ON THE RELATION BETWEEN RESCHEDULINGS AND BANK VALUE

by

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Abstract

The effect of developing country loan reschedulings on commercial banks has been investigated by empirical methods. The data base includes the stock returns of the largest U.S. banks over the 1978-1980 period and is analysed using event study methodology. Our major finding concerns the evolving nature of the impact of loan reschedulings: During the early (1978-1980) part of the period studied, reschedulings had a positive effect on bank returns, in contrast to the negative impact found for the later period. Even the latter finding, however, does not imply that the specific banks involved suffered directly from individual defaults. Instead, the detrimental effect appears to stem from general concerns over the health of the banking industry.

A general explanation for these results, including the occurence of both positive and negative influences, is provided by a model of the rescheduling process that recognizes the non-competitive aspect of rescheduling negotiations.

I. Introduction

The effects of international loan reschedulings on lender bank values is a subject of great contemporary interest. Existing evidence on the reschedulings of the early 1980s indicates that banks have suffered losses because of reschedulings of international loans. However, since rescheduling involves a deferred plan of payment this need not always be the case. The outcome in a particular case depends on the terms of the loans and how the payment probabilities change as a consequence of the rescheduling agreement. For example, the spreads charged on loans that were rescheduled during the 1978-80 period were more than double the original spread. Loans rescheduled in the 1981-83 period, by contrast, had narrowing spreads coinciding with a dramatic increase in the number of reschedulings.[1] At the same time, developments in the world economy, such as the recession in the industrialized countries and high real interest rates heightened doubts about the full repayment of developing country loans. These considerations suggest a marked alteration in the quality of such bank loans.

Is this transition to more frequent reschedulings and smaller increases in spreads on reschedulings accompanied by an evolution in the banking industry's ability to deal with developing country loans? This study presents empirical evidence that it is. Specifically, our results indicate that early reschedulings appear as good news and hence the bank stock returns show a positive response to reschedulings. Reschedulings in the later period, in contrast, appear as bad news. A model of reschedulings which provides an explanation for these results is also presented in this study.

Previous systematic studies of the effects of developing country loans on bank values have been concerned only with the Mexican crisis and its immediate aftermath.[2] In these studies two principal methods of analysis

have been employed. The first approach examines the relationship between bank exposure to Latin American countries and either bank stock prices (Kyle and Sachs (1984)) or bank stock price returns (Cornell and Shapiro (1986)) of the 1982-83 period. Kyle and Sachs used quarterly data and found a negative effect of exposure on the market value of banks during the period. Cornell and Shapiro reported that exposure was an insignificant determinant of monthly or daily returns around the announcement date, but had a negative impact on the annual or biannual returns.

Another approach measures the impact of nonpayment events on bank security returns. Presumably the actual nonpayment event is an important occurrence that conveys information on the likelihood of reschedulings and alters expectations of future cash flows on outstanding loans. Schoder and Vandurke (1986) and Bruner and Simms (1987) each employed the standard event study method to investigate the Mexican exposure effect during the August 1982 Mexican crisis. The first study found no impact on the returns of August 19, the publication date of Mexico's nonpayment. The latter study determined that the degree of Mexican exposure was positively related to initial returns, but, by the sixth day exposure had a negative effect.

In this paper we employ a capital asset pricing model to implement a standard event study method, in order to investigate the impact of loan reschedulings on bank returns. The early reschedulings (1978-80) are found to have had a positive impact on bank stock returns, in contrast to the negative impact found for the later ones. If an index of returns for the banking industry is incorporated to the asset pricing model, estimates of the later period losses associated with reschedulings weakens considerably. This suggests the existence of general concerns regarding the health of the industry because of developing country loans. The positive results for the

early period, however, are robust to a variety of alternative specifications of the model. Furthermore, these findings do not seem to be the artifacts of an event study methodology.

In the light of previous studies, the negative relation between reschedulings and bank value for the late reschedulings is unsurprising. The positive influence of the early reschedulings, however, is remarkable evidence countering the common perception that reschedulings are a partial writing off of loans under all circumstances. One possible explanation for the existence of positive returns from reschedulings is presented in this study. The framework is based on the recognition that the institutional environment of reschedulings differs from ordinary competitive banking conditions.

Empirical evidence is presented in Section II. Section III contains a model of rescheduling and Section IV is a summary of our findings.

II. Empirical Evidence

A. Methodology

An empirical method is needed to examine the changes in bank security returns associated with news relevant to reschedulings. In investigating the security returns, we first assume that the capital asset pricing model (CAPM) holds. The CAPM (derived by Sharp (1964), Lintner (1965)) quantifies the equilibrium return on an asset as a function of its market-related risk. Second, we assume financial markets are efficient. The efficient markets hypothesis posits that the price of a security incorporates all information available at a given time, yielding an unbiased estimate of future rents to investors. Under these two assumptions, the realized returns deviates from returns predicted by CAPM only when unanticipated information enters the

market. We are concerned with identifying those particular deviations caused by unanticipated information related to reschedulings.

In giving empirical content to the above discussion, we use a version of CAPM that is extended to control for industry specific returns. In this manner, the bank specific effect of reschedulings is separated from the fortunes of the industry. (Several alternative versions are also tested but we present this version here for concreteness.) Accordingly, the return-generation process for each bank is:[3]

$$(1) \qquad R_{jt} - R_{ft} = \alpha_j + \beta_j(R_{mt}-R_{ft}) + I_j(R_{nt}-R_{ft}) + d\,D_{jt} + \mu_{jt}$$

where:

R_{jt} = return on the security of bank j at time t,

R_{ft} = risk free rate,

R_{mt} = return on the market portfolio at time t,

R_{nt} = the return on a portfolio of other banking industry securities,

D_{jt} = variable representing unanticipated information about reschedulings,

α_j = bank-specific constant,

μ_{jt} = error term with zero expected value.

In equation (1) the parameter d measures the change in the bank returns in response to new information about reschedulings. If the news does affect security returns, then d should indicate the direction in which the expectations have changed.[4] If the news is bad d will be negative, if good then it will be positive.

Estimation of equation (1) requires a measure of D_{jt}. There is not, however, an obvious direct method for accomplishing this. A simple way of dealing with this issue is to choose some events to proxy D_{jt}. In this study we employ nonpayment events (which for brevity will be called

"defaults" in the remainder of the paper) to proxy D_{jt}. Default presumably conveys information on the likelihood of reschedulings, and hence alters expectations of future cash flows on outstanding loans. If the capital markets are in fact efficient, and there is no new information between default and actual rescheduling then all the future gains/losses associated with reschedulings will be captured.

In this method, β_j is estimated simultaneously with the other parameters. The standard approach of estimating capital pricing models is, in contrast, first to estimate β_j from the previous five or so years of the data in a regression of the form $R_{jt} - R_{ft} = \beta_j(R_{mt}-R_{ft}) + \epsilon_{jt}$; and $\hat{\beta}_j$ then is used as an independent variable in the final regression to produce estimates of the other coefficients. This latter approach may introduce bias in the parameter estimates as well as efficiency loss.

The model is first estimated using ordinary least squares method, on the assumption that error terms are not correlated across observations or across time. The latter assumption can be justified on the grounds of rational expectations. If there is correlation across equations, estimates of the parameters remain consistent, but inefficient. We will provide evidence that correlation across equations is not important and does not contaminate the results.

B. Data

In this paper the term "default" indicates failure to comply with a loan contract, i.e., failure to make a timely payment. Accordingly, an announcement of nonpayment will be defined as any news released indicating that a country has: i) fallen behind payments to its bank creditors; ii) asked the IMF to arrange debt rescheduling with its creditor banks; iii) suspended payment; or iv) been declared in default by its creditors.

We have attempted to identify the first report indicating default. No other information prior to default, such as indicators of general economic or political conditions in a country or rumors about the banks' worries, is incorporated. Data on default dates were obtained through an exhaustive search of the Wall Street Journal, The London Times and The Banker. The identified default months of countries are presented in the Appendix Table A-1.

The default variable in equation (1), D_{jt}, could be defined as a dummy variable that is one when a default occurs and zero otherwise. This would, however, imply that all announcements of default have an equal effect on returns. The magnitude of outstanding loans generally varies across countries, and banks' foreign exposures do as well. Thus, the default variable is defined as a weighted dummy variable, where the weights represent the share of a bank's assets that is revalued in response to defaults.[5]

Other variables are constructed as follows (sample characteristics are in Appendix Table A-2): R_{jt} is a monthly series of returns on the securities of the top nineteen banks, ranked by assets, derived from the monthly returns file compiled at the Center for Research in Securities Prices (CRISP) at the University of Chicago.[6] R_{nt} is the equally weighted return on a portfolio of other banks listed on the NYSE. R_{mt} is the rate of return on the portfolio of NYSE securities. R_{ft} is the return on treasury bills.

C. Empirical Results

1. How did Reschedulings Affect Bank Values?

In estimating the impact of defaults on bank returns, an extended CAPM that includes an industry factor is employed (equation (1)). The model is estimated for the 1978-83 period. We then separately investigate whether

the impact of early defaults is different from that of later ones. The robustness of the results are studied in a number of ways; specifically we provide evidence that the results are not a consequence of a few disproportionately influential observations or large cross-sectional covariances. Finally, we investigate an alternative specification to equation (1) by replacing the industry factor with an interest rate factor. The parameter estimates of the default variable, and their "t" values for all these specifications along with the beta coefficients are displayed in Table 1.

TABLE 1: Impact of Defaults: Default Parameters*

		Alternative Specifications			
Period		(1)	(2)	(3)	(4)
1978-1983	d	0.008	-0.002	-0.007	0.007
		(0.867)	(-0.191)	(-0.694)	(0.651)
	Beta	0.020	-0.005	-0.178	0.002
	R^2	0.41	0.41	0.31	0.29
1978-1980	d	0.122	0.216	0.070	0.065
		(4.504)	(2.602)	(2.413)	(2.358)
	Beta	0.095	0.059	0.032	0.017
1981-1983	d	-0.003	-0.001	-0.014	-0.005
		(-0.259)	(-0.079)	(-2.378)	(-0.412)
	Beta	-0.006	-0.001	-0.036	-0.001
	R^2	0.42	0.41	0.32	0.32

*d is the estimate of default parameter, and numbers in parentheses are "t" values. Beta coefficients are a scaling of the least squares estimates that measure how many standard deviations the dependent variable moves when there is one standard deviation increase in the dependent variable.

Column (1) uses equation (1) employing all observations.
Column (2) uses equation (1) after June 1979 is deleted from the sample.
Column (3) employs a modified form of equation (1) over the whole sample, where the industry factor is replaced with an interest rate factor.
Column (4) uses Aitken's two step estimator for equation (1).

Column (1) of Table 1 presents the coefficient estimates of the default variable and their "t" values for 1978-83 period as a whole. (Estimates of the remaining parameters appear in the Appendix, Table A-3.) When the 1978-83 period is examined in this way, defaults do not seem to have had an important impact on bank stock returns.

A finding that bank returns were not altered in response to defaults would be somewhat surprising given the other evidence that banks have incurred losses on foreign loans since the debt crisis of 1982. There are reasons to suspect, however, that this may be a consequence of accumulating observations over several subperiods in which reschedulings have opposing effects. A number of factors relevant to the repayment probability of developing country loans, such as the recession in the industrialized countries and higher real interest rates, indicate that the structure of bank debt may have been altered in the early 1980s.[7] Specifically, early reschedulings might be better viewed as isolated events. In the early 1980s, however, reschedulings became widespread partly because of shocks confronting the world economy as a whole, even creating fears of a developing country's debtors' cartel that would repudiate all the loans.

To investigate whether there is any difference between the early period and the later period we first estimated equation (1) without the default variable. The cross-section mean and standard error of the residuals for the default months are presented in Table A-1. It is interesting to note that prior to 1981 the mean of the residuals are all positive with a single exception, whereas after 1980 a number of residuals are negative, yet with larger variation across banks. The observation adds to our suspicion that the result of no net impact across the 1978-83 period arises from combining two very different subperiods.

Accordingly, the following procedure is used to study various periods separately: we introduce a dummy variable to indicate the period prior to 1981, and interact this dummy variable with the default variable. The estimated default parameters for both subperiods and their "t" values computed by this procedure are also presented in Column (1) of Table 1. Given the way one is accustomed to thinking reschedulings since the early 1980s, Table 1 contains surprising empirical results. During 1978-80 returns associated with defaults are determined to have been positive, i.e., they were regarded as unanticipated good news. (The null hypothesis that defaults had no effect on the returns earned by investors is rejected.) The beta coefficient for the 1978-1980 period is 9.5 percent. This implies that an increase by one standard deviation in the percentage of assets defaulted would cause the monthly return on bank stocks to increase from their mean of 1.5 percent to near 1.6 percent. The results for the 1981-1983 period also fail to confirm the perception that defaults have been costly for shareholders. The standardized estimate of -0.6 percent and the negligible "t" value indicate that defaults had no impact, when one controls for the banking industry returns as a whole.

In order to assess the generality of this result we have employed a number of alternative cut-off points for the early period dummy. Specifically, equations were estimated in which the dummy was redefined on a monthly basis starting from end-1979 to mid-1982. However, in terms of the overall fit of the equations, as evidenced by R^2 value, a cut-off point at end of 1981 performed best. (If the dummy is defined over a six-month period centered at end of 1981, then the change in the R^2 is minor.) The qualitative finding is in any case unaltered. For example, if the cut-off is at the end of 1979 then the coefficient estimate for the 1978-1979 period

is 0.119 with a "t" value of 3.90. The 1980-1983 "t" and parameter values are again very small.

The estimated positive impact of defaults for the 1978-1980 period might be suspected to be the consequence of extraordinarily influential data. A careful inspection of the amounts owed by countries at the time of default reveals that some of them were quite large. The one observation that is the biggest source of concern here is the Mexican default in June 1979, since the amount then owed by Mexico was very large in comparison to other defaults of the 1978-1980 period. However, this special observation does not seem to drive the results. This can be evidenced in column (2) of Table 1, where equation (1) with the early period dummy has been reestimated omitting the June 1979 observation. The early period is still associated with a positive parameter estimate, although the "t" value and the beta coefficient are both smaller. Employment of the diagnostics suggested by Krasker et al. (1983) does not indicate the further existence of disproportionately influential data.

The results based on equation (1) state that defaults had no impact on stock returns during 1981-1983 when one controls for the industry factor. This finding appears to stem from a positive correlation between defaults and the industry-specific returns during the period.[8] In fact, when an interest factor is employed in place of the industry factor, the later period is seen to be associated with negative valuation. Specifically, we used as a variable the difference between the return on a government bond portfolio and the risk-free rate.[9] Column (3) of Table 1 reports the estimates of this model, and implies negative valuation of bank stocks from defaults. These findings confirm the standard view that developing country payment difficulties created concerns regarding the health of banking

industry as a whole.

It is important to note that the results presented are not contaminated because of cross-equation covariances within each period. This should not be a general concern with our specification since it incorporates an industry factor which presumably controls for correlations within a period. The only source of concern is that this does not properly control for the correlation among the largest banks. Because the largest banks are in our sample, the industry index incorporates the returns of the banks that are not among the largest nineteen. The cross-correlation matrix of equation (1) has therefore been estimated. As anticipated, relatively significant correlations are observed only among the largest few banks, and the largest element of the matrix is near .50. The correlations among the small banks are much lower and between these banks and the few largest banks lower still. Instead of simply using ordinary least-squares in a pooled cross-section time-series framework, we applied Aitken's two stage estimator, restricting the default parameters to be the same across banks. As presented in column (4) of Table 1, the qualitative findings of this application are very similar to the former results obtained.

An additional issue of interest is whether there are significant difference among the responses of the different banks. For example, is there a difference between the effects on larger banks and the effects on smaller banks? To investigate this issue we compared the largest nine banks to the next ten banks in our sample. By conducting an F-test, the hypothesis that the two groups' regression parameters are identical is not rejected at reasonable levels of statistical significance.

Overall our results indicate that defaults had a positive impact on the returns of commercial banks during the 1978-80 period. The negative impact

during the 1981-83 period, however, seems to support the view that the non-payment problems of the developing countries created general concerns over the health of the banking industry, rather than supporting the view that the specific banks involved suffered directly from individual defaults.[10]

2. The Results are not Artifacts of the Event Study Methodology

Since we have omitted all other information prior to the default announcement, the above results could be contaminated by the omission of potentially relevant information as all standard event studies.[11] For example, a country's general economic indicators and political conditions are likely to convey information about the occurrence of defaults. One plausible scenario is that adverse news prior to default generates expectations of large bank losses, while the subsequent nonpayment announcement reveals information that the projected losses were exaggerated; then the announcement would appear positive in a standard event study regardless of the change in the overall value of the loan.

One means of investigating the existence of anticipatory movements prior to the event is to introduce leads. One, two- and three-month leads were included separately for the default variables. One-month leads, for example, impose the restriction that each default was anticipated one month in advance.

The estimated parameters and the "t" values presented in Table 2 suggest that the anticipatory movement in the market prior to the default announcements was negligible. This finding provides evidence that the results presented in the previous section are not mere artifacts of an event study method.

TABLE 2: Impact of Leads: Default Parameters*

Period		(1)	(2)	(3)
1978-1980	d_L	0.027	0.001	-0.003
		(1.731)	(0.001)	(0.197)
1981-1983	d_L	-0.043	-0.004	-0.013
		(-1.442)	(0.379)	(-1.349)
	R^2	0.42	0.41	0.41

*d_L is the estimate of lead parameters and the numbers in parenthesis are "t" values. Columns (1)-(3) employ one-three month leads of the default variable respectively.

III. Interpretation of the Empirical Results: A Model

The empirical findings of the previous section demonstrate that the consequence of reschedulings for the lenders are not always the same. Despite substantial prior work in the problems of sovereign lending, there is not a satisfactory understanding of reschedulings which can explain these results. Eaton, Gersovitz and Stiglitz (1986) and Eaton and Taylor (1986) provide reviews of the literature. Accordingly, in this section we present a model of rescheduling in order to address the particular issue of under what circumstances reschedulings benefit banks or borrowers.

Institutional details of the rescheduling process suggest that reschedulings take place in a unique environment which can not be characterized as competitive. Bank debt reschedulings typically involve three actors: the borrower government, the banks, and the IMF. A coordinating or steering committee of banks is established to act as an advisory and liaison group to all bank creditors to discuss the coverage and terms of rescheduling with the borrower governments. The discussions take place through IMF intermediation. Most reschedulings are based upon IMF conditionality

agreements, which typically restricted further public borrowing from any international source until the relations with current creditors become normalized.[12]

These stylized facts of the international credit markets are captured in a model which assumes that banks operate in a competitive market initially. When outstanding loans come due, one option of the borrower is to default and enter rescheduling negotiations. In such cases, the lenders form a cartel and a bilateral monopoly confrontation between the borrower and lenders takes place. Banks, therefore, might gain from reschedulings if their relative bargaining power is sufficient for them to collect rents on reschedulings.

A. The Model

The model has two periods. In each period the borrower maximizes the utility of consumption and the consumption level is exogenously specified at a minimum of zero.

In the first period, the country borrows an amount, N_1, at a competitively determined interest rate, r_1. Borrowing increases output by augmenting the capital stock. The output from a given amount of borrowing, $y_1(N_1)$, is a random variable that becomes known at the end of period one. It is also nonstorable. Loans mature in one period; thus the debt service $(1+r_1)N_1$ is due at the end of period one.

At the end of the first period, the borrower may choose to pay, to repudiate or to negotiate. First, the borrower who repays will have access to funds N_2 at competitive terms r_c and produce the second period output $y_2(N_2)$. Second, the borrower who repudiates is denied access to further credit and hence will produce only $y_2(0)$. In addition to the denial of credit, the borrower faces an exogenously specified penalty, z. This

penalty is a random variable that is realized at the end of period one. (z may be interpreted as the cost of trade embargoes and assets seized.)

The third option of the borrower is to negotiate. Negotiations are over the settlement of unpaid loans as well as the extension of loans for the second period. At this point the lenders form a cartel. In this bilateral monopoly confrontation the borrower's threat point is determined by repudiation or unilateral rescheduling, depending on which is better for the borrower. Unilateral rescheduling involves payment of the present value of the loan in the second period. (We assume that the borrower is solvent, that is, $y_2(0) \geq (1+r_c)(1+r_1)N_1$.) The borrower does not incur the penalty z for not honoring the original contract; however, it does not have access to new loans until the value of outstanding loans is fully repaid. If the borrower decides to repudiate it will face the penalty z and the opportunity cost of $y_2(N_2) - y_2(0)$.

The lenders maximize profits by lending deposits that are borrowed at the certain competitive rate r_c in each period. If the first period loans are repaid on schedule the return is $r_1 - r_c$. Otherwise, the lender's payoff depends on the threat point. Specifically, when repudiation is the threat point the lenders recover $z_L < z$ as a consequence of imposing the penalty z on the borrower in the second period. Unilateral rescheduling implies that the lenders receive the present value of the first period loans in the second period.

The threat points for the creditor and the borrower algebraically are as follows:

$$\text{Unilateral Reschedulings: } (1+r_1)N_1, \; y_1(N_1) + \frac{y_2(0) - (1+r_c)(1+r_1)N_1}{1 + r_c}$$

$$\text{Repudiation:} \quad \frac{z_L}{1+r_c}, \qquad y_1(N_1) + \frac{y_2(0) - z}{1 + r_c}$$

Where the borrower and the lenders are assumed to use the same discount factor, r_c. Accordingly, the operational threat point depends upon a comparison of the value of the outstanding loans and the repudiation penalty. Let $z^R = (1+r_c)(1+r_1)N_1$. If the realization of z is at $z = z^R$, the borrower is indifferent between unilateral rescheduling and repudiation should bargaining break down. Since the amounts the lender can recover in each case are different, the threat point is discontinuous at $z = z^R$.

An equilibrium satisfies the following properties: all agents have rational expectations about the entire process; choices are dynamically consistent; and the resolution of the bargaining problem in period two is given by the Nash bargaining solution.

B. Equilibrium

In this model repudiation never takes place, a result that follows from the assumption of efficient bargaining. Neverthless, the threat of repudiation is important in determining the operative threat point, hence the outcome of rescheduling. To discuss the properties of the bargaining equilibrium, the gains from reaching an agreement should be specified. $z > z^R$ implies that unilateral rescheduling is the threat point, and the total efficiency gain of an agreement results from continued credit relations. If $z < z^R$, repudiation is the threat point, and the total gain involves the additional gain of the elimination of repudiation costs to both parties. With risk neutrality, the Nash bargaining solution involves equal division of the total gain.[13]

Repudiation is a viable option when penalties are low. Bargaining then

concerns only the extent and terms of the future credit relations. Since a borrower who repays on a timely basis gets all of the efficiency gain, only an illiquid borrower will initiate negotiations. Unilateral rescheduling implies that the lenders gain market power and take a share of the future surplus. Hence the opening of negotiations means higher profits for the banks. This result is stated in Proposition 1.[14]

Proposition 1: Given $(1+r_1)N_1$ and $y_1(N_1)$ there exists z^R such that unilateral rescheduling is the threat point if and only if $z \geq z^R$. i) Borrowers negotiate if and only if $y_1(N_1) < (1+r_1)N_1$, ii) Negotiation is better than timely repayment for the banks.

If repudiation becomes the operative threat point, however, rescheduling may no longer be good news for the banks. This depends on the balance of two opposing effects: first, the lenders incur losses on the currently outstanding loans, since they can only extract payment equal to z. Second, the lenders extract rents from new loans extended under the rescheduling agreement. Formally:

Proposition 2: Given $(1+r_1)N_1$ and $y_1(N_1)$ there exists $z^* \geq z^R$ such that $z > z^*$ implies that: i) Borrowers negotiate if and only if $y_1(N_1) < (1+r_1)N_1$, ii) Negotiation is better than timely repayment for the banks. And $z < z^*$ implies that: i) Borrowers always negotiate; ii) Negotiation is worse than timely repayment for the banks.

Consider the arrival of new information concerning the distribution of y and z values. Increases in the likelihood of illiquidity or in the viability of repudiation raise the probability of bargaining. These two sources of increasing frequency of reschedulings have very different impli-

cations for the expected profits of lenders as stated in Proposition 3. Increases in the probability of low realization of repudiation costs, given the distribution of output conditional on z, decrease the expected profits of lenders. In particular, expected profits decline and become negative, since they were equated to zero at the time the loans were made. However, as illiquidity becomes more likely, lenders revise their expectations of the return upward.

Proposition 3: If $p(z<z^*) < p'(z<z^*)$ for given $p(y_1(N_1)>(1+r_1)N_1|z)$, then $E\Pi(p) < E\Pi(p')$. If $p(y_1(N_1)<(1+r_1)N_1) < p'(y_1(N_1)<(1+r_1)N_1)$ for given $p(z<z^*|y_1(N_1))$, then $E\Pi(p') > E\Pi(p)$ where p is the probability of bargaining and $E\Pi$ is the expected return of the lender.

Proposition 3 suggests that the losses of the banking industry during 1981-83 could be explained by the perceived ability of the borrowers to favorably revise earlier lending agreements. Repudiation had become a viable threat. The gains during 1978-80, on the other hand, were associated with rents collected from illiquid borrowers.[15]

IV. Conclusions

We have empirically investigated the relation between reschedulings and bank value using an event study methodology. Reschedulings are estimated to have had a positive impact on the top U.S. banks during the 1978-80 period. From 1981 to 1983, however, reschedulings had a negative impact on bank valuation. Our investigation suggests that the negative valuation stem from general concerns on the health of the banking industry. These results are shown to be robust to a number of alternative specifications. The empirical findings in this study are important as evidence that reschedulings do not

always lead to the same change in the value of banks' shares and that they are not necessarily equivalent to the writing off of loans.

An explanation for the empirical findings is based on the recognition that the institutional environment during reschedulings is non-competitive, unlike the competitive market in which loans were initiated. The model constructed suggests that the positive relationship for the 1978-80 period can be explained by illiquid borrowers facing a banking community that had a strong bargaining position and which was therefore able to extract rents. The 1981-83 reschedulings, however, were negotiated with the banking industry in a weakened bargaining position.

ENDNOTES

[1]While the average spreads charged on new loans for developing countries increased from 0.83 during 1978-1980 to 1.31 between 1980 and 1983, the spreads on rescheduled loans were around 1 3/4 until 1980 and around 2 1/4 percentage points during 1981-1983. (IMF (1984), p.23). Nearly all agreements signed since October 1983 show further narrowing of spreads compared to the original terms.

[2]Özler (1987) constructs an empirical model of the rescheduling process to calculate unanticipated changes in the value of international loans associated with the newly revealed information relevant to reschedulings. Then the response of bank stock price returns to the unanticipated changes is investigated. The main finding is that the 1978-80 reschedulings have positive impact on bank stock returns, in contrast to 1981-83 reschedulings having negative impact.

[3]CAPM and capital market efficiency in the sense of Fama (1976) suggest that the error term in a standard one factor model is the ratio of the change in firm's value from new information released at time t, to the value at time t-1. Define the information set that contains information on defaults as ϕ_{Dt}. Accordingly D_{jt} is an approximation to $V_{jt} - E(V_{jt}|\phi_{Dt})/V_{jt-1}$ where V_{jt} is the market value of bank j at time t. For further details see Özler (1986).

[4]This is a variant of the standard event study framework. Estimated over the event period, a dummy variable configuration on excess returns avoids specification errors while giving the researcher the same information on the pattern and timing of excess returns that would be obtained from the

conventional cumulative residual approach of event studies.

[5] (DEF_{jt}/V_{jt-1}) is the measure of exposure that is interacted with a dummy variable that indicates the timing of default. V_{jt-1} is the market value of bank j at time $t-1$. DEF_{jt} represents a measure of the amount of loans owed to bank j by the country that defaults at time t. DEF_{jt} is constructed by using amounts owed by countries to groups of banks, and individual banks foreign exposure. The former is obtained from the Federal Financial Institutions Examination Council for the top nine and top fifteen bank groups.(Because of other data limitations only ten of this latter category is in our sample.) This total is allocated to banks according to their share of overall foreign exposure. Since it is an imperfect measure, one would expect a downward bias of the parameter estimates.

[6] The banks in our sample are: Bank of America, Citicorp, Chase Manhattan, Manufacturers Hanover Corp., Morgan (J.P.) & Co., Chemical N.Y., Continental Illinois, Bankers Trust New York Corp., First Chicago Corp., Wells Fargo & Co., Irving Bank Co., Marine Midland Banks Inc., Norwest Corp., Interfirst Corp., Republic Bank Corp., NBD Bancorp Inc., First City Bancorp. Tex., Texas Comm. Bankshares Inc.

[7] Real interest rate increased to 11 percent in 1982 from an average of -0.8 during 1971-80. The recession of industrialized countries is estimated to have cost $79 billion in terms of trade loss and $21 billion in export volume loss to developing countries during 1981-82. Cline (1984, pp. 12-13).

[8] In regression of the (R_n-R_f) on the defaults the intercept (its "t" value) is 0.009 (5.3) and the default parameter ("t" value) is 0.04(4.30) for 1981-1983. The default variable and (R_n-R_f) correlation for the early

period is negligible.

[9]The government bond portfolio is constructed for the 16-20 year maturity government bonds from CRISP government bond tapes. Sheridan Titman has kindly provided the data.

[10]In earlier versions of this paper I have employed an alternative returns generation process. Specifically, the alternative relied on nonlinear estimation procedures since the risk free rate was specified as a function of th treasury bill-rate, instead of directly using the treasury bill-rate. Furthermore, the second factor has been completely left out of some specification. The qualitative results of all these alternatives support the findings regarding the default parameter of this study.

[11]We have also omitted information released between the time of default and the formal signing of an agreement. During that period conditions may change and hence so may the ex post gains/losses. To explore this two other sources of information are introduced: news of bank rescheduling agreements; and news of IMF conditionality agreements and Paris Club reschedulings. First information on bank agreements is introduced. In this specification the default parameters essentially are the same. Agreement parameter estimates and the associated "t" values suggest weak evidence for the existence of information release between the default and agreement. Second we added a dummy variable for the occurrence of IMF conditionality and Paris Club agreements to the former specification. These variables have small "t" values but their major impact is to decrease the t values for the bank agreement variables.

[12]"The IMF seems to provide a crucial ingredient in arranging a cooperative settlement between creditors and debtors .... The case of Peru in the mid-1970s provides a case in point, for the banks and Peru tried unsuccessfully to mimic an IMF program without the IMF. The experiment was a debacle, and eventually the IMF had to enter the scene." (Sachs (1982, p. 231.) "The Rescheduling scheme has a potential problem however, if new lenders enter in the second period. A marginal lender, not a part of the original loan ..., can free-ride on the major creditors .... One mechanism for reducing dilution problems has been for the rescheduling country to commit itself to external borrowing limits via IMF conditionality. In almost all reschedulings, the country is required to undertake an upper-tranche, high conditionality loan from the IMF. Such loans typically restrict public sector borrowing from international capital markets." (Sachs and Cohen (1982, p. 41, 42.)

[13]One function of bank lending may be to provide insurance for consumption fluctuations. However, the results presented in this paper are robust to the assumption of risk aversion.

[14]Proofs and additional properties of the model are in Ozler (1986).

[15]Another prediction of the present model is that the difference between rescheduling rates and the rates on initial loans narrows as repudiation becomes more likely. This seems consistent with the cursory evidence on the behaviour of relevant interest rates when the early and later periods are compared (see note one above).

Appendix

TABLE A-1: Defaults

Date		Country	Amount*	Mean** Residual	St. Er.
1978	February	Turkey	945.1	0.046	0.049
	April	Jamaica	194.1	0.050	0.039
	May	Peru	880.5	-0.001	0.035
	July	Peru	880.5	0.034	0.039
	September	Sudan	304.9	0.001	0.033
	December	Sudan	121.8	0.012	0.031
1979	March	Yugoslavia	1,104.1	0.015	0.039
	April	Jamaica	192.3	0.007	0.037
	June	Mexico	6,311.0	0.056	0.040
	November	Iran	520.8	0.001	0.049
1980	April	Bolivia	285.1	0.046	0.038
	August	Turkey	890.2	0.004	0.027
1981	March	Poland	766.6	-0.067	0.046
	April	Bolivia	168.4	0.001	0.060
		Jamaica	168.4		
	May	Senegal	47.7	0.052	0.041
	August	Costa Rica	232.2	-0.012	0.053
	October	Rumania	207.3	-0.018	0.086
	November	Poland	766.6	-0.005	0.046
1982	January	Honduras	138.8	0.001	0.066
	April	Liberia	143.5	-0.011	0.054
		Zaire	56.5		
	May	Yugoslavia	1,419.9	-0.056	0.062
	June	Argentina	5,595.1	-0.001	0.062
	July	Sudan	141.0	-0.037	0.090
	August	Mexico	13,094.3	0.005	0.087
	September	Bolivia	229.8	0.005	0.062
		Venezuela	7,606.3		
		Malawi	86.0		
	October	Ecuador	1,156.5	0.006	0.069
	November	Dominican Republic	295.9	-0.048	0.055
	December	Brazil	14,165.5	-0.043	0.062
1983	January	Chile	2,991.1	0.006	0.065
		Rumania	160.0		
		Zambia	91.1		
	February	Nigeria	1,303.2	-0.030	0.040
	March	Argentina	5,631.8	0.024	0.048
		Peru	1,423.7	0.024	0.059

Table A-1 (cont.)

Date	Country	Amount*	Mean** Residual	St. Er.
May	Brazil	13,771.4	-0.022	0.058
June	Poland	660.0	-0.022	0.042
	Nicaragua	231.6		
September	Morocco	651.6	-0.040	0.042
October	Liberia	83.5	-0.035	0.050
	Philippines	3,631.4		
November	Chile	3,247.8	0.047	0.048
December	Ivory Coast	385.9	0.004	0.053

* These are the amounts owed to the largest nine U.S. banks (in $ mill.) as reported in the Federal Financial Institutions Examination Council, Statistical Release E.16(126).

**Residuals are calculated from equation (1) that excludes the default variable. Mean is defined across the 19 banks in the sample and St. Err. is the standard error of the residuals.

TABLE A-2

Characterization of the Sample

(Means and Standard Deviations)

	1978-83	1978-80	1981-83
Return	0.014 (0.076)	0.015 (0.067)	0.013 (0.085)
T-Bill (R_f)	0.008 (0.002)	0.008 (0.002)	0.009 (0.002)
NYSE portfolio (R_m)	0.014 (0.045)	0.017 (0.048)	0.011 (0.042)
G-Bond	0.006 (0.039)	0.001 (0.038)	0.011 (0.039)
Industry index	0.018 (0.052)	0.012 (0.051)	0.025 (0.542)
Default dummy	0.514 (0.502)	0.333 (0.472)	0.694 (0.461)
Dummy interacted with exposure	0.062 (0.180)	0.022 (0.085)	0.101 (0.234)

TABLE A-3

Parameter Estimates* - Equation (1) - with an Early Period Dummy**

Parameter		Parameter		Parameter	
α_1	-0.009	β_1	-0.014	I_1	0.722
α_2	0.006	β_2	0.347	I_2	0.647
α_3	-0.004	β_3	0.185	I_3	0.823
α_4	-0.007	β_4	-0.190	I_4	0.962
α_5	-0.002	β_5	0.047	I_5	0.567
α_6	-0.003	β_6	-0.125	I_6	0.933
α_7	-0.009	β_7	0.252	I_7	0.637
α_8	0.001	β_8	-0.128	I_8	1.097
α_9	-0.006	β_9	0.367	I_9	0.901
α_{10}	-0.002	β_{10}	0.226	I_{10}	0.952
α_{11}	-0.005	β_{11}	-0.031	I_{11}	1.013
α_{12}	0.001	β_{12}	0.447	I_{12}	0.433
α_{13}	-0.007	β_{13}	-0.182	I_{13}	1.105
α_{14}	-0.004	β_{14}	0.193	I_{14}	0.858
α_{15}	0.001	β_{15}	0.265	I_{15}	0.660
α_{16}	-0.005	β_{16}	-0.140	I_{16}	0.978
α_{17}	-0.010	β_{17}	-0.133	I_{17}	0.989
α_{18}	-0.003	β_{18}	0.704	I_{18}	0.607
α_{19}	-0.002	β_{19}	0.021	I_{19}	0.758
Default	-0.003 (0.010)	default*early dummy			0.124 (0.027)
R^2	0.424				
no.of observations	1368				

* The standard errors for α_j, β_j and I_j are respectively: (0.007), (0.230), (0.199).

**Early period dummy is defined as one for months prior to January 1981, and is interacted with the default variable.

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