

OIL CRISES AND SOVEREIGN DEBT'S PRIVATE FINANCING EDWARD

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ABSTRACT

Relative to bond financing, there is a significant and temporary increase in the use of loan financing by less developed countries as oil crises occurred. We argue that bank loan syndication reschedules debt more efficiently and better serves balance of payments financing than bondholders. This explanation is consistent with the line of argument that banks are unique. In addition, the low-income countries' loan financing increased more than that of the middle-income countries during the oil-crises, which is compatible with the notion that the contracting cost is cheaper with loan financing than with bond financing.

I. INTRODUCTION

It is widely believed that due to oil shocks banks drastically increased their exposures to less developed countries (LDCs).¹ As a result of oil exporters' preference for liquid assets, banks absorbed large deposits from the oil exporters. The increase in the supply of loanable funds was greeted by a sharp rise in the demand for balance of payments financing by non-oil exporting developing countries, which could have caused banks to increase their exposures to sovereign borrowers through syndicated lending.²

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However, loan financing has been a preferred financing instrument ever since 1970 and there has been a notable increase in the amount of bond financing over the years as well.³ This paper shows that loan financing occurred relatively more frequently when oil prices rose suddenly and that oil crises did not have a permanent impact on the choice of financing method.

Why did borrowers favor loan financing more during the oil crises? The "liquidity explanation" may not be sufficient to answer this question. Indeed, borrowers could have issued bonds instead of borrowing through loan syndication. Or, as Weintraub (1983, pp. 4-5) puts it:

In the mid-1970s, banks recycled OPEC's surpluses to non-OPEC developing nations. If banks had not matched the new petro-deposits to the new credit demands of non-OPEC developing nations, if they had loaned the funds to other entities instead, some of these other entities or those to whom the funds were transferred to, further down the line, would have done the recycling.

The banking literature asserting that banks are unique is called upon to answer this question. Banks are unique because they are efficient information producers (e.g., Leland and Pyle, 1977; Campbell & Kracaw, 1980; Chan, 1983; Diamond, 1984; Ramakrishnan & Thakor, 1984). Banks are more efficient than other types of financial intermediaries partly because of the long-term relationship between banks and clients (e.g., Fama, 1985; Sharpe, 1990).

A phenomenon in the international lending is that a default by a sovereign borrower usually leads to debt rescheduling. We argue that as efficient information producers banks can ascertain the nature of economic shocks which result in default so that banks reschedule debt more efficiently than bondholders. Diamond (1984) shows that banks can serve as delegated monitors for depositors because banks minimize the cost of monitoring information which resolve incentive problems between borrowers and lenders. Applying Diamond's theory to our study, we think that bondholders can just be the depositors, letting banks monitor sovereign borrowers on bondholders' behalf. This can circumvent the free riding problem among bondholders who do not have incentive to monitor for others.

In addition, bank loans are more flexible than bonds in deal with balance of payments financing. Therefore, since oil crises resulted in high probability of debt rescheduling and loan renewal, loan financing was a preferred financing instrument. Our analysis also shows that small and less well-off countries tend to use loan financing more than large and more well-off countries. This is compatible with the argument that the contracting cost is lower with loans than with bonds (Fama, 1985). The findings in this paper thus complement the theoretical and empirical literature contending that banks are unique.⁴

The paper proceeds as follows. Section II gives an overview of the choice pattern of financing instruments during and outside the oil crises. Section III examines how the relative amount of bond financing and loan financing changed as the oil shocks occurred. In section IV the Wilcoxon signed ranks test is applied to test whether or not the choice between bond financing and loan financing is affected permanently by oil shocks. Section V provides explanations for the empirical findings. A conclusion follows.

Table 1. The Amount of Loan Commitments of Loan Financing and Bond Financing—Public and Publicly Guaranteed Debt of 109 Countries Reporting to the World Bank through the Debtor Reporting System (Millions of Dollars)

| <i>Periods</i> | <i>Loans</i> | <i>Bonds</i> | <i>Total</i> | <i>Loan Ratio</i> |
|---|--------------|--------------|--------------|-------------------|
| 1970 | 2598.9 | 144.8 | 2743.7 | 0.947 |
| 1971 | 3081.2 | 488.2 | 3569.4 | 0.863 |
| 1972 | 5223.6 | 871.7 | 6095.3 | 0.858 |
| 1973 | 10080.3 | 934.1 | 11014.4 | 0.915 |
| Total of 70-73 | 20984.0 | 2438.8 | 23422.8 | 0.896 |
| 1974 | 13068.6 | 960.9 | 14029.5 | 0.932 |
| 1974 | 16427.6 | 769.2 | 17196.8 | 0.955 |
| Total of 74-75 | 29496.2 | 1730.1 | 31226.3 | 0.945 |
| 1976 | 22393.1 | 1465.7 | 23858.8 | 0.939 |
| 1977 | 25731.3 | 3481.4 | 29212.7 | 0.881 |
| 1978 | 42059.9 | 3926.1 | 45986.0 | 0.915 |
| Total of 76-78 | 90184.3 | 8873.2 | 99057.5 | 0.910 |
| 1979 | 52545.7 | 2254.7 | 54800.4 | 0.959 |
| 1980 | 43324.8 | 1918.6 | 45243.4 | 0.958 |
| 1981 | 52627.4 | 2548.2 | 55175.6 | 0.954 |
| Total of 79-81 | 148497.9 | 6721.5 | 155219.4 | 0.957 |
| 1982 | 52440.6 | 6822.8 | 59263.4 | 0.885 |
| 1983 | 44100.1 | 2535.9 | 46636.0 | 0.946 |
| 1984 | 34169.8 | 2501.7 | 36671.5 | 0.932 |
| 1985 | 32973.4 | 5164.2 | 38137.6 | 0.865 |
| Total of 82-85 | 163683.9 | 17024.6 | 180708.5 | 0.906 |
| Grand Total of 70-85 | 452846.3 | 36788.2 | 489634.5 | 0.925 |
| Average of 70-85 | 28302.9 | 2299.3 | 30602.2 | 0.925 |
| Normalized Std.* | 0.6283 | 0.7663 | 0.6225 | 0.0386 |
| Oil Crisis Total (74-75, 79-81) | 177994.1 | 8451.6 | 186445.7 | 0.955 |
| Non-Crisis total (70-73, 76-78, 82-85) | 274852.2 | 28336.6 | 303188.8 | 0.907 |

Note: *Normalized standard deviation is derived from dividing the standard deviation by the average of all years.

Source: The loan commitment figures are from the World Debt Tables on tape (1970-85)

II. AN OVERVIEW OF THE CHOICE OF FINANCING INSTRUMENTS, 1970-1985

There are 109 countries which regularly report their financing activities to the World Bank through the Debtor Reporting System. Without a doubt bank loans are the preferred financing instrument. Table 1 shows that in U.S. dollars over 92% of the total amount borrowed in 1970-1985 was from loans. Table 2 shows that for the 18 countries which most actively borrowed in the international bond and loan markets, approximately 98 out of every 100 borrowing contracts were in the form of loan financing during this period.

Although since 1970 both bond financing and loan financing have increased notably, relative to bond financing loan financing increased even more as oil crises occurred. For instance, 80.7% of the 109 reporting countries borrowed only through loans during the non-crisis period, while 83% during the crisis period. Table 1 shows that the ratio of the

Table 2. Annual Frequencies of Bond and Loan Contracts of the 18 Countries That Borrowed Most Actively in the International Bond and Loan Markets

| <i>Periods</i> | <i>Loans</i> | <i>Bonds</i> | <i>Total</i> | <i>Loan Ratio</i> |
|---|--------------|--------------|--------------|-------------------|
| 1970 | 564 | 8 | 572 | 0.9860 |
| 1971 | 627 | 11 | 638 | 0.9828 |
| 1972 | 1004 | 17 | 1021 | 0.9833 |
| 1973 | 1263 | 0 | 1263 | 1.000 |
| Total of 70-73 | 3458 | 36 | 3494 | 0.9897 |
| 1974 | 2240 | 10 | 2250 | 0.9956 |
| 1974 | 1357q | 5 | 1362 | 0.9963 |
| Total of 74-75 | 3597 | 15 | 3612 | 0.9958 |
| 1976 | 1558 | 28 | 1586 | 0.9823 |
| 1977 | 1518 | 74 | 1592 | 0.9535 |
| 1978 | 1772 | 56 | 1828 | 0.9694 |
| Total of 76-78 | 4848 | 158 | 5006 | 0.9684 |
| 1979 | 1804 | 29 | 1833 | 0.9842 |
| 1980 | 1896 | 28 | 1924 | 0.9854 |
| 1981 | 2356 | 36 | 2392 | 0.9849 |
| Total of 79-81 | 6056 | 93 | 6149 | 0.9849 |
| 1982 | 2221 | 59 | 2280 | 0.9741 |
| 1983 | 1400 | 39 | 1439 | 0.9729 |
| 1984 | 1584 | 41 | 1625 | 0.9748 |
| 1985 | 817 | 35 | 852 | 0.9589 |
| Total of 82-85 | 6022 | 174 | 6196 | 0.9719 |
| Grand Total of 70-85 | 23981 | 476 | 24457 | 0.9805 |
| Average of 70-85 | 1498.8 | 29.8 | 1528.6 | 0.9805 |
| Coefficient of Variation | 0.3572 | 0.6732 | 0.3555 | 0.0125 |
| Oil Crisis Total (74-75, 79-81) | 9653 | 108 | 9761 | 0.9889 |
| Non-Crisis total (70-73, 76-78, 82-85) | 14328 | 368 | 14696 | 0.9749 |

total amount borrowed through loan financing during the non-crisis years is 90.7%, vs. 95.5% during the crisis years. For the period 1970-1985 the coefficient of variation for the amount of bond financing is greater than that of loan financing (0.7663 vs. 0.6283), an indication that bond financing is affected more by the oil crises than is loan financing. Furthermore, loan financing is not as prevalent in the post-crisis period as in the oil-crisis period. The loan ratios for the two post-crisis periods (1976-78 and 1982-85) are 0.9104 and 0.9058, lower than the 0.9446 and 0.9567 for the two crisis periods. Therefore, although oil crises made borrowers more dependent on loan financing, their effects might not have continued after the crises. Table 2 delivers the same message. For every one thousand borrowing contracts, approximately 26 were bond contracts during the non-crisis period, versus 11 during the oil-crisis period. The coefficient of variation in terms of contract frequency also indicates that bond contract has a greater variation than loan contract. In addition, the post-crisis loan ratios (0.9684 and 0.9719) are smaller than the crisis-period ones (0.9958 and 0.9849).

Table 3. Percentages and Cumulative Percentages of Loan Ratios (PLFs) Falling in Different 5-Percentile Ranges in Ascending Order by Periods

| | Non-Oil Crisis Period | | | | | | Oil-Crisis Period | | | | | |
|-----|-----------------------|-----------|----------------------|---------------------|---------------------------|------------------|-------------------|----------------------|---------------------|---------------------------|------|--|
| | Percentile Range | Frequency | Density Function (%) | (A) | | Percentile Range | Frequency | Density Function (%) | (B) | | | |
| | | | | Cumulated Frequency | Distribution Function (%) | | | | Cumulated Frequency | Distribution Function (%) | | |
| 1. | 0 | 10 | 1.35 | 10 | 1.35 | 0 | 1 | 0.27 | 1 | 0.27 | 1.08 | |
| 2. | 0.01-5 | 2 | 0.27 | 12 | 1.62 | 0.01-5 | 1 | 0.27 | 2 | 0.54 | 1.08 | |
| 3. | 5.01-10 | 3 | 0.40 | 15 | 2.02 | 5.01-10 | 0 | 0.00 | 2 | 0.54 | 1.49 | |
| 4. | 10.01-15 | 2 | 0.27 | 17 | 2.29 | 10.01-15 | 1 | 0.27 | 3 | 0.80 | 1.49 | |
| 5. | 15.01-20 | 0 | 0.00 | 17 | 2.29 | 15.01-20 | 0 | 0.00 | 3 | 0.80 | 1.49 | |
| 6. | 20.01-25 | 3 | 0.40 | 20 | 2.70 | 20.01-25 | 2 | 0.54 | 5 | 1.34 | 1.36 | |
| 7. | 25.01-30 | 3 | 0.40 | 23 | 3.10 | 25.01-30 | 0 | 0.00 | 5 | 1.34 | 1.76 | |
| 8. | 30.01-35 | 3 | 0.40 | 26 | 3.51 | 30.01-35 | 1 | 0.27 | 6 | 1.61 | 1.90 | |
| 9. | 35.01-40 | 3 | 0.40 | 29 | 3.91 | 35.01-40 | 2 | 0.54 | 8 | 2.14 | 1.77 | |
| 10. | 40.01-45 | 0 | 0.00 | 29 | 3.91 | 40.01-45 | 1 | 0.27 | 9 | 2.41 | 1.50 | |
| 11. | 45.01-50 | 2 | 0.27 | 31 | 4.18 | 45.01-50 | 2 | 0.54 | 11 | 2.95 | 1.23 | |
| 12. | 50.01-55 | 7 | 0.94 | 38 | 5.13 | 50.01-55 | 2 | 0.54 | 13 | 3.49 | 1.64 | |
| 13. | 55.01-60 | 6 | 0.81 | 44 | 5.94 | 55.01-60 | 0 | 0.00 | 13 | 3.49 | 2.45 | |
| 14. | 60.01-65 | 3 | 0.40 | 47 | 6.34 | 60.01-65 | 1 | 0.27 | 14 | 3.75 | 2.59 | |
| 15. | 65.01-70 | 3 | 0.40 | 50 | 6.75 | 65.01-70 | 5 | 1.34 | 19 | 5.09 | 1.65 | |
| 16. | 70.01-75 | 9 | 1.21 | 59 | 7.96 | 70.01-75 | 0 | 0.00 | 19 | 5.09 | 2.87 | |
| 17. | 75.01-80 | 13 | 1.75 | 72 | 9.72 | 75.01-80 | 1 | 0.27 | 20 | 5.36 | 4.35 | |
| 18. | 80.01-85 | 11 | 1.48 | 83 | 11.20 | 80.01-85 | 1 | 0.27 | 21 | 5.63 | 5.57 | |
| 19. | 85.01-90 | 21 | 2.83 | 104 | 14.04 | 85.01-90 | 3 | 0.80 | 24 | 6.43 | 7.60 | |
| 20. | 90.01-95 | 20 | 2.70 | 124 | 16.73 | 90.01-95 | 16 | 4.29 | 40 | 10.72 | 6.01 | |
| 21. | 95.01-99.99 | 19 | 2.56 | 143 | 19.30 | 95.01-100 | 23 | 6.17 | 63 | 16.89 | 2.41 | |
| 22. | 100 | 598 | 80.70 | 741 | 100.00 | TOTAL | 310 | 83.11 | 373 | 100.00 | 0.00 | |
| | TOTAL | 741 | 100.00 | 741 | | TOTAL | 373 | 100.00 | 373 | | | |

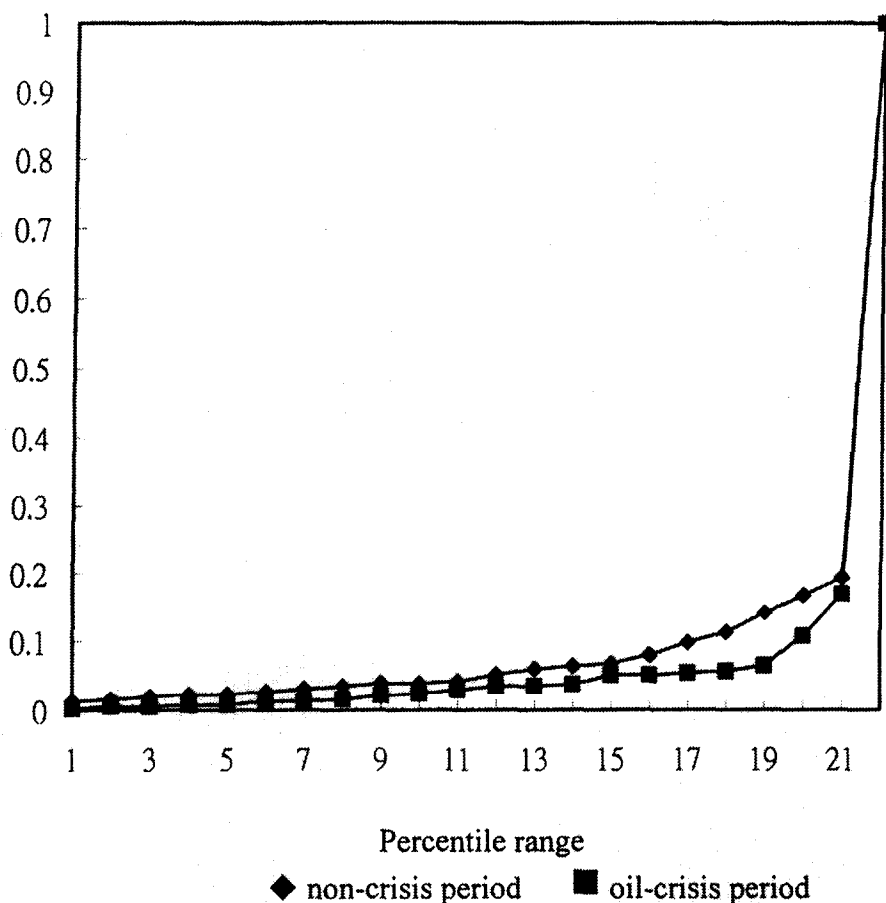


Figure 1. Distribution Functions of the Loan Ratios Falling into 5-percentile Ranges in the Oil- and the Non-Oil-Crisis Periods

III. THE RELATIVE IMPORTANCE OF LOAN FINANCING IN THE NON-OIL-AND OIL-CRISIS YEARS

We now apply the concept of stochastic dominance to show the relative importance of loan financing during the crisis period and the non-crisis period. A country's annual amount of loan financing as a ratio of the total amount borrowed through bonds and loans is defined as follows.

$$PLF_{it} = \frac{LN_{it}}{LN_{it} + BN_{it}}, i = 1, \dots, 109. t = 1, \dots, 16 (1970-1985).^5 \quad (1)$$

LN_{it} and BN_{it} are the amount of loan commitments of loan financing and bond financing for country i in period t . The data are from the World Debt Tables tape and are limited to

long-term public and publicly guaranteed debt from private financial markets. Excluding the years in which countries did not borrow, a sample size of 1,114 loan ratios are obtained.

The 1,114 observations are divided into two subsets: 741 for the oil crisis period, and 373 for the non-crisis period. The PLFs are sorted in ascending order and the numbers of PLFs falling in different 5-percentile ranges are counted. Then the percentage of the number of sample points in each percentile is calculated. Table 3 shows the frequency and the percentage densities as well as their cumulated distributions of the two periods. For example, in the non-oil-crisis period there are seven PLFs inside the 50.01-55 percentile range, which constitutes 0.98% of the PLFs. The cumulated frequency up to this range is 38, which is 5.13% of the total PLFs.

Figure 1 plots the distribution functions of the PLFs falling into different 5-percentile ranges in the oil- and non-oil-crisis periods. The figure clearly indicates that the distribution of the non-oil-crisis period lies everywhere above that of the oil-crisis period. Since sample points in a lower percentile range rely relatively less on loan financing than those in a higher percentile range, by the first order stochastic dominance we argue that there was more reliance on loans in the crisis period than in the non-crisis period. We consider Table 3 and Figure 1 a convincing evidence for two reasons. One, the distribution functions in Figure 1 could cross, which would invalidate the above arguments. Two, our results are invariant to any re-sizing of the percentile ranges.

IV. THE TEMPORARY EFFECTS OF OIL CRISES ON THE RELATIVE IMPORTANCE OF LOAN FINANCING

We now employ the Wilcoxon signed ranks test to test whether the oil crises had a permanent impact on borrowers' financing choices. To test the hypotheses, five sub-periods are defined: the period before the first oil-crisis (I: 1970-1973), the first oil-crisis period (II: 1974-1975), the period after the first oil-crisis and before the second one (III: 1976-1978), the second oil-crisis period (IV: 1979-1981), and the period after the second oil crisis (V: 1982-1985).

The annual frequencies (number of transactions) of bond and loan contracts are the basis of the tests. Countries included in the sample must have borrowed in all of the five sub-periods and the total number of contracts must not be less than six in each sub-period.⁶ In addition, each country must have borrowed in the bond market. Eighteen countries are included in the sample and the data are from the World Bank's private domain.

Let NLT_{it} be the number of loan transactions for country i in sub-period t , and NBT_{it} its bond counterpart.⁷ Define:

$$X_{it} = \frac{NLT_{it}}{NB_{it} + NLT_{it}}, \quad (2)$$

$$Y_{ijk} = X_{ij} - X_{ik}. \quad (3)$$

The test is done in three phases. Phase 1 tests the null hypothesis that the countries' choice of financing was independent of oil crisis. The alternative hypothesis is that countries preferred loans to bonds more in the crisis period than in the non-crisis period. Phase

Table 4. The Wilcoxon Signed Rank Test of the Impact of Oil Crises on the Choice of Financing Methods

| | No. of Effective Obs. ^b | No. of Negative Ranks ^c | ZY | Significance Level of 1-Sided Test |
|--|--|--|--------|---------------------------------------|
| <i>Phase 1</i> | 18 | 15 | -2.548 | 0.6% |
| (1) $X_{I,III,V} - X_{II,IV}$ ^a | | | | |
| <i>Phase 2</i> | 18 | 17 | -3.593 | 0.1% |
| (2) $X_{I,III,V} - X_{II}$ | | | | |
| (3) $X_I - X_{II}$ | 14 | 10 | -1.789 | 3.7% |
| (4) $X_{III} - X_{II}$ | 15 | 13 | -3.181 | 0.1% |
| (5) $X_I - X_{III}$ | 17 | 8 | 0.97 | 16.6% |
| <i>Phase 3</i> | 16 | 12 | -2.12 | 1.7% |
| (6) $X_{III,V} - X_{IV}$ | | | | |
| (7) $X_{III} - X_{IV}$ | | | | |
| (8) $X_V - X_{IV}$ | | | | |
| (9) $X_{III} - X_V$ | | | | |

Note: a. The difference in loan financing ratios between sub-periods I, III, V and sub-periods II and IV.
 b. If a country's loan ratio is identical in the two sub-periods, it is excluded from the sample.
 c. No. of negative ranks refers to the number of countries that have negative Y_{ijk} .

2 and 3 test whether the impact of oil shocks on the choice of financing instrument is permanent, i.e., if X increased in the crisis periods and reverted to its pre-crisis level in the post-crisis periods.

One can rank Y_{ijk} 's by their absolute values in ascending order. Then ranks are assigned to all Y_{ijk} 's with their original signs attached to the ranks. Let YP be the sum of positive ranks. When N is sufficiently large ($N \geq 15$), YP is asymptotically normally distributed with mean $MYP = N(N + 1)/4$, and variance $VYP = N(N + 1)(2N + 1)/24$. So the test statistic

$$ZY = \frac{YP - MYP}{\sqrt{VYP}} \quad (4)$$

is approximately normally distributed with mean zero and unit variance.

The test results are shown in Table 4. For phase 1, 15 of the 18 countries had higher percentages of loan financing in the crisis period than in the non-crisis period. The null hypothesis that loan financing was chosen equally frequently could be rejected at the 0.6% significance level.

For phases 2 and 3 we examine the permanent effect of the first oil shock using sub-periods I, II, and III. Years after 1979 are not included because the effect of the first oil crisis must be isolated from that of the second oil crisis. Likewise, we examine the permanent impact of the second oil crisis using sub-periods III, IV, and V.⁸

Rows (2) and (6) of Table 4 confirm the test results of phase 1. Furthermore, rows (3) and (4) indicate that the use of loan financing jumped significantly as the first oil crisis occurred, then fell significantly afterwards. Row (5) shows that the choice pattern was not significantly different between the pre- and the post-crisis periods, although the post-crisis

period depended even less on loan financing than the pre-crisis period. This implies that the first oil crisis did not have a permanent impact on the choice of financing instruments.

Rows (7) and (8) indicate that although loan financing was used less frequently before the second oil crisis, the post-crisis period did not have significantly less loan financing in comparison to the crisis period. In addition, row (9) reveals that loan financing in the pre-crisis period was less than in the post-crisis period, but not significantly so.

V. DISCUSSION OF THE EMPIRICAL RESULTS

A. *The Uniqueness of Bank Loans as Efficient Debt Rescheduling Instruments*

So far we have some evidence that sovereign borrowers relied more on loan financing during oil crises. We now argue that this is because banks reschedule debt more efficiently and better serve balance of payments financing than bondholders. The sudden increases in oil prices worsened the economic condition and thus the debt repayment ability of many developing country borrowers. As a result, oil shocks increased the likelihood of repeated debt rescheduling in the future.⁹

In the case of sovereign lending, legal means cannot be imposed upon a sovereign government who is not subject to laws regarding bankruptcy and enforcement of collateral. Therefore, unlike domestic debt for which a default can lead to bankruptcy proceeding, sovereign states cannot be rendered bankrupt and therefore a default results in repeated rescheduling.¹⁰ If done inefficiently debt rescheduling could be very costly to borrowers. If bondholders do not find it economical to monitor the borrower's repayment ability and thus cannot reschedule the debt based on the nature of economic shocks, then a default can prompt bondholders to impose heavy default penalty to deter the debtor from defaulting on purpose. In contrast, if banks can monitor the nature of economic shocks, then a default caused by uncontrollable events does not have to result in default penalty. Instead banks can reschedule debt efficiently based on the nature of economic shocks. Thus, compared to bonds, bank loans mitigate future expected rescheduling cost.

There are at least two reasons why banks reschedule debt more efficiently than bondholders.¹¹ One, bondholders are such a non-cohesive group of creditors that it is difficult for them to negotiate with the debtor with consensus, whereas banks in a syndication constantly communicate with one another and therefore can negotiate without as much difficulty.¹² In addition, small bondholders tend to free-ride the monitoring and negotiation results of large bondholders. Loan syndication allows banks to spread the risk as well as the cost of monitoring and negotiation more evenly across members of the syndication.¹³

Two, banks possess more accurate information about a borrower than bondholders. Fama (1985) argues that banks have comparative advantage as inside lenders. "The ongoing history of a borrower as a depositor provides information that allows a bank to identify the risks of loans to depositors and to maintain the loans at lower cost than other lenders." Sharp (1990) considers a similar situation in which a long-term relationship between banks and customers are valuable to banks. The value is embedded in the private information banks acquire over time about a borrower's quality, which is then used by banks to induce

the old customers to stay with the original lender. Berlin and Loeys (1988) consider a case in which a bank monitors efficiently to determine whether or not a borrower's project should be terminated, whereas bondholders are not capable of doing so. Thus, bank lenders should reschedule debt more efficiently than bondholders because: 1) the time and money spent on renegotiation is less when lenders know the borrower's situation better, and 2) the likelihood that lenders make incorrect decisions based on incomplete information is smaller with better information about a borrower.¹⁴

Diamond (1984) shows that banks can serve as delegated monitors for depositors because banks minimize the cost of monitoring information which resolves incentive problems between borrowers and lenders. Applying Diamond's theory to our study, we think that as delegated monitors banks can circumvent the free riding problem among bondholders who do not have incentive to monitor for others. As efficient information producers banks can ascertain the nature of economic shocks which result in default so that banks can reschedule debt more efficiently than bondholders. Bondholders can be depositors, letting banks do the monitoring for them.

Since oil crises resulted in high probability of debt rescheduling, borrowing countries increased their use of bank loans to reduce expected rescheduling cost. When the oil prices stabilized and the uncertainty regarding future economic performance dissipated after the oil crises, the borrowers' pattern of financing choices reverted to its pre-crisis level. This argument is consistent with our observation that the importance of loan financing abated significantly after the first oil crisis ended.

But why did we not find the use of loan financing decline significantly after the second oil crisis? Since 1982 Mexico defaulted on its debt, depressive economic conditions have forced borrowing countries to reschedule debt frequently. We think that, in anticipation of future rescheduling, countries chose loan financing over bond financing to reduce expected rescheduling costs. Consequently, loan financing did not decrease significantly after the second oil crisis. **B. Balance of Payments Financing and the Choice of Financing Instruments** Balance of payments financing is an important part of banks' lending to LDCs.¹⁵ Oil crises increased the need for balance of payments financing. Bank loans can serve balance of payments financing better than bonds.¹⁶

Balance of payments financing is revolving (recurring) in nature and therefore requires a line of credit or frequent loan renewals to meet future contingencies. Bond financing before mid 1980s was clearly not suitable for balance of payments financing for several reasons. One, drawdown of a loan on short notice is normally not possible and frequent trips to bond market are costly. Two, borrowing in advance before a balance of payments need arises may not be feasible, because bondholders may not be convinced of such necessity. Three, information production cost for credit renewal is high because either there would be duplication in the effort to produce information or some bondholders would free-ride on other bondholders' information production.

In contrast, loan contracts are flexible enough to meet future borrowing contingencies. In addition, bank syndication produces information efficiently based on an already existing relationship to determine if a loan would be renewed (Fama, 1985). The duplication of information production is avoided and the free-riding problem is reduced in the case of syndicated lending.

Table 5. GNP Per Capita and the Choice of financing Instruments (Millions of Dollars)

| | All Countries | | | Middle Income Countries | | | Low Income Countries | | | | | |
|-------------------------------------|---------------|----------|-----------|-------------------------|-----------|----------|----------------------|---------|----------|---------|----------|---------|
| | Loans | Bonds | Total | Loans % | Loans | Bonds | Total | Loans % | Loans | Bonds | Total | Loans % |
| Total (1970-1985) | 452,846.3 | 36,788.2 | 489,634.5 | 92.49% | 430,629.9 | 36,070.1 | 466,700.0 | 92.27% | 22,216.4 | 718.1 | 22,934.5 | 96.87% |
| Crisis Period | 177,994.1 | 8,451.6 | 186,445.7 | 95.47% | 168,171.9 | 8,363.5 | 176,535.4 | 95.26% | 9,822.2 | 88.1 | 9,910.3 | 99.11% |
| Per Year Average | 35,598.8 | 1,690.3 | 37,289.1 | 95.747% | 33,634.4 | 1,672.7 | 35,307.1 | 95.26% | 1,964.4 | 17.6 | 1,982.1 | 99.11% |
| Non-crisis Period | 274,852.2 | 28,336.6 | 303,188.8 | 90.65% | 262,458.0 | 27,706.6 | 290,146.6 | 90.45% | 12,394.2 | 630.0 | 13,024.2 | 95.16% |
| Per Year Average | 24,986.6 | 2,576.1 | 27,562.6 | 90.65% | 23,859.8 | 2,518.8 | 26,378.6 | 90.45% | 1,126.7 | 57.3 | 1,180.0 | 95.16% |
| % Increase in the Per Year Average* | 42.47% | -34.38% | 35.29% | 5.31% | 40.97% | -33.59% | 33.85% | 5.32% | 74.35% | -69.23% | 67.40% | 4.15% |

Note: *This is the percentage increase in the per year average figure from the non-crisis period to the crisis period.

C. *Banks as Inside Lenders with Comparative Advantages*

We now provide further evidence for why bank loans are preferred even more during oil crises. Our data indicate that all countries borrowed in the loan market, whereas only wealthy or large countries borrowed in the bond market. Based on the definition of the World Debt Tables, among the 109 reporting countries, only three of the low-income African countries, and only China and India of the low-income Asian countries, ever borrowed through bonds.¹⁷ Six of the 13 oil exporters never issued bonds. Their GNPs are small relative to the other seven oil exporters. Thirty-two out of 59 middle-income oil importers never used bonds, and they are relatively smaller than the rest of the oil importing countries. Table 5 shows that 96.87% of low-income borrowers' debt is in the form of loan financing, in contrast to the 92.27% of the middle-income borrowers. Our observations are consistent with Fama's (1985) that "individuals and organizations of all types and sizes finance with bank loans, but outside debt is issued predominantly by large corporations."¹⁸

Furthermore, Table 5 shows that during the oil-crisis the annual average total amount of borrowing increased more for low-income borrowers (67.40% increase) than for middle-income borrowers (33.85% increase). And the annual average amount of loan financing rose more for low-income borrowers (74.35% increase) than for middle-income borrowers (40.37% increase). But the low-income borrowers' annual average bond financing amount actually dropped by 69.23%, compared to a smaller drop of 33.59% for the middle-income borrowers.

The upshot of the above observation is that as the oil-crises occurred, not only did poorer countries increase their borrowing more than larger and more well-off countries, their use of loan financing also increased relatively more than the wealthier countries. Our observation is consistent with the notion that the information production cost is cheaper with loan financing than with bond financing. Since banks are more efficient information producers than other types of financial intermediaries, it is cheaper for small and poor countries to contract with banks than with bondholders, just as it is cheaper for small organizations to use loans than outside debts.

VI. CONCLUSION

Our empirical findings indicate that countries relied on loan financing more in the oil-crisis period than in the non-crisis period. Furthermore, oil crises did not have permanent effects on the choice between bonds and loans. It is also observed that poor countries used less loan financing than large or wealthy nations, and that the level of loan financing increased more for the low-income countries than for the middle-income countries during the oil-crisis period.

The argument that the competition among banks to recycle oil dollars gave borrowers easy access to loan financing is not sufficient to explain our findings. Were this argument true, one would have observed the changes in the pattern of financing choices as oil crises occurred to be permanent rather than temporary because there was a lasting need to recycle oil dollars. Also, instead of lending through loans, banks could have used oil dollars to pur-

chase bonds. Therefore, there must be something special about the characteristics of bank loans for our observations to have prevailed.

We believe that bank syndication as a delegated monitor is a more efficient form of lending to sovereign countries because it reschedules debt more efficiently by producing better information at a lower cost than bondholders and resolves the free-riding problem among lenders. It is also more efficient for bank loans to finance balance of payments than bonds. Our empirical finding is thus consistent with the line of argument that bank loans are unique.

A final comment on the stability of the world financial system in connection to the "debt crisis" seems appropriate. The fact that bank loans facilitated rescheduling rather than called for outright default helped avoid massive defaults in the 1980s. We note that during the 1930s when most borrowing contracts were in the form of bonds massive defaults occurred. With the aid of hindsight, we know that the fearful widespread defaults in 1980s did not materialize because they were circumvented by debt rescheduling. Loan financing not only substitutes rescheduling for default, it also allows central banks to intervene more easily than in the case of bond financing in which a non-cohesive group of bondholders is difficult to deal with.

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NOTES

1. Two oil crises occurred when oil prices jumped substantially in the 1970s. In this paper the oil-crisis years are defined to be 1974, 1975, 1979, 1980, and 1981. The first oil crisis started in late 1973 and its effect continued into 1975. Since it took time to react to the oil shocks with borrowing, 1974 and 1975 are considered as a crisis period.

2. For example, see Folkerts-Landau (1985), Goodman (1982), O'Driscoll and Short (1984), and Weintraub (1983). Henceforth, this line of argument is called the "liquidity explanation".

3. Since 1968 syndication has been the dominant form of lending through which a number of banks (as many as 200) jointly issue commercial loans to LDCs. Before 1930s the dominant form was bonds issued to individuals and institutions.

4. James (1987) finds that stock prices responded positively to announcements of bank loans, but not to the announcement of publicly or privately placed bonds. Lummer and McConnell (1989) find that the announcement of loan renewals affected stock returns positively. Hirschey, Slovin, and Zaima (1990) show that corporate sell-offs were associ-

ated with positive responses in the equity market when bank debt was involved. These authors conclude that bank loans are unique.

5. The sample period is chosen on purpose to have as many (4) years before the first oil crisis as after the second one.

6. Except for Egypt which had six contracts in sub-period 1970-73, and Singapore which had six contracts in the 1974-75 sub-period, all the other contracts had at least 10 contracts observed in each sub-period.

7. Rescheduling contracts are excluded from the sample.

8. Sub-period III could conceivably be affected by the first oil crisis. However, since the financing pattern in this period is about the same as that of the sub-period I before the first oil crisis, including sub-period III in the analysis for the second oil crisis seems appropriate.

9. One of the distinct features of sovereign debt is constant rescheduling (Bulow & Rogoff, 1989). See Eichengreen and Portes (1986, 1987, 1988, 1990a, 1990b, forthcoming), Winkler (1933), and Madden, Nadler and Sauvain (1937) for historical accounts of debt rescheduling.

10. Outright repudiation of debt usually is not a viable choice for the borrower because the penalty could be too severe. The penalty can be economic and political sanctions as well as complete severance from future borrowing.

11. Bulow and Shoven (1977) study a firm's bankruptcy decision by assuming that banks reschedule debt more efficiently than bondholders. Cohen and Sachs (1982) rely on the same assumption to infer that this is the reason why bank loans have been the dominant financing instrument since the 1970s.

12. As early as in 1868 the British Corporation of Foreign Bondholders was set up in the United Kingdom, followed by the Foreign Bondholders Protective Council in 1933 in the United States (Eichengreen & Portes, 1986), to palliate the "non-cohesiveness" problem so as to facilitate the negotiation between bondholders and sovereign borrowers.

13. De Grauwe and Fratianni (1984) similarly argue that loan syndication spreads the cost of setting up and organizing loans more evenly over large groups of banks than otherwise. This prevents banks from free-riding on the credit information produced by other banks who lent to the same borrower earlier. Ramakrishnan and Thankor (1984) believe that a financial intermediary is a group of individual information producers who spread the risk of producing incorrect information about firms by forming alliances.

14. Lenders' decisions entail imposing default cost and discontinuing to lend, partially forgiving the debt, or continuing to lend hoping that the debtor will grow out of its problem, etc.

15. Our data from the World Bank do not allow us to determine the magnitude of balance of payments financing.

16. Wallich (1982) believes that balance of payments financing is roll-over credit and that banks have an advantage in conducting this type of financing. But he does not provide reasons for his belief.

17. A country is classified as low income if its 1985 GNP per capita was below \$400, as middle income if above \$400. The three low-income African countries are Rwanda, Senegal, and Zambia. They borrowed through bonds only for one year and for very small amounts. China and India are two very large nations with the first and second largest populations in the world.

18. Outside debt is publicly traded debt.

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