HAVE COMMERCIAL BANKS IGNORED HISTORY?

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ABSTRACT

The effect of repayment problems in an earlier era on the spreads paid by developing country borrowers during the 1968-81 period is empirically investigated. The results indicate that creditor banks took account of the default histories of the borrowers: Defaulters paid higher spreads than non-defaulters, and the defaulters that reneged on larger portions of their debt paid higher spreads than the ones that reneged on smaller portions of their debt. This conclusion is important in providing support for models that emphasize the role of borrower reputation. Specifically, the findings which pertain to the expansion stage of the market, stand in contrast to observations made for an earlier crisis stage, where it is found that markets failed to discriminate from badly behaved borrowers.

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I. Introduction

Following the onset of the present debt crisis in August 1982, new lending to developing countries diminished drastically. The evidence indicates that commercial bank lending decreased to almost all countries, independent of whether they had been problem debtors. Signs of revival of bank lending have been weak even for countries which have repaid their debts. A lack of evidence for discriminatory behavior against problem borrowers has also been observed for earlier eras of breakdown in international private lending (Lindert and Morton (1987), Eichengreen (1988), Jorgensen and Sachs (1988)). These observations suggest that exclusion from borrowing is primarily the consequence of a market breakdown rather than being a specifically imposed penalty.

It has also appeared that the syndicated loan market of the lenders in the 1970s did not take notice of the default history of borrowers. From cursory inspection of the data, simply by comparing the average interest rates for defaulters and non-defaulters, Lindert and Morton (1973, p. 23) asserted that:

> ...one would expect major banks to charge higher premia, or lend at short term, or lend less, to governments with default history. They did slightly the opposite in 1976-1979... Governments with histories of default and rescheduling paid about 0.04 percent less in interest, on slightly longer-term loans then governments with unblemished repayment records. Repayments history, which helps predict subsequent repayments crisis in the international cross-section was ignored.

The evidence of Lindert and Morton, however, is somewhat inconclusive, because governments with a history of defaults simply may have become less risky through their recent economic policies. More convincing evidence could be provided in the context of an investigation that accounts for the

present economic characteristics of borrowing countries.

The purpose of the present study is to investigate empirically the effect of prior repayment behavior of the borrowers on the interest rates they were charged. For this purpose we have analyzed the credit terms on 1452 bank loans made to developing countries from 1968 to mid-1981. The repayment problems of these countries are grouped into one of two eras: 1820-1929 and the 1930s. The sample includes monthly data on 24 countries. The primary finding is that the repayment history of a borrower significantly contributes to the variation in interest rates: Countries with histories of default are found to have paid higher interest rates, after controlling for their present economic risk characteristics.

The relevance of past repayment behavior has important implications. Some implications concern the validity of certain theoretical models of international credit markets and hence their policy implications. A number of authors have modeled lending in international credit markets as a repeated game and stressed the role of borrowers' "reputation".[1] In these reputation models a country which defaults on its foreign debt loses its reputation as a trustworthy borrower. The implication is that default has reputation costs even if there are no other direct costs. A borrower whose reputation is hindered because of default may be excluded from borrowing or pay a higher interest rate. The evidence provided here supports the applicability of these models to the 1968-81 period of expansion in commercial bank lending.

In contrast, some recent theoretical work have challenged the importance of reputation. For example, Bulow and Rogoff (1988) conclude that loans to developing countries will not be made or paid unless the creditors have a direct means of penalizing the defaulters.[2] The argument

continues that a small, developing country's ability to borrow is not enhanced by having a reputation for repayment. Our findings in fact indicate that having a negative record was costly for the borrowers during the expansion of the market.

The results in this study are also important in pointing the different behaviour in the financial markets during their expansion and contraction stages. Specifically, that markets seem to have paid attention to past borrower performance during expansion. This contrasts with the findings of others that during a breakdown such mechanisms have not worked (Eichengreen (1988), Jorgensen and Sachs (1988)). The findings in this paper may in fact help to explain why borrowers do not fully repudiate their debts despite the pains of repayment efforts.

In Section II the empirical method and the data are described. Section III contains the results. Finally, Section IV is the conclusion.

II. Empirical Issues

A. Methodology

1. Credit Terms in the Eurocurrency Market

The correspondence between the repayment history of a borrower and the credit terms it later faces in the Eurocurrency market is to be examined. In the Eurocurrency credit market the rate of interest has two components: the interbank interest rate, which represents the cost of capital to banks, and the spread above the interbank rate. The interbank interest rate is exogenous to the lending decision to specific borrowers. Therefore the determination of spreads will be investigated, with particular regard to the relevance of repayment histories.[3] For this purpose, a general model of spread determination is first described; in which the variation in spreads

among various borrowers are explained primarily as a function of their perceived riskiness.

The relationship between the spread, s, and the probability of default, p, can be posited (see Feder and Just (1977)) as:

$$(1) \qquad s = \frac{p}{(1-p)}\,\theta \ ,$$

where θ represents other variables, such as the discount rate and loan maturity, that affect the spread (for notational convenience the subscripts that would indicate country- and time-periods are not employed). This equation is easily justified if perfect competition and risk neutral banks are assumed.[4]

In implementing this model empirically, the convention regarding the functional form of p has been to assume that it has the logistic form (Feder and Just (1977), Edwards (1984)):

$$(2) \qquad p = \frac{\exp\left(\alpha_0 + \sum_{j=1}^{k} \alpha_j x_j\right)}{1 + \exp\left(\alpha_0 + \sum_{j=1}^{k} \alpha_j x_j\right)}$$

where $\underline{x}$ is a vector of k variables relevant to the probability. (The variables in $\underline{x}$ are discussed in the data section.) Equation (1) can then be rewritten in the logarithmic form. Incorporating country- and time-specific dummy variables equation (1) becomes:

$$(3) \qquad \ell n\ s = \alpha_0 + \sum_{j=1}^{k} \alpha_j x_j + \ell n\ \theta + \alpha_c C + \alpha_t T + \omega$$

where C = dummy variable that is one when country is c

T = dummy variable that is one when time is t

ω = error term with zero expected value.

To this general model can be added the variables pertaining to repayment history.

2. Former Defaults and Credit Terms

The importance of former defaults in affecting the credit terms is investigated employing two methods. First, the borrowers that have defaulted on their loans are identified with dummy variables. As will be discussed in the data section, a number of definitions of the default dummy are considered. For concreteness, consider a dummy variable, D, that is unity for a country that had any prior repayment problems and zero, otherwise. Employing the dummy variable in equation (3), one obtains (4):

$$(4) \qquad \ell n\ s = \alpha_0 + \Sigma\alpha_j x_j + \ell n\ \theta + \alpha_c C + \alpha_t T + \delta D + \omega$$

With a specification of this form, one can investigate whether countries that had repayment problems in an earlier era, $D = 1$ paid higher spreads in the 1968-81 period.

To develop this further, we investigate the relation between spreads and the severity of former defaults. This investigation is aimed at determining whether the defaulters that were more costly to the lenders were charged higher spreads in their later borrowings. For this investigation the sample is restricted only to those borrowers that defaulted formerly. It seems reasonable to think that the degree of default of a borrower is affected by the present and future spreads it would be facing. In such a model, a selection problem arises. To correct for the selection problem we employ a two-step estimation procedure (Heckman (1976)). Accordingly, we first estimate

$$(5) \qquad D^* = \gamma_0 + \sum_{j=1}^{k} \gamma_j x_j + \epsilon_j,$$

where D^* is a latent variable which determines if the country is a defaulter, i.e., $D = 0$ if $D^* < 0$ and $D = 1$ if $D^* \geq 0$, and ϵ_j is a normally distributed random error term with variance σ^2.

Equation (5) describes a probit model for the probability of having defaulted, from which one obtains estimates for ψ and Ψ, the respective density and distribution functions of the standard normal evaluated at $\gamma x/\sigma$. Second, using only the observations corresponding to $D = 1$ the equation:

$$(6) \qquad \ell n\ s = \alpha_0 + \sum_{j=1}^{k} \alpha_j x_j + \ell n\ \theta + \alpha_c C + \alpha_t T + \lambda\left(\frac{\psi}{\Psi}\right) + \rho\ \ln R + \omega$$

is estimated by ordinary least squares where ψ/Ψ is the inverse of the Mill's ratio (see Amemiya (1985)), and R is a measure of the cost of default to the lender.

As will be discussed more fully in the data section, R is taken to be the ratio of the present value of repayments to borrowing. Hence larger values of R represent less costly defaults. Accordingly, if ρ is estimated as negative, it will indicate that borrowers that had less costly defaults in earlier episodes of lending were charged lower spreads later.

B. Data

1. Sources and description

Models represented by equations (4) and (6) are to be estimated, employing monthly data for the period of 1968 to mid-1981. The data incorporates information on each loan and on the borrowers' characteristics,

including their prior default behavior. Information on the loans consists of the identity of the borrower, the time of the loan, its terms, and some qualitative aspects such as whether the loan is public. Loans data for the 1973-81 period is obtained from the various issues of the World Bank's Borrowing in International Capital Markets. The data for the prior period, however, has been obtained through an exhaustive search of the financial press as well as the central bank reports of the borrower countries. We have included only $U.S.-denominated loans that have variable interest rates and LIBOR (London Interbank Offer Rate) as the base rate. These restrictions are incorporated to avoid complications that may arise from comparisons across different types of financial instruments. An additional restriction on the data concerns the countries included. Countries that were sovereign nations at no time during 1820-1929 and the 1930s are excluded. This restriction, of course, is intrinsic to focusing on past repayment problems. After these restrictions, the data set contains information on 1452 loans to 24 countries. Since much has been written on the general nature of these loans they will not be further discussed here. However, the Appendix Table 1 contains information on some characteristics of our data.

Information on the loans that is included among the elements of the $\underline{x}$-vector include maturity of the loan, a dummy variable that indicates whether the loan is public, and a dummy variable that indicates if the loan is syndicated. A possible problem could arise from the inclusion of maturity to the extent that banks determine spread and maturity simultaneously. However, based upon practices in the Eurocurrency market and the previous literature, loan maturity is assumed to be determined prior to the spread determination (see Euromoney (1978), Feder and Just (1977), Edwards (1984)).

Borrower characteristics included in the x-vector contain information on general economic conditions of the borrower, these are presumably important in measuring the riskiness of the borrower. Economic theory does not provide much guidance on which variables to include. The "country risk" literature, however, helps to identify variables that predict occurrence of defaults and hence the riskiness of the borrower.[5] The variables in this study are total debt-to-GNP ratio, debt service-to-exports ratio, imports to GNP ratio, GNP growth, lagged value of investment to GNP ratio, rate of devaluation and rate of inflation. The total debt, and debt service variables are obtained from the World Bank's World Debt Tables. The remaining variables are obtained from IMF's International Financial Statistics.

Default histories of the countries in our sample are obtained from Lindert and Morton (1987). The authors provide detailed information on loans that were in the form of privately held bonds. Default is defined to include the following: 1) unilateral default, 2) arrears, 3) negotiation on terms at least partly concessionary. This data are available separately for the 1820-1929 period and the 1930s. Table 2 presents a summary of former default behavior of the countries in our sample. The available information on defaults is used to construct dummy variables to indicate each country's past default behavior. A number of alternatives are employed. These alternatives include identifying countries that defaulted in both episodes and identifying countries that defaulted more than once in any episode. A more detailed description of these are provided following Table 3.

Finally, a measure of the cost of default to the lenders is needed. One choice of measure, for a small set of the borrowers in our sample, could be obtained from Jorgensen and Sachs (1988). The authors use all of the

long-term, nationally guaranteed bond debt issued in dollars and outstanding through the 1930s for five Latin American countries: Argentina, Bolivia, Chile, Colombia and Peru. They estimate a present value ratio, R, which is defined as the ratio of repayments to borrowings, both discounted to 1920. For the four defaulters during the 1930s (all except Argentina), they also estimate a post default present-value ratio. This ratio is defined as the ratio of repayments after default to principal outstanding at defaults, both discounted to 1931. These estimates are reported in Table 2. As is evident from the definition, as the ratio diminishes towards zero, it indicates increased costs to the lender.

III. Results

In this section we first present the results obtained from estimation of equation (4). Using this equation we are able to test whether the former defaulters paid higher spreads on their bank loans. We then present the results from the estimation of equation (6), which relates the spread on bank loans to a measure of the cost of former defaults. The latter estimation is conducted over a subset of our data since a measure of the cost of former defaults is not available for all countries.

The evidence pertaining to the impact of former defaults on the spreads is presented in Table 3. The results in Table 3 are based on estimates of equation (4) using a number of alternative definitions to identify former defaults. These variables are also described in Table 3. When the countries that defaulted at least once during the 1820-1929 or 1930 episodes are identified (variable D_0 in Table 3), the parameter of interest, δ is estimated as .08 with a "t" value of 1.99.[5] Though the "t" value is not large, it indicates that the parameter is significant in reasonable degrees

of confidence. Similar results with larger "t" values are obtained when the defaults in the 1820-1929 and 1930s episodes (D_{20} and D_{30}) are investigated separately.

Next we investigate the impact of multiple defaults. This is done in two ways. First, in identifying multiple defaults, the default episode is taken into consideration. We identify countries that defaulted only in one of the two default episodes with D_1 and countries that defaulted in both of the episodes with D_2. The parameters associated with D_1 and D_2 are estimated as 0.02 and 0.15, with their respective "t" values 0.50 and 3.95. Evidently countries that defaulted in both episodes of lending paid higher spreads.

Second, we focused on the total number of defaults independent of the default episode. As shown in Table 2 a number of countries defaulted more than once during 1820-1929, even though there are no cases of multiple defaults in the 1930s. A dummy variable (D_2') identifies countries that defaulted twice or more irrespective of the default episode and another dummy variable (D_1') identifies borrowers that defaulted once irrespective of the episode. The associated parameters are estimated as 0.08 and 0.07 for D_1' and D_2' respectively. Their "t" values indicate that they are estimated statistically significantly at reasonable degrees of confidence.

Overall, the results based on dummy variable considerations indicate that defaulters paid higher spreads. The magnitude of the impact is best understood by employing the beta coefficients associated with the parameter estimates. (Beta coefficients measure how many standard deviations the dependent variables move when there is one standard deviation increase in the independent variable.) For example, the largest beta is estimated as 0.17 for countries that defaulted in both episodes. Evaluated at the mean

spread of our sample, i.e., 1.09 percentage points with a standard error of .43, this means that the spread increases to near 1.20 percentage points when default increases by one standard deviation. While this effect might appear small, when compounded over billions of dollars of debt and over a number of years, it takes on more importance.

The next set of results, based on equation (6) is an attempt to investigate whether the market discriminated between countries that had different degrees of default. Table 4 presents results from estimation of equation (6).[6] These results indicate that the degree of default had an impact on the spreads charged. Specifically, countries with less costly defaults paid lower spreads. This is indicated with an estimated value of -1.11 for ρ with a "t" value of -3.9.[7] The associated beta coefficient is estimated as -.56. The mean of the spread for this group of countries is 1.21 percentage points (with a standard error of .37). The beta coefficient then indicates that one standard deviation increase in the cost of default to the lenders causes the spreads to increase to 1.49 percentage points.

Overall, the results presented here indicate that the creditors paid attention to the default histories of the borrowers. The defaulters were charged higher risk premia than non-defaulters and the defaulters that reneged on larger portions of their debt paid higher spreads than the ones that reneged on smaller portions of their debt.

IV. Conclusions

In this paper we investigated the impact of historical defaults on terms for bank loans in developing countries during 1968-81. Our primary finding is that those countries that had repayment problems in the former episodes of private lending were charged higher risk premia.

The evidence provided here suggests that defaults had long-run costs for the borrowers and problem borrowers were discriminated against. This finding is important in providing some support for models that stress the role of reputation of the borrower. Furthermore, these findings may provide some explanation for the non-occurrence of widespread repudiation by borrowers in the present era. Though a large number of countries suffered economic and political losses in their efforts to repay the outstanding debt, they avoided full scale non-payment, so as not to incur long-run reputation costs associated with such behavior.

The empirical findings presented here are also important in pointing to the difference in the workings of the financial market during its expansionary and contractionary phases. Eichengreen, Jorgensen and Sachs provide evidence that following breakdown of international private lending in the 1930s, lenders failed to discriminate against problem borrowers. Similarly in the early 1980s lending to all developing countries decreased following the onset of the debt crisis. These observations on the workings of the international financial markets during the non-payment crisis are in contrast to the evidence provided here on the working of the market during its evolution and expansion state. This investigation reveals that our understanding of the long-term behavior of lending markets is still far from complete. Future work is needed to characterize the change that occurs over a lending era.

FOOTNOTES

[1]For excellent surveys of the relevant literature see Eaton, Gersovitz, and Stiglitz (1986), and Eaton and Taylor (1986).

[2]Another example of recent theoretical work which does not allow a role for borrowers' reputation is Chowdhry (1987). Chowdhry constructs a model of banking syndication which yields an upper bound on the number of times the borrower would be allowed to default in equilibrium. The consequence, of course, is that borrowers choose safer projects after each successive default that lead to a decrease of interest rates. The evidence in this paper, however, may not be sufficient evidence to refute the predictions in Chowdhry. A more meaningful study can be conducted by a careful study of the impact of successive defaults during the syndicated banking of the 1970s and 1980s.

[3]Data on fees and commissions are not included because of inavailability. Previous studies such as Feder and Just and Edwards also suffer from this inadequacy. It is noted, however, that these costs are low relative to spreads (see Edwards p. 728 and Cline pp. 82-83).

[4]To illustrate this assume that loans are for one period, and default means complete loss of both the principal and the interest rate. Let $s=i-i^*$ where i^* is the LIBOR rate and i is the interest rate charged to a country. Then the equilibrium condition is $(1-p)(1+i) = (1+i^*)$, which implies that $\theta=(1+i^*)$. This structure has been implemented by Edwards (1984). Introduction of more realistic assumptions yield a similar structure, for example see Feder and Just (1977).

[5]For reviews of this literature see McDonald (1982) and Eaton and Taylor (1986). The debt-service ratio, imports to GNP ratio, imports to

reserves ratio, GNP growth, and investment to GNP ratios are among the variables that are found to have significant impact on spreads. In addition, Özler (1988) demonstrates that the repeated experience of a borrower in the market has a significant impact on the evolution of spreads.

[6]The values for variable R in equation (6) are presented in Table 2. As noted earlier this estimation is done only for the defaulters of 1930s for which R value is available.

[7]When the estimation is done using R_d in Table 2, as opposed to R, ρ is estimated as -0.34 with a "t" value of -4.30.

TABLE 1

Loan Data*

Country	NBOR	Time 1	T.IN	s	T	L
Argentina	87	July 73	93	1.15	7.8	100.7
Bolivia	16	Apr. 74	59	1.90	6.2	39.2
Brazil	289	Dec. 72	102	1.47	8.8	75.6
Chile	66	Oct. 68	152	1.22	7.1	53.9
Colombia	36	Aug. 72	105	1.00	9.2	75.8
Costa-Rica	21	Sept. 73	87	1.34	7.7	30.0
Ecuador	40	Mar. 75	74	1.10	7.8	61.7
Egypt	10	Feb. 74	87	1.54	6.1	55.2
El Salvador	5	June 74	18	1.73	6.4	19.0
Greece	49	Feb. 72	112	0.93	8.8	93.8
Honduras	7	Apr. 79	23	1.20	8.4	16.7
Mexico	192	Jan. 73	101	1.09	7.3	143.0
New Zealand	9	July 74	76	0.83	6.5	183.7
Nicaragua	7	May 73	30	1.65	7.1	26.6
Panama	25	Oct. 73	87	1.57	7.2	62.2
Peru	40	Apr. 73	98	1.44	7.6	67.2
Portugal	49	May 73	97	0.94	7.0	71.5
South Africa	34	Mar. 73	91	1.32	6.0	64.3
Spain	305	Feb. 73	100	1.05	7.4	55.0
Taiwan	46	May 74	82	1.15	7.4	50.6
Thailand	25	Mar. 76	63	0.89	7.8	66.6
Turkey	9	July 75	48	1.56	5.0	135.8
Uruguay	13	Aug. 75	67	1.32	8.3	52.4
Venezuela	72	May 71	120	1.02	5.9	141.7

*NBOR : number of times the country has borrowed.
TIME 1: first date the country appears
TIN : number of months between the first and last borrowing of the country
s : average spread expressed as percentage point above LIBOR
T : average loan maturity
L : average amount of loans in $U.S. million.

TABLE 2

Defaults

Country	D_{20}	$\#D_{20}$	D_{30}	R	R_d
Argentina	1	2	0	1.25	-
Bolivia	1	1	1	0.54	0.08
Brazil	1	2	1	-	-
Chile	1	1	1	0.56	0.31
Colombia	1	2	1	0.85	0.63
Costa-Rica	1	3	1	-	-
Ecuador	1	4	1	-	-
Egypt	1	1	0	-	-
El Salvador	1	2	1	-	-
Greece	1	2	1	-	-
Honduras	1	3	0	-	-
Mexico	1	3	N.L.	-	-
New Zealand	0	0	0	-	-
Nicaragua	1	2	0	-	-
Panama	0	0	1	-	-
Peru	1	1	1	0.52	0.39
Portugal	0	0	0	-	-
South Africa	0	0	0	-	-
Spain	1	1	0	-	-
Taiwan	1	1	1	-	-
Thailand	0	0	0	-	-
Turkey	1	2	N.L.	-	-
Uruguay	1	1	1	-	-
Venezuela	1	2	0	-	-

NOTES: D_{20}: σ dummy variable. $D_{20} = 1$ indicates that a country has defaulted (or negotiated at concessionary terms) on its national private debt during 1820-1929.

$\#D_{20}$: the number of times a country has defaulted during 1820-1929.

D_{30}: σ dummy variable which is defined like D_{20} except that it is for the defaults of the 1930s.

N.L.: No loans.

R : ratio of repayment to borrowings on national, guaranteed, dollar bond debt during the 1930s.

R_d: same as PV, measured post-default.

Sources: Lindert and Morton (1987), and Jorgensen and Sachs (1988).

TABLE 3

Impact of Former Defaults: Equation (4)

Constant	-3.74 (0.35)	-3.57 (0.33)	-3.70 (0.35)	-3.74 (0.35)	-3.71 (0.35)
Syndic	0.01 (0.02)	0.01 (0.03)	0.01 0.03)	0.01 (0.03)	0.01 (0.03)
Public	-0.17 (0.01)	-0.15 (0.02)	-0.17 (0.02)	-0.18 (0.02)	-0.17 (0.02)
Total Debt/GNP	1.07 (0.08)	0.93 (0.09)	1.03 (0.08)	0.86 (0.09)	1.03 (0.09)
Reserves/GNP	-0.05 (0.02)	-0.10 (0.02)	-0.04 (0.02)	-0.06 (0.02)	-0.04 (0.02)
Debt Service/Exports	0.0003 (0.004)	-0.001 (0.003)	0.0001 (0.004)	-0.001 (0.003)	-.0002 (0.003)
Maturity	0.09 (0.004)	0.08 (0.004)	0.09 (0.004)	0.09 (0.004)	0.09 (0.004)
Investment/GNP	-0.80 (0.22)	-0.73 (0.22)	-0.84 (0.22)	-0.61 (0.22)	-0.82 (0.23)
GNP Growth	-0.12 (0.13)	-0.23 (0.13)	-0.86 (0.12)	-0.32 (0.13)	-0.07 (0.13)
Imports/GNP	-0.09 (0.11)	-0.53 (0.11)	-0.12 (0.11)	-0.24 (0.11)	-0.13 (0.11)
Inflation	0.30 (0.13)	0.35 (0.13)	0.26 (0.12)	0.48 (0.13)	0.25 (0.13)
Devaluation	-0.005 (0.03)	-0.005 (0.03)	-0.003 (0.03)	-0.007 (0.03)	-0.003 (0.03)
$\delta(D_{20})$[a] $\beta(D_{20})$[b]	0.09 (0.04) 0.06	-	-	-	-
$\delta(D_{30})$ $\beta(D_{30})$	-	0.09 (0.03) 0.10	-	-	-
$\delta(D_0)$ $\beta(D_0)$	-	-	0.08 (0.04) 0.05	-	-

Table 3 (cont.)

$\delta(D_1)$	-	-	-	0.02	-
				(0.04)	
$\beta(D_1)$				0.02	
$\delta(D_2)$	-	-	-	0.15	-
				(0.04)	
$\beta(D_2)$				0.17	
$\delta(D_1')$	-	-	-	-	0.08
					(0.04)
$\beta(D_1)$					0.08
$\delta(D_2')$	-	-	-	-	0.07
					(0.04)
$\beta(D_2)$					0.08
Nobs	1452	1251	1452	1452	1452
R^2	0.38	0.43	0.38	0.39	0.39

Notes:

D_{20} and D_{30} are defined in Table 2.

D_0 indicates whether a country defaulted at least once during 1820-1929 or 1930

D_1 indicates countries that defaulted in only one of the two default episodes: 1820-1929 or 1930

D_2 indicates countries that defaulted in both of the default episodes considered

D_1' indicates if the total number of defaults of the country during the two episodes is one

D_2' like D_1' but for countries that defaulted twice or more.

Numbers in the parenthesis are standard errors.

[a]The variable in parentheses indicate the various dummy variables employed as defined above.

[b]β's are the beta coefficients (associated with the dummy variable indicated in the subscript). Beta coefficients are a scaling of the least squares estimates that measure how many standard deviations the dependent variables move when there is one standard deviation increase in the independent variable.

TABLE 4

The Impact of the Cost of Former Defaults: Equation (6)

Constant	-2.60 (0.55)	Investment/GNP	-6.05 (2.55)
Syndic	-0.03 (0.09)	GNP Growth	-1.27 (0.55)
Public	-0.09 (0.06)	Imports/GNP	-2.53 (0.68)
Total Debt/GNP	0.56 (0.56)	Inflation	1.42 (0.59)
Reserves/GNP	0.05 (0.11)	Devaluation	-0.01 (0.30)
Debt Service/exports	-0.02 (0.31)	Mills Inv.	1.07 (1.94)
Maturity	0.11 (0.01)	$\rho(\ell n\ R)$	-1.11 (0.28)

N.obs = 158 $R^2 = 0.64$

Millsinv is the inverse of the Mill's ratio and it is obtained by estimating equation (6) over total of 275 observations. These observations include the following countries: New Zealand, Portugal, South Africa, Thailand, Bolivia, Chile, Colombia and Peru.

Numbers in the paranthesis are standard errors.

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