the subsequent five-year interval.

V. Policy Announcements and LDC Debt Returns

Secondary sovereign debt markets are distinguished from other important markets, such as those for corporate bonds and equities, by the relatively small number of decision makers operating in an environment where contracts are not legally enforceable. Given this setting, unexpected announcements of decisions by single creditors, debtors, or third parties may impact debt returns 1/. This section tests whether sovereign debt returns are sensitive to such announcements. The methodology used in this paper differs from other event studies in that the sensitivity of returns to important external and domestic shocks is controlled for, implying more reliable tests of the impact of discrete events on price changes. 2/

1. Policy announcements and contemporary sovereign debt market returns

a. Commercial bank reserving decisions

The hypothesis that the May 1987 Citicorp loan loss provisioning action had an immediate impact on debt returns 3/ is tested by adding a dummy variable which equals one in May 1987 to the model reported in Table 4. None of the dummy variable coefficients (the results are not reported here) were significant at the 10 percent level. The hypothesis that the market adjusted slowly to the reserve changes was tested by replacing the May 1987 dummy with a new variable equaling one in June through October inclusive and zero elsewhere. Sixteen of the dummy variable coefficient estimates were

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1/ The impact on returns of debtor announcements of debt payment interruption and resumption was also tested. The results indicated, surprisingly, that these announcements had a mixed effect on price changes, as reported in Stone (1989) and Stone (1990).

2/ See Thompson (1985).

3/ Citibank's unexpected decision added $3 billion to loan loss reserves, announced on May 20, 1987, was followed over a six-week period by the other major banks (New York Times, various issues).

significant at the 5 percent level, while the only change in the other estimates was a decrease in the number of significant reserve-import ratio coefficients to four.

These results, which are presented in Table 5, imply bank reserving decisions sharply reduced the market value of LDC debts, even after controlling for other macroeconomic surprises. Possible reasons for this regularity include investor perceptions of a weaker debtor bargaining position, and the consequences of expected decreases in loan flows. 1/ The prolonged market response may be a result of slow decision-making, or a consequence of potential sellers not wanting to unload loans in the still illiquid market, thus bringing prices down and reducing the market values of their LDC debt portfolios.

b. Announcement of the Brady Plan

The hypothesis that sovereign debt valuations were impacted by the May 1989 announcement of the Brady Plan, which called for debt restructuring involving conditional funding by third parties, is tested by including a dummy variable equalling one in March 1989 to the basic pricing model. Four of the dummy variable coefficients (for Morocco, Zaire, Honduras, and Uruguay) were negative and significant at the 5 percent, while the only positive coefficient with a t-statistic exceeding 1.99 was for Mexico. Mexico was the first country to restructure debt in late 1989.

The first confirmation that the multilaterals would concur with the Brady Plan's suggestion of new funds for debt reduction came in early April. The hypothesis that this subsequent event had a stronger impact on debt prices then announcement of the Brady Plan was tested by including a dummy variable for April 1989. The associated coefficients for seven countries (Philippines, Honduras, Mexico, Brazil, Colombia, Venezuela, and Poland) were positive and significant, while no coefficients were negative.

The top panel of Table 5 summarizes testing of the hypothesis that secondary market prices were positively impacted by the Brady Plan and subsequent developments by including a dummy variable which equals one for March, April and May 1989. Seven of the dummy coefficient (the same seven as for the April dummy) estimates are positive and significant, while the t-statistic for the Panama dummy was -1.99. Mexico, the Philippines, and Venezuela have completed or are in the process of debt transformations based on the Brady Plan.

1/ Bird (1989) discusses explanations for the impact of bank loan reserve provisioning on debt values.

Table 5

Number of Factor Sensitivity, Country-Specific Parameter and Announcement Parameter Estimates Significant at the 5% Level

April 1986 - November 1989

	U.S. Equity		U.S. Ind. Prod.		Res-Imp Ratio		Loan-Loss Reserving		Brady Plan		
	+	-	+	-	+	-	+	-	+	-	R2[1]
Africa (3)[2]	2		2					2			15%
Cent Amer (6)	2		1					4	3		22%
Sth America (9)	3		2	1	3	1		8	3		29%
Europe (2)			2					1	1		31%
Philippines			1					1	1		57%
TOTAL (21)	7	0	8	1	3	1	0	16	8	0	
Risk Premia[3]	0.0001 (0.03)		-0.0029 (2.37)								

January 1931 - December 1935

	U.S. CPI		Corp Risk Prem		Exchange Rate		Imports		Exports		Gold Reserves		Gold Ex-St		
	+	-	+	-	+	-	+	-	+	-	+	-	+	-	R2
Asia (5)[4]				3	2	2		2			3			4	27%
Europe (22)	3			12	6	2	3	5	5	11	12	1		11	25%
Sth America (10)	2			9		9	4		3	2	5				26%
Mexico (1)				1		1		1	1					1	36%
Canada (1)	1				1			1		1	1				43%
TOTAL (39)	6	0	0	25	9	14	7	9	9	13	21	1	0	16	
Risk Premia	0.0003 (0.44)		-0.0195 (1.76)												

1/ Proportion of return variance explained by factors.
2/ Number of countries per region in parentheses.
3/ Risk premia parameter estimates and absolute value of t-statistics.
4/ Number of bonds per region in parentheses.

2. Policy announcements and interwar sovereign debt market returns

a. Termination of the gold-exchange standard

Many observers have linked interwar debt payment problems directly and indirectly to the problems with, and eventual termination of, the gold-exchange standard. 1/ When the United Kingdom severed the sterling-gold link in September 1931, which effectively ended the gold-exchange standard, sovereign debt values were directly impacted by the subsequent deterioration in the value of their currencies (backed by sterling reserves), and bond prices were indirectly affected by the blow to investor confidence in world financial markets. 2/

The hypothesis that the effective termination of the gold-exchange standard reduced sovereign bond values, after accounting for external and country-specific shocks, was tested by including a dummy variable for September 1931 in the 1931-35 country-specific regressions. The results are reported in the last panel of Table 5. The dummy variable coefficient was significant at the 5 percent level in 16 of the 39 bond regressions, which provides strong support for the hypothesis that the cessation of the gold standard did substantially reduce the values of sovereign claims.

VI. Conclusion

The interwar sovereign debt market was highly liquid, and agents were able to base decisions on publicly reported individual security prices. The relative illiquidity of today's market, and the absence of publicly reported price time series for individual issues, suggests that the insensitivity of returns to unexpected changes in key external and country-specific indicators may be a consequence of market imperfections. Comparison of the econometric results for the contemporary and interwar periods is evidence that the limited impact of observable fundamentals on returns is an inherent characteristic of sovereign securities.

The poor equation fits and the low number of significant factor risk premia estimates from this study indicate that the empirical restrictions of the arbitrage pricing model are not consistent with the pricing of sovereign debt, even when these markets are highly liquid. Other studies have concluded that the arbitrage pricing theory framework is supported by the U.S. equity market, which highlights the difference between sovereign and

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1/ Under the pure gold standard currencies are redeemable in gold coin and international currencies are made up of gold holdings. Under the gold-exchange standard currencies are redeemable in other gold currencies, and reserves include gold and the other currencies convertible into gold at fixed prices. See Brown (1940) for comprehensive analysis of the gold-exchange standard and its consequences.

2/ See Kindleberger (1978).

corporate securities. This distinction suggests that explanations of what moves sovereign debt returns lie outside of the standard financial asset pricing model framework.

The pronounced impact of the announcement of third party decisions on debt returns is an example of such an explanation. The termination of the gold-exchange standard, the Citicorp reserving decision and the Brady Plan can each be associated with a discrete change in investor expectations of new lending. The gold-exchange announcement marked the beginning of the breakdown in world capital flows. 1/ The adverse impact of the Citicorp reserving decision can be viewed as signalling a tougher bargaining position, and less future voluntary lending, while the Brady Plan explicitly called for new third party lending. However, even after controlling for these events a large proportion of sovereign debt returns remains unexplained.

This study does not account for political risk, such as investor views of policy credibility, or changing expectations of government regime changes, or changes in the shares of national wealth claimed by various sectors. The impact of modifications in the substitutability of sovereign debt for other types of securities, for example through debt for equity swaps, is not controlled for in the analysis.

The results provide some insights into the nature of sovereign loan versus bond financing. 2/ According to Edwards (1986) bond values will be more sensitive to risk indicators because creditor governments will not default on bank loans. Gersovitz (1985) argues that there are no sharp distinctions between each type of sovereign-issued security, since the lower riskiness implied by the possibility of bank syndicate sanctions is offset by bond precedence over bank loans in bankruptcy proceedings. The similarities between the sensitivity of bond and loan market returns during the two eras to macroeconomic fundamentals suggest that the form of the debt contract matters less than the unique nature of sovereign-issued securities. 3/

The commonalities between the two sovereign debt markets, along with the repayment problems of the earlier era, imply that if bonds begin to account for a large share of total LDC foreign liabilities 4/, as they did

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1/ Total new U.S. loans to foreigners dropped from $757,200,000 in 1930 to $7,000 in 1932 (Lewis, 1938).

2/ The recent increase in sovereigns international bond market borrowing is expected to increase in the years ahead (Salomon Brothers (1990)).

3/ Edwards (1986) concluded that macroeconomic variables explain some of the variation in both when-issued bond and bank yields over the 1976 to 1980 interval.

4/ According to Salomon Brothers (1990) the amount of outstanding LDC bonds, which totaled $50 billion in March 1990, will increase during the next several years.

during the interwar period, investors in these issues should not presume that the superior bond (versus bank loan) repayment record during the 1980s will continue through the 1990s.

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