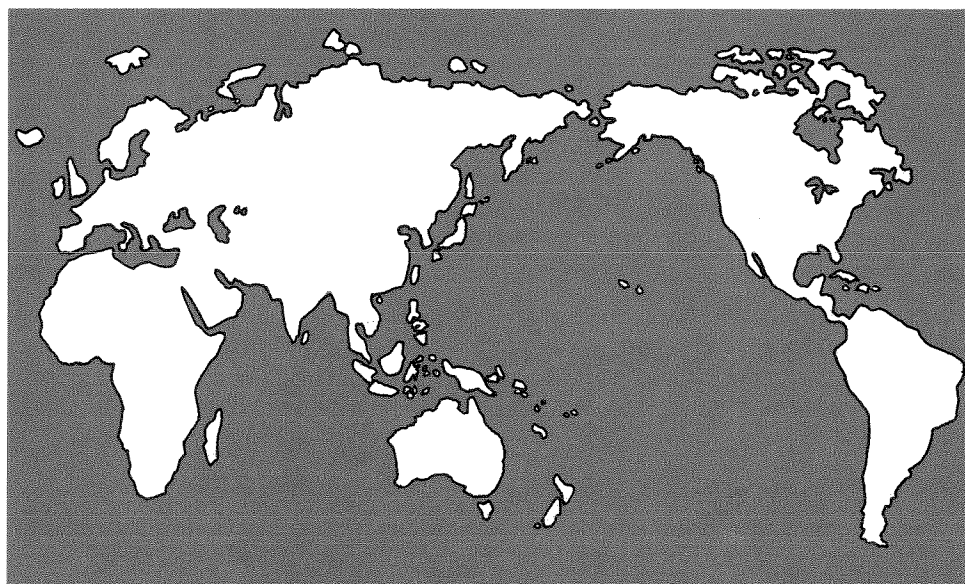


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Banking in the World Economy

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Introduction and Summary

“When America sneezes, the rest of the world catches pneumonia”—so went the favorite cliché of the 1940’s and 1950’s. Now, with the fast-growing influence of foreign nations upon the American economy, the metaphor may have to be revised somewhat, along the lines recently suggested by Tilford Gaines—“When the rest of the world has the sniffles, the U.S. may get them too.” But although the international financial system has shown itself susceptible to a wide variety of economic ills, it has also demonstrated an ability to develop antibodies to fight off disease, in the form of new methods of analysis and new forms of cooperation and regulation. This issue

of the *Economic Review* analyzes the new diseases—and corresponding cures—that have arisen in the risk-infested world of the 1970’s, with special reference to their impact on the operations of multinational banks and multinational corporations.

In the first article, Hang-Sheng Cheng considers the impact of the heavy commercial-bank financing of payments deficits on the stability of both the U.S. banking system and the international financial community. Within several years’ time, the world has experienced an abrupt and large increase in world payment imbalances, a rapid accumulation of external debt by non-oil

developing nations, and a substantially enhanced commercial-bank role in financing those imbalances. Moreover, most analysts expect that this situation will continue for some time to come.

Cheng reviews the pessimistic discussion of the subject found in Congressional testimony and the press, and asks if the system is as inherently unstable as alleged. Judging from a recent International Monetary Fund study of balance-of-payments adjustments, he claims that the pessimistic argument is overdrawn. "Balance-of-payments developments and debt accumulation should be viewed in the context of a growing but inflation-prone world economy. When proper account is taken of output, trade and price changes, the world economy has been more successful in approaching financial stability than is generally realized."

Cheng finds little evidence to support the argument that balance-of-payments loans are inappropriate for banks. Instead he claims that the two-way capital flows between international banks and borrowing countries provide evidence of world-wide financial intermediation, which supports the world economy's efficiency of resource allocation. In particular, he notes the role played by banks as the consequence of a major shift of international payments—from the earlier build-up of payments surpluses by industrial nations to the present build-up of surpluses by OPEC nations and offsetting debt accumulation by less-developed countries (LDC's). Since the OPEC nations place a large portion of their surpluses with commercial banks, the latter play an important part in recycling such funds through the world economy.

Following on Cheng's argument, Nicholas Sargen notes that major international banks strongly discount the possibility of widespread defaults or rescheduling of developing-country loans. A more likely situation would be occasional repayment difficulties requiring refinancing or rescheduling. From the lending banks' standpoint, then, the crucial problem is to detect in advance which countries are likely to experience repayment difficulties and when these difficulties may arise.

More information and improved analytical techniques thus are necessary to detect potential default or rescheduling situations. Sargen finds

many existing procedures wanting in this regard, and discusses ways of improving country-risk appraisal through the use of several types of economic indicators. "Banks should focus on the inflation rate (and its determinants) and the debt-service ratio as the key economic variables affecting a country's borrowings and its ability to repay."

Sargen distinguishes between "liquidity" reschedulings, which are associated with the bunching of short-term commercial credits, and other reschedulings, which are identified with long-term debt relief on official credits. Monetary (and fiscal) factors appear to be closely involved in the "liquidity" cases. Inflation and overvalued exchange rates lead to export stagnation and over-importing—and thence to excessive reliance on foreign borrowing and frequently to foreign-exchange crises. He argues, however, that cases of chronic-debt relief—for example, Ghana and India in the mid-1960's—are less amenable to a monetary framework of analysis. He notes the difficulty of measuring the extent of overvaluation on the basis of inflation-rate differentials, because in these cases of chronic-debt relief, governments tend to resort to price controls, capital controls, exchange controls, and high tariff barriers.

Official regulators as well as commercial-bank analysts must cooperate in maintaining the health of the international financial community, according to Robert Johnston in a third article. He notes that banks have established a good record of international operations through diversification, improved information systems, and appropriate internal controls. "However, banks' collective risk assessment may still result in a banking system that is too risky from the viewpoint of society, and the function of banking supervision is to keep risk exposure within acceptable boundaries. Foreign risk, to the extent it affects the stability of the domestic banking system, makes supervision of international banking necessary."

Johnston argues that there are important distinctions between the types of risk involved—banking risk and sovereign risk. Banking risk is essentially the same at home and abroad. Despite greater potential difficulties in obtaining information on foreign borrowers, the credit factors

involved are fundamentally the same as in domestic lending. Sovereign risk is a different matter, for which there is no exact domestic counterpart. Actually, there are few cases where countries refuse to repay (or refuse permission for their citizens to repay) foreign loans, because borrowing countries don't want to foreclose the possibility of obtaining foreign credit again in the future. Rather, the real problem cases are those where countries get into balance-of-payments difficulties which force them to reschedule debt.

Johnston emphasizes that banks have been successful in reducing their loss exposure, judging by the relatively low losses they have experienced in their foreign operations. But to the extent that official international lending represents a form of insurance, banks may tend to take greater risks, and international supervision must act to counteract that tendency. "At the same time, this emphasis upon risk-taking should not interfere with the ability of U.S. banks to function as international lenders. Indeed, efforts to improve international-banking supervision must ultimately be judged by their contribution to the world as well as the U.S. banking system."

John H. Makin follows by analyzing the impact of a specific domestic action—the now-famous FASB-8—upon the operations of multinational corporations. Statement No. 8 of the Financial Accounting Standards Board was designed to standardize procedures for reporting foreign-currency positions of U.S. multinationals. FASB-8 prompted a storm of protest from many of these firms, which argued that it would cause violent swings in earnings unrelated to their basic economic condition, and hence would penalize their share prices and increase their costs of raising capital. But some analysts retorted that investors should be expected to "see through" reported earnings figures to distinguish between those fluctuations which reflect "fundamentals" and those which don't.

Makin's analysis represents a pioneer effort to measure statistically the impact of FASB-8 upon share prices of multinationals. He notes that FASB-8 standards were super-imposed upon a system of quasi-floating exchange rates which permitted various degrees of exchange-rate flexibility, selectively since August 1971 and more widely since March 1973. For multinationals, such flexibility meant increased variability of the dollar value of foreign-currency items on balance sheets and income statements, with possibly increased variability of net earnings. This fact should have been fully appreciated by investors well before FASB-8 went into effect in January 1976. It was thus necessary to look for possible effects of floating *per se* on costs of equity capital for multinationals, and then see if any additional effects could be attributed to FASB-8.

Makin concludes that the application of FASB-mandated accounting standards produced few unanticipated effects on earnings—and thus on share prices—of *typical* multinational firms such as the oils, drugs and chemicals. The performance of such groupings was generally indistinguishable from that of a control group of domestic firms—whether in the face of floating rates, anticipation of FASB-8, or actual application of that new standard. However, the performance of a group of companies whose earnings are especially sensitive to exchange-rate risk was adversely affected. "Our results suggest that earnings reports which resulted from application of FASB-8 did provide new information which helped investors distinguish *between* multinational groupings regarding the impact of exchange-rate adjustments upon (actual and expected) volatility of reported net dollar earnings. The new standards are significant, then, not so much because of their specific form but because they apply a single standard to all multinationals, and thereby enable the market to judge more accurately the relative importance of firms within the overall multinational grouping."

Commercial Bank Financing of World Payment Imbalances

Hang-Sheng Cheng*

In September 1977, the Senate Subcommittee on Foreign Economic Policy began hearings on the proposed \$10-billion International Monetary Fund (IMF) Supplementary Credit Facility—the so-called “Witteveen Facility.” The Subcommittee’s concern focused on the “massive balance of payments lending that has been done by the commercial banks since the oil price hike”¹ and its impact on the stability of the U.S. banking system and the international financial system as a whole. A subcommittee staff report, prepared in advance of the hearings, described the problem created by the mounting debt of the borrowing countries as follows:

As the debt service burden balloons for many countries toward the end of this decade, the point may come when one or several of these countries will find it more in their interest to simply default or repudiate their external debts rather than to have to continue borrowing just to repay old loans. And if this happens, a domino effect could take place in which other debtor countries follow suit: the banks panic and start calling in their international loans; the stock market drops precipitously; and the international capital market collapses. This doomsday scenario may be extreme in its pessimism, but it is being taken seriously enough by responsible officials that a concerted international effort is now underway to prevent that first domino from falling.²

The purpose of this paper is to analyze the grounds for this concern. Section 1 compares the conditions prevailing in world trade and finance during the 1974-76 period, with those prevailing during the 1970-73 period. This survey confirms

the general impression of abrupt and large increases in world payment imbalances since 1973, rapid external-debt accumulation by non-oil developing nations, and a substantially enhanced commercial-bank role in financing the payment imbalances. Moreover, available projections suggest that world payment imbalances will continue large in the foreseeable future and that banks will continue to handle a substantial part of the payments financing.

Section 2 turns to the question: Is such a system inherently unstable, as alleged? We approach that question by examining three areas: (a) balance-of-payments adjustments of deficit countries, (b) the persistent OPEC surplus, and (c) the mounting debt of developing countries. The analysis suggests that the world economy has been more successful in approaching international financial stability than is generally realized. Although much remains to be done, there is little reason to be overly concerned over the future stability of the international financial system.

Section 3 examines two policy-related issues. First is the prudence of commercial-bank financing of world payment imbalances—in particular, the extension of medium- and long-term balance-of-payments loans for maintaining domestic consumption rather than investment financing. We find little ground for concern over such loans. The second issue concerns the roles of the IMF and national central banks in enhancing the stability and efficiency of the international financial system with respect to commercial-bank financing of world payment deficits. Although the system is found to be basically sound, appropriate national and international measures should be adopted—indeed, some already have been adopted—for improving its functioning and strengthening its safeguards. This and other conclusions are set forth in a final section.

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I. Deficits and External Debts

World payment imbalances

The world current-account payment imbalance shifted abruptly in recent years, from an annual average of \$20 billion in the 1970-73 period to \$87 billion in the 1974-76 period.³ (Table 1) Incidentally, we separate "Surplus OECD" from "Deficit OECD" countries in this comparison, to underscore the different balance-of-payments performances among the OECD countries. As a result, the total world payment imbalance (total deficits) is much larger than when all OECD countries are considered as a group.⁴

The countries that suffered the largest declines (in absolute terms) from the recent shocks to the world economy were not the non-oil developing nations, as is commonly assumed, but the "Deficit OECD" countries. As a group, the latter countries recorded a shift from a current-account surplus of \$3 billion per year during the 1970-73 period to an annual deficit of \$29 billion during 1974-76, whereas the non-oil developing countries moved from a \$15-billion average deficit to a \$37-billion average deficit over the same period.

International debt accumulation

Although nearly all the deficit countries borrowed internationally during 1974-76, data on external debts are available only through 1975, and only for the 84 developing countries that regularly report such information to the World Bank.⁵ The data indicate that the accumulation of public external debt accelerated sharply in the 1972-75 period (Table 2). Most notably, non-oil developing countries increased their debts to foreign *private* creditors at a 40-percent annual rate in the 1972-75 period, compared with a 17-percent growth rate in the 1970-72 period. Consequently, such debts rose from 31 to 40 percent of the non-oil LDC's total external public debts between the end of 1970 and the end of 1975. According to incomplete World Bank estimates, external public debts of the non-oil LDC's continued to rise in 1976, but at a decelerated (23-percent) rate, to a year-end total of \$123 billion.⁶

Bank lending

The recent rapid growth of international lending has been a global phenomenon, with banks of

Table 1
World Current-Account Balances,¹ 1970-76
(Billions of Dollars)

	<u>Annual Averages</u>					
	1973	1974	1975	1976	1970-73	1974-76
(1) OPEC ²	3.0	63.5	35.5	44.0	1.5	47.7
(2) Surplus OECD ³	12.8	12.0	27.4	18.6	7.9	19.3
(3) Deficit OECD ⁴	-1.3	-34.0	-20.9	-32.1	3.1	-29.0
(4) Non-oil Developing ⁵	-15.0	-32.5	-44.0	-34.0	-15.0	-36.8
(5) Socialist and Others ⁶	-4.0	-10.5	-17.5	-13.5	-4.0	-13.8
(6) Statistical Discrepancies ⁷	4.5	1.5	19.5	17.0	6.5	12.5
Total Deficits	-28.4	-85.5	-89.7	-85.7	-20.5	-86.9

1. Balance on goods, services and private transfers.

2. Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, U.A.E., and Venezuela.

3. Germany, Japan, Belgium, Netherlands, Switzerland, and United States.

4. Australia, Austria, Canada, Denmark, Finland, France, Greece, Iceland, Ireland, Italy, Luxembourg, New Zealand, Norway, Portugal, Spain, Sweden, Turkey and the United Kingdom.

5. All countries that are not included in "OPEC" or "Socialist and Others."

6. USSR, Eastern European Countries, China, North Korea, Mongolia, Laos, Cambodia, Vietnam, Malta and South Africa.

7. Attributed to asymmetries in national reportings of balance of payments data. For details, see Organization for Economic Cooperation and Development, *Economic Outlook*, July, 1977, Technical Annex, pp. 152-3.

Source: Based on data in Organization for Economic Cooperation and Development, *Economic Outlook*, July 1977, pp. 69, 72-73, 89.

many nations participating (Table 3). The data indicate that the banks' external claims increased by more than 50 percent during the 1974-76 period, and more than doubled between 1973 and 1976 when interbank credits were excluded.

For the three groups of payment-deficit countries, the banking system provided about \$51 billion net lending in 1976 (Table 4), but that was offset by a reverse flow of \$31 billion into the banking system, so that the *net* banking capital flow amounted to only \$20 billion, or about 25 percent of their aggregate deficit in 1976 (Table

1).⁷ Bank net financing of current-account deficits last year amounted to 55 percent for "Socialist and Others," 23 percent for "Deficit OECD," and only 14 percent for "Non-Oil Developing."

Despite the concern over bank lending to the non-oil LDC's, the net banking capital flow to these countries amounted to only \$4.9 billion in 1976, or 25 percent of the total flow to all deficit countries. Moreover, only Latin American non-oil LDC's were net bank borrowers (\$7.9 billion), and Mexico and Brazil accounted for almost that entire amount (\$7.1 billion). This analysis thus suggests the need to consider

Table 2
External Public Debt¹ of 84 Developing Countries

	1970	1972	1975	Annual Average Increase	
				1970-72	1972-75
	(Billions of dollars)			(percent)	
Total	51.3	69.0	121.2	17.3	25.2
Official Creditors	35.4	46.1	70.9	15.1	17.9
Private Creditors	15.9	22.9	50.2	22.0	39.7
Non-Oil Developing Countries	43.8	56.8	100.3	14.9	25.5
Official Creditors	30.1	38.4	59.4	13.8	18.2
Private Creditors	13.7	18.5	40.8	17.5	40.2

¹Disbursed debt outstanding at end of year.

Source: *IMF Survey*, Supplement on International Lending, June 6, 1977, p. 186.

Table 3
Total External Claims of Banks¹, 1973-76
(Billions of Dollars)

	1973	1974	1975	1976
Total Claims	n.a.	368	447	555
U.S. banks ²	n.a.	185	223	286
Other banks	n.a.	183	224	269
Claims on Non-Banks	154	215	261	326
U.S. banks ²	56	83	98	124
Other banks	98	132	163	202

¹Includes banks in the United States, Western Europe, Canada and Japan.

²Includes branches.

Source: *IMF Survey*, Supplement on International Lending, June 6, 1977, pp. 177 and 182; and Senate Subcommittee staff report, *op. cit.*, p. 44.

changes in bank liabilities as well as changes in bank claims on developing countries. The differ-

ence between the two reflects a country's net recourse to the banks during a given period.

II. Stability of the Present System

The prevailing concern over the stability of the international financial system may be summarized by three propositions which are analyzed in this section:

1. Balance-of-payments financing by banks has enabled the deficit countries to postpone adopting necessary but politically and socially difficult policy measures for correcting payments deficits. Continued reliance on foreign borrowing reflects

continued inability or unwillingness to adopt necessary policy measures.⁸

2. The persistent surplus of the OPEC nations is a "structural surplus," which is not amenable to normal balance-of-payments adjustment policies.⁹ Until oil-importing nations as a group adjust to reduce their dependence on oil imports and until oil-exporting countries expand their import-absorptive capacities, oil importers will

Table 4
External Positions of Banks¹ Vis-a-Vis Groups of Countries
Year-End 1975 and 1976
(Billions of Dollars)

	1975		1976		Change in Claims	Change in Liabilities	Change in Net Position
	Claims	Liabilities	Claims	Liabilities			
Surplus OECD ²	128.2	154.3	149.6	189.0	21.4	34.7	13.3
Offshore Centers ³	61.9	40.8	83.7	56.2	21.8	15.4	6.4
Oil-Exporting ⁴	14.3	51.8	24.1	64.2	9.8	12.4	-2.6
Subtotal	204.4	246.9	257.4	309.4	53.0	62.5	-9.5
Deficit OECD ⁵	134.6	138.6	158.5	155.2	23.9	16.6	7.3
Non-Oil Exporting	65.2	38.4	83.7	52.0	18.5	13.6	4.9
Latin America ⁶	(43.5)	(16.3)	(57.4)	(22.3)	(13.9)	(6.0)	(7.9)
Middle East and Africa	(6.6)	(10.0)	(8.8)	(12.4)	(2.2)	(2.4)	(-0.2)
Other Asia	(12.9)	(10.4)	(14.7)	(14.7)	(1.8)	(4.3)	(-2.5)
Other Europe ⁷	(2.2)	(1.7)	(2.8)	(2.6)	(0.6)	(0.9)	(-0.3)
Socialist and Others ⁸	28.2	9.6	36.6	10.6	8.4	1.0	7.4
Subtotal	228.0	186.6	278.8	217.8	50.8	31.2	19.6
Unallocated ⁹	9.3	13.6	11.4	16.4			
Total	441.7	447.1	547.6	543.6			

1. Banks in the Group-of-Ten countries and Switzerland and the foreign branches of U.S. banks in the Caribbean area and the Far East, in domestic and foreign currencies.

2. See Table 1, Footnote 3.

3. Bahamas, Barbados, Bermuds, Cayman Islands, Hong Kong, Lebanon, Liberia, Netherlands Antilles, New Hebrides, Panama, Singapore, West Indies.

4. Includes Bahrain and Oman, which are not members of OPEC.

5. See Table 1, Footnote 4.

6. Includes those countries in the Caribbean area which are not offshore banking centers.

7. Andorra, Cyprus, Gibraltar, Liechtenstein, Monaco, Vatican, Yugoslavia.

8. See Table 1, Footnote 6.

9. Includes international institutions, residuals of Western European countries and other developed countries, and statistical discrepancies.

Source: Bank for International Settlements, *Annual Report 1976*, pp. 86-87; *Annual Report 1977*, pp. 112-114.

continue to accumulate a large aggregate payment deficit to the oil-exporting nations. So long as the oil surplus persists, there is no end in sight to this cycle of a few permanent financial surplus oil producer countries and burgeoning international indebtedness by weaker oil importing countries.¹⁰

3. These developments have led to mounting international debts with rising debt-service burdens for debtor countries. If this situation continues, debtor countries may start defaulting or repudiating external debts, and this could signal the collapse of the shaky international financial system.¹¹

Payment adjustments

Many observers consider persistent large payment imbalances as *prima facie* evidence of lack of adjustment by the deficit countries. The blanket indictment, however, is an over-simplification which considers only the nominal magnitudes involved, in isolation from the major price and output changes that have taken place in the world economy. Moreover, the aggregate figures hide a great deal of payment adjustments that have actually taken place in recent years.

The conventional wisdom—see Proposition 1 above—has been challenged in a massive study

by the International Monetary Fund,¹² the result of which is summarized in Table 5. The study compares IMF staff projections of 1977 current-account balances of four groups of countries with their average balances in 1967-72—“a period of little bias in cyclical conditions”¹³—adjusted to reflect changes in prices and real output. The results indicate that (a) the industrial countries have sustained the largest current-account deterioration (\$32 billion) in comparison with their 1967-72 norm; (b) the deficits of other developed non-oil countries have doubled since 1967-72; and (c) non-oil LDC's are the only oil-importing group which has fully adjusted to the oil-price increases and other economic disturbances.

The IMF study also notes that, as a result of these changes, the oil-exporting nations have replaced the industrial countries as the major surplus group, supplying national savings for financing the net imports of goods and services required by non-oil LDC's. Only the “non-oil more-developed” countries are now incurring a substantially greater current-account deficit than they did in 1967-72.¹⁴ Thus, aside from these shifts, the global structure of current-account balances has been largely restored to its 1967-72 pattern. If that earlier structure was a stable one, there should be no cause for alarm over the present payments structure.

Table 5
Global Current-Account Balances:
1977 Projections Compared to Rescaled 1967-72 Norms
(Billions of dollars)

Country Groupings	1967-72 Average		1977 Projections	Changes Effected by 1977
	Actual	Rescaled to 1977 Levels ¹		
	(1)	(2)	(3)	(4)=(3)-(2)
Oil Exporting ²	0.7	3	37	34
Industrial ³	10.2	31	-1	-32
Other Non-Oil				
More Developed ⁴	-1.7	-6	-12	-6
Less Developed ⁵	-8.1	-28	-25	3

1. 1967-72 average rescaled to 1977 prices and real-output levels by using (a) a general index of world trade prices for rescaling prices, and (b) average real-GNP (or GDP) growth rates of the respective country groups for adjustment for output growth.

2. OPEC countries, as listed in Table 1, Note 2, minus Ecuador and Gabon, plus Oman.

3. OECD countries, as listed in Table 1, Notes 3 and 4, excluding Australia, Finland, Greece, Iceland, Ireland, New Zealand, Portugal, Spain and Turkey.

4. OECD countries excluded in Note 3 above, plus South Africa, Malta, and Yugoslavia.

5. All other IMF member countries.

Source: IMF, *Annual Report 1977*, p. 13.

Persistent OPEC surplus

If the above IMF analysis is correct, then the persistent OPEC surplus should not be a threat to the stability of the international financial system. As stated, the OPEC countries have now displaced the industrial countries as the surplus group in the world economy. Of course, a persistent OPEC surplus implies a persistent deficit on the part of the oil-importing nations, but that is no more a "structural imbalance" than was the former surplus. The latter represented national savings that helped to finance the rest of the world's economic-development expenditures. Now, the OPEC countries have assumed the role of supplying such savings—the players have changed, but the game is the same.

Some worry about the reliability of the new players. What if for political considerations, they employ their enormous financial resources as a weapon and threaten to withdraw funds from the financial institutions of the major industrial nations? Would that not unsettle the market and, in particular, the affected institutions?¹⁵ The concern perhaps stems from a faulty perception of how banks compete for funds. A sudden withdrawal of any large deposit always poses a threat to an individual bank's profit margin, as the bank has to scurry for funds that may be more costly than the original deposit. But such an occurrence does not threaten the stability of the market as a whole nor the viability of the bank as an institution. The withdrawn funds have to go somewhere, and can be recycled back to the original bank if the bank is willing to bid for them.

In addition, as Thomas Willett has pointed out, there are strong economic incentives against irresponsible behavior by OPEC (in fact, any) investors.¹⁶ In today's highly competitive foreign-exchange and financial markets, large sudden shifts of funds will turn prices and exchange rates against the one making the transfer. Thus, the market place exercises its own discipline against erratic behavior on the part of individual participants. Indeed, to date, there has been no evidence to suggest that OPEC investors have behaved irresponsibly.

Mounting debt

Concerns over the so-called "mounting debt" problem are often expressed in terms of the

nominal value of the accumulated debt, in isolation from other factors in world economic growth. That is hardly a meaningful way of looking at the problem. The magnitude of the problem also depends critically on price changes, income and export growth, and similar factors.

From 1970 to 1975, the nominal debt of developing nations increased steadily by 145 percent, while their real debt (adjusted for export-price changes) rose by only 40 percent—and actually declined from 1972 to 1974 as a result of steep increases in primary-commodity prices (Chart 1, upper panel). Various debt ratios, despite increases in recent years, still remain below their 1972 peaks, and the situation is not expected to change much in 1977 (Chart 1, lower panel). These measures include the ratio of outstanding debt to exports, the debt-service ratio (ratio of interest plus amortization to exports), and the ratio of interest payments to exports. Thus, after allowing for price changes and export growth, international indebtedness has not increased disproportionately in recent years.

The current concern over the external-debt problem is reminiscent of the fears expressed over consumer-credit accumulation in this country in an earlier era. During the 1950's, the public became alarmed by the fact that in the first postwar decade, consumer credit had risen at a 26-percent average annual rate compared with only a 6-percent growth rate of personal income. What would happen to the economy if the debt burden became unbearable and debt accumulation had to stop? In a classical analysis of the subject, Alain Enthoven used a simple debt-growth model to show the unwarranted nature of this concern.¹⁷ His model assumed a constant income growth rate, and new borrowings as a constant proportion of income. Over time, both the debt-growth rate and the debt-income ratio would asymptotically approach their respective limits, which are determined by the income-growth rate and the new borrowing/income ratio. Moreover, if the initial stock of debt is small, both the debt-accumulation rate and the debt-income ratio would rise steeply at the beginning and then asymptotically approach their respective long-run limits. The Enthoven prediction has been borne out by subsequent developments. The debt-income ratio rose only from 10 percent to

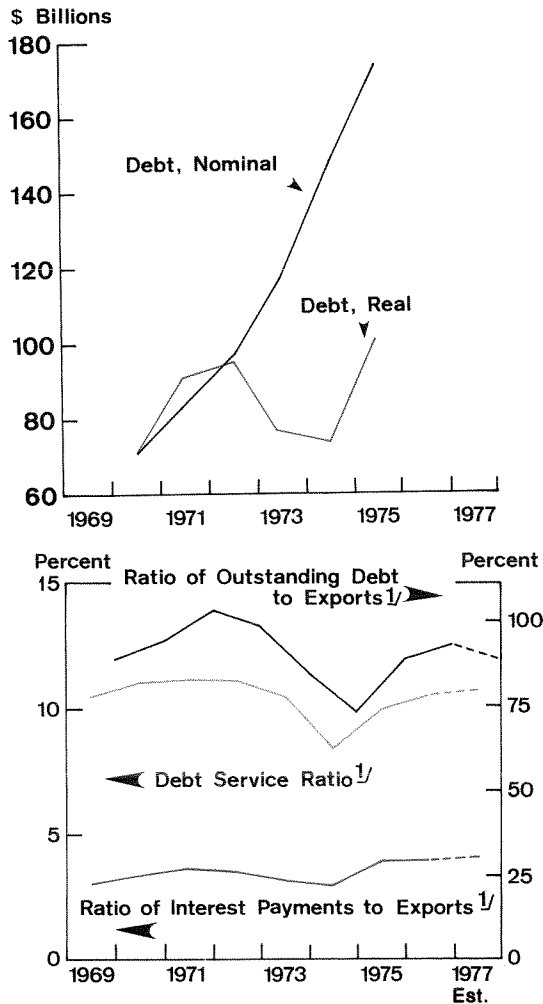
13 percent between 1956 and 1976, and the average annual growth rate of consumer instalment credit dropped from 22 percent in the first postwar decade (1946-56) to 9 percent during the decade ended 1976.¹⁸

The moral of the Enthoven model is very simple: Debt and economic growth are closely related. Since debt must be serviced out of current income, the debt-income ratio is a key factor to

consider. In the short run, because of transitory factors, the ratio may rise very sharply for a time. But in the long run, the ratio depends on two factors—the rate of growth of income, as well as the ratio of debt accumulation to income. In other words, a growing economy can service a growing volume of debt, and short-run fluctuations in the debt-income ratio provide little guidance to the analysis of debt-accumulation problems.

Chart 1

DEBT OUTSTANDING AND DEBT SERVICE RATIOS OF DEVELOPING COUNTRIES, 1969-77



¹ The debt and debt service figures relate only to medium-term and long-term external public, or publicly guaranteed debt, as defined in the Debt Reporting Statistics of the IBRD.

Source: International Monetary Fund, *Annual Report 1977*, p. 22; *IMF Survey*, Supplement on International Lending, June 6, 1977, p. 185.

III. Policy Issues

Bank lending

Four separate issues have arisen with respect to bank financing of world payment deficits: (a) the risks in extending medium-term (1-7 year) balance of payments loans when bank liabilities are predominantly short-term;¹⁹ (b) the risks in making balance-of-payments loans for maintaining consumption rather than for expanding investment in productive projects;²⁰ (c) the relationship between profit and risk in foreign lending; and (d) economic efficiency in world-wide allocation of capital through the private market system.

Balance-of-payments loans present the usual problem of matching long-term assets against short-term liabilities.²¹ In order to cope with interest-rate fluctuations, banks apply floating rates to most of their Eurocurrency medium-to-long term loans, with the loan rate adjusted every six months or so to reflect movements in the London interbank offer rate on deposits (the LIBOR rate). Thus despite being technically committed to fairly lengthy loans, banks essentially renegotiate their loans on every roll-over date.²² In this way, they have demonstrated the ability to develop successful techniques for managing the liquidity problem in the areas of both domestic and international banking.

The concern over the use of balance-of-payment loans for domestic consumption rather than investment ignores the fungibility of capital. This means that once loan proceeds are received, the funds can no longer be distinguished from those obtained from other sources, and are thus completely substitutable with each other. For instance, a loan purportedly for the financing of an investment project could enable the borrower to release his own resources for other "non-productive" purposes. On the other hand, a loan purportedly for the importation of consumer goods could free a country's domestic resources for "productive" investments. In short, the true test of the soundness of a loan is not its stated purpose, but the anticipated income stream of the borrower—which in the case of a foreign nation is its expected rate of economic growth.

On the question of profitability, banks have achieved a considerably higher level of profits on

international banking than on domestic banking in recent years. In 1976, international operations accounted for 57 percent of Citicorp's assets but for 72 percent of its after-tax earnings, and for 48 percent of Chase's total assets but for 78 percent of its earnings.²³ However, critics have asked whether banks have become so attracted by the profitability of international lending as to have imprudently incurred an unacceptable level of country risk.²⁴ Yet recent surveys on banks' internal control over foreign lending—conducted by the Federal Reserve System and the U.S. Eximbank—have yielded no evidence to support that conclusion.²⁵ Moreover, gross domestic loan charge-offs rose from 0.42 percent in 1974 to 0.94 percent in 1976, while international loan charge-offs rose from 0.11 percent to 0.20 percent over the same period.²⁶ Thus, international banking to date has been at least as successful as domestic banking in balancing profitability and risks.

A final consideration relates to the economic function of bank lending, in terms of the efficiency of allocation of capital on a world-wide scale. Most analysts recognize that banks perform an important task of international financial intermediation in recycling oil-surplus funds, but few explicitly recognize that the banking role goes much farther than that. The extensive banking network that has been built up during the last 15 years is now gathering savings from all parts of the world and redistributing them on a world-wide basis in response to market forces. In particular, the flows of funds are not uni-directional from surplus countries to deficit countries, but are rather *two-way* flows with respect to each region and indeed to each country as well (Table 4). Access to the banking network offers savers all over the world an opportunity for international portfolio diversification, so as banking capital flows into relatively high-return countries, savers in these countries also put funds in the banks for risk diversification.²⁷ Again, because of economies of scale and scope of risk diversification, multinational banks can operate world-wide on a lower overall spread between deposit and lending rates, than can local financial institutions. In ei-

ther case, the development of the international banking network means a gain in economic welfare for the world as a whole.

Role of the IMF

Several recent proposals have called for the International Monetary Fund to play a more active role in helping member countries cope with their payments financing and adjustment problems. The proposals fall into two categories: (a) enlargement of IMF resources to provide more effective assistance to member countries, and (b) increased coordination with commercial banks to reduce risks of private lending.²⁸

(a) *Enlargement of IMF resources.* The two proposals of this type include the so-called "Witteveen facility" (described below) and the authorization for the IMF to borrow directly in the private capital market.²⁹ Both recognize the fact that IMF resources have become woefully inadequate in relation to its responsibilities as a result of the substantial growth of world payments deficits. During the 1974-76 period, IMF lending rose to record levels but still financed only about six percent of aggregate payments deficits.³⁰

The Witteveen Facility is designed as a Supplementary Credit Facility at the IMF, consisting of funds borrowed from source countries at 7-percent interest and re-lent to deficit countries at market-related interest rates. About \$10 billion has been pledged, including \$2.5 billion from Saudi Arabia, \$1.7 billion from the United States, \$1.2 billion from Germany, and \$1.0 billion from Japan. The Facility is viewed as a stop-gap until the IMF's regular quota resources are substantially increased in about two years' time.

Several misgivings have been raised about the proposed Facility. One criticism, raised by Senator Frank Church, concerns its size in relation to the magnitude of the aggregate payment deficits. "The amount contemplated—approximately \$10 billion—is nowhere near the magnitude necessary to cover the balance-of-payments deficits of the oil-importing countries. Consequently, it is anticipated that there will be future requests for additional Congressional appropriations."³¹ Another criticism concerns the use of the Facility "for bailing out the commercial banks or taking over risky loans injudiciously contracted by the banks."³² Another possibility is that the banks, with such a "safety net" under them, might lower

their standards for controlling risk and further expand their foreign lending, thus aggravating the external-debt problem.³³

In response, it might be noted that the Facility's purpose is not so much to permit the IMF to engage in a larger volume of lending, as to strengthen its hands in urging member countries to adopt appropriate policies to cure payment imbalances. In the words of Federal Reserve Chairman Burns: "One reason why countries often are unwilling to submit to conditions imposed by the IMF is that the amount of credit available to them—as determined by established quotas—is in many instances small relative to their structural payment imbalance."³⁴

The key words about the proposed Facility—indeed, about the use of all IMF credits—are "conditionality" and "payment-adjustment policies." Thus, the intent of the Facility is neither to "bail out banks" nor to "bail out countries," but to offer a viable avenue—a financially sound package—for countries in payment difficulties to adopt in order to return to health. The outcome would be reduced payment imbalances and a healthier world financial climate. The resultant reduction in risk might induce banks to expand their foreign lending beyond what they would otherwise do, but that does not necessarily imply any lowering of standards of risk-assessment. If the Facility were administered as intended, banks could not reasonably expect to be bailed out from loans to countries that do not accept policy conditions attached to IMF credits. Thus, bad loans would still be bad loans, but the Witteveen Facility, by encouraging debtor countries to adopt payment-adjustment policies, would help improve the chances of turning potentially bad loans into good loans.

(b) *Coordination with banks.* Enhanced IMF-bank coordination could take the form of greater consultation to prevent misunderstandings, greater flows of information to assist evaluation of borrowers' creditworthiness, and co-financing packages involving a blend of IMF and private funds. All these proposals raise fundamental questions about the operations of the IMF and its relationship with sovereign members and private banks. It is, therefore, not surprising that the IMF thus far has reacted cautiously to the various proposals.

Difficulties could arise, for example, over the proper handling of information flows. There can be no disagreement that a larger and freer information flow would aid risk assessment and thus improve the efficiency of the market. Specifically, more information—and more systematic and timely information—is needed on the magnitudes, maturity structures, external guarantee provisions, and types of borrowers of both the public and private external debts of individual borrowing countries. A multinational project is now underway, under the auspices of the Bank for International Settlements, to collect such information from banks of major industrial countries and make it available to banks engaged in foreign lending.³⁵ More difficult is the development of thorough analytical reports concerning not only the economic conditions in borrowing countries, but also the willingness and ability of their governments to carry out appropriate stabilization policies. The IMF already prepares material of this type, but it is generally not available to the public because of the confidential nature of IMF recommendations.

The need for information, however, should not be overstated, because the market mechanism can help adjust for the volume and quality of the information available at any point of time. For instance, if a government is either unable or unwilling to supply information which a potential creditor deems critical, this should affect the loan rate or lending terms—or even the decision to lend. On the other hand, if the availability of such information in fact makes little difference to loan terms, it may be a good indication that the information is not so critical after all.

Lastly, several leading commercial bankers have addressed the question of co-financing packages and coordination in lending policy. John Haley of Chase Manhattan has noted that informal consultation already exists between banks and the IMF, and asks to what extent the cooperation should be formalized. He argues against formalizing the situation to the point where the IMF would become the arbitrator of both official and private lending.³⁶ Gabriel Hauge of Manufacturers Hanover points to the complications arising from parallel-financing plans, where the loan agreement between the IMF and the borrowing country contains clauses

that are confidential between the two parties. He suggests as a solution “cross default” clauses in parallel-loan agreements, so that default against any one loan would mean default against all the loans in the package. Thus protected, bank participants in the package would not need to know the terms of agreement between the IMF and the individual borrowing country.³⁷

Role of Central Banks

In the area of international banking, as in domestic banking, a central bank's responsibility encompasses both a regulatory/supervisory function and a lender-of-last-resort function for supporting the liquidity of a particular institution or of the economy as a whole. The former is the subject of another article in this issue.³⁸ A few comments may be added regarding the central bank's second responsibility—the lender-of-last-resort function.³⁹

The concern over foreign lending arises over the tendency for banks to jump on the bandwagon when things are going well and to stop lending when things go sour. This tendency creates great swings in lending activities, and at worst a general banking crisis.⁴⁰ That, of course, is precisely what central banks are supposed to forestall through their lender-of-last-resort function, by providing ample liquidity to the banking system through liberal discount policy. The Penn Central episode of June 1970 provides a vivid example of how the default of a major borrower can affect financial markets, and how a central bank's decisive actions can restore liquidity and market confidence.⁴¹

In the international context, cooperation among national central banks is clearly necessary in carrying out this lender-of-last-resort role. In fact, major central banks already cooperate in this fashion through their regular monthly meetings at Basle under the auspices of the Bank for International Settlement. At one such meeting, they reached an agreement concerning ways of extending emergency credits to banks within their individual jurisdictions and to branches and subsidiaries of multinational banks. Under this agreement, parent banks are expected to back up their foreign branches and wholly-owned subsidiaries. Moreover, in accordance with a 1976 Federal Reserve interpretation, U.S. banks are

expected to support more than their own share in cases of difficulty with joint ventures—that is, arrangements involving minority participation where some management interest exists.⁴²

The central banks participating in the agreement deliberately left unclarified the exact procedures for providing temporary liquidity. Instead, they merely stated that they were “satisfied that means are available for that purpose and will be used if and when necessary.”⁴³ This is in line with the tradition of not defining and publicizing specific rules for emergency assistance to troubled banks, to discourage banks from relax-

ing their bankerly caution and relying instead on such emergency facilities.

Thus, the present international financial system is cushioned against untoward shocks, first by banks which have access to a vast international money market with considerable depth, breadth, and resiliency; then by central banks acting as joint lenders of last resort; and also by the IMF with its active surveillance over adjustment policies in borrowing countries. International cooperation in this fashion promotes a basic condition of confidence, under which banks can safely and efficiently perform their function of international financial intermediation.

IV. Summary and Conclusions

1. As a result of the post-1973 international crises—the OPEC oil price increase plus the ensuing world-wide inflation and recession—total world current-account imbalances more than quadrupled from an annual average of \$20 billion in 1970-73 to \$87 billion in 1974-76. Net bank lending (changes in claims minus changes in liabilities) financed about one-fourth of the aggregate deficits in 1976.

2. Considerable balance-of-payments adjustments have now been made—especially by the majority of non-oil developing countries—given the price changes and output growth that have occurred since the 1967-72 period. While continued improvements are needed, the payment imbalances and growing debt are not as unmanageable as sometimes alleged. When the same factors are taken into account, the external debt burden of non-oil developing countries (as a group) does not appear to be any larger now than in the early 1970's.

3. The continuing OPEC surplus has replaced the pre-1973 current-account surplus of the industrial nations as the principal source of world savings for financing deficit countries' development needs. Being risk averters, the OPEC

countries have chosen to place the bulk of their surplus funds in world financial markets, including banks. They are thus subject to the same kind of market discipline as other investors and, in fact, have behaved as responsible investors in their investment activities.

4. In principle, there is no reason why commercial banks should not extend medium- or even long-term loans for financing payment deficits, even though the loans may be intended for maintaining domestic consumption rather than for investment financing. There is also no evidence that banks have been any more lax in controlling risks in their foreign lending than in their domestic lending. On the positive side, international financial intermediation through multinational banks means enhanced efficiency in gathering and allocating capital in the world economy.

5. Although the world financial system is basically sound, there is much that the IMF and national central banks can do—and in fact have done—to improve the system's functioning (e.g. assurance of lender-of-last-resort facilities). The proposed Witteveen Facility is a needed step in this direction.

FOOTNOTES

1. **International Debt, the Banks, and U.S. Foreign Policy**, a staff report, Subcommittee on Foreign Economic Policy, Committee on Foreign Relations, U.S. Senate, 95th Congress 1st Congress 1st Session, U.S. Government Printing Office, August 1977, p. 5.
2. *Ibid.*
3. According to IMF and OECD estimates, world payment imbalances will continue to be nearly as large in 1977 as in 1976, and prospects are rather dim for significant reductions in the future. For details, see International Monetary Fund, **Annual Report, 1977**, p. 13, and OECD, **Economic Outlook**, July 1977, p. 69.
4. Some arbitrariness was necessary in separating "Surplus OECD" from "Deficit OECD," particularly with respect to Japan and the United States, which changed from deficit to surplus (or vice versa) during the 1974-76 period. The criterion used was whether the sum of the annual current-account balances during the period was positive or negative for each country in question.
5. Disbursed debt only. The selection of 1972 was dictated by the fact that debt accumulation began to accelerate in 1973, even before the oil-price increases went into effect.
6. World Bank, **World Debt Tables, 1977**, Vol. 1, p. 42.
7. Changes in banks' external claims indicate banks' net foreign lending (loans minus amortizations). But, since banks also accept deposits from foreign nationals, the "net banking capital flow" to or from a foreign country is obtained by subtracting the changes in banking liabilities from those in banking claims vis-a-vis that country. Because of interbanking capital flows and of difficulties in identifying sources of funds in certain cases, the data pertaining to "Surplus OECD," "Offshore Centers," and "Oil-Exporting Countries" should be considered together.
8. Senate Subcommittee staff report, *op. cit.*, pp. 50-51.
9. Robert Solomon, "IMF Urged to Borrow in Financial Markets," **The Journal of Commerce**, September 26, 1977, pp. 4.
10. Statement by Senator Frank Church, Preface to the Senate Subcommittee staff report, *op. cit.*, p. vi.
11. See, e.g., the passage cited on the first page of this article.
12. IMF, **Annual Report 1977**, pp. 12-24.
13. *Ibid.*, p. 12.
14. Since these findings are contrary to common impressions, some elaboration may be needed. In the first place, the sharp deterioration in the industrial countries' current-account balance can be explained by the \$21 billion aggregate 1976 deficit of eight countries (Austria, Canada, Denmark, France, Italy, Norway, Sweden, and the United Kingdom), which was nearly offset by the aggregate \$20-billion surplus of the other members of the group (Belgium, Germany, Japan, the Netherlands, Switzerland, and the United States). The common impression of "strong" industrial countries pertains to the latter subgroup only. Secondly, the IMF study notes that an upsurge of current-account deficits among non-oil LDC's in 1974-75 was sharply reduced in 1976, especially by Asian and Latin American countries. The common impression of the adjustment problems of this group was probably based only on those 1974-75 developments.
15. For an articulation of this concern, see Senate Subcommittee staff report, *op. cit.*, p. 68.
16. Thomas D. Willett, **The Oil Transfer Problem and International Economic Stability**, Princeton Essay in International Finance, No. 113 (December 1975), p. 13.
17. Alain Enthoven, "The Growth of Installment Credit and the Future of Prosperity," **American Economic Review**, December 1957, pp. 913-929.
18. Board of Governors of the Federal Reserve System, **Banking and Monetary Statistics, 1941-1970**, September 1976; **Annual Statistical Digest, 1971-1975**, October 1976; and **Federal Reserve Bulletin**, September 1977.
19. For an expression of this concern, see Gerald A. Pollack, **Are the Oil-Payments Deficits Manageable?**, Princeton Essay in International Finance, No. III (June 1975), p. 5.
20. The Senate Subcommittee staff report comments: "Presumably, a corporate loan will be self-liquidating once the investment for which the money was borrowed begins yielding a return. But many of the loans to governments have been used not for investment, but to maintain a given level of consumption. This does nothing to increase the future earning power of the borrower, and funds to service the loan have to be found elsewhere, perhaps through additional borrowing." Subcommittee staff report, *op. cit.*, p. 5.
21. Jack Beebe, "A Perspective on Liability Management and Bank Risk," **Economic Review**, Federal Reserve Bank of San Francisco, Winter 1977, pp. 12-25.
22. John Hewson and Eisuke Sakahibara, **The Eurocurrency Markets and Their Implications**, 1975, pp. 147-152.
23. Senate Subcommittee staff report, *op. cit.*, p. 47.
24. "Has the profitability of this activity blinded them to the underlying risks?" Senate Subcommittee staff report, *op. cit.*, p. 67.
25. See statement by Chairman Arthur F. Burns, Federal Reserve Board, before the Senate Banking Committee on March 10, 1977; and also Stephen Goodman, "How the Big U.S. Banks Really Evaluate Sovereign Risks," **Euromoney**, February 1977, pp. 105-110.
26. Robert Morris Associates, **Domestic and International Commercial Loan Charge-Offs**, various issues. For a study of loan-loss experiences of the 1962-74 period, see Fred B. Ruckdeschel, "Risk in Foreign and Domestic Lending Activities of U.S. Banks," Board of Governors of the Federal Reserve System, International Finance Discussion Papers, No. 66, July 1975.
27. Herbert G. Grubel, "Internationally Diversified Portfolios: Welfare Gains and Capital Flows," **American Economic Review**, December 1968.
28. See, for instance, Arthur F. Burns, "The Need for Order in International Finance," speech at Columbia University Graduate School of Business, New York, April 12, 1977; W. Michael Blumenthal, "Toward International Equilibrium: a Strategy for the Longer Pull," speech at International Monetary Conference, Tokyo, May 25, 1977; Senate Subcommittee staff report, pp. 62-67; statements by Richard D. Hill, Frederick Helderling, John C. Haley, and Irving S. Friedman before the Senate Banking Subcommittee on International Finance, August 30, 1977; Robert Solomon, "IMF Urged to Borrow in Financial Markets," **Journal of Commerce**, September 26, 1977, pp. 5 and 10; Gabriel Hauge, "How the Banks Should Work with the Fund," **Euromoney**, October 1977, pp. 57, 59-60.
29. Robert Solomon, *op. cit.*
30. W. Michael Blumenthal, *op. cit.*, p. 7.
31. Foreword to the Senate Subcommittee staff report, *op. cit.*, p.v.
32. Cited in Michael Blumenthal's speech, *op. cit.*, p. 6.
33. "Has the banks' willingness to lend to foreign countries for balance of payments purposes been premised on the unstated assumption that in the event of a real debt repayment crisis, the governments of the wealthy industrial countries will come to the rescue because they cannot afford to see either the debtor countries or their own large banking institutions go under?" Senate Subcommittee staff report, *op. cit.*, pp. 67-68.
34. Arthur F. Burns, *op. cit.*, p. 12.
35. Participating in the project are banks from the Group of Ten countries (Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, the United Kingdom, the United States)—plus banks from Denmark, Ireland, and Switzerland—and the affiliates of those banks in offshore centers. The global data for end-1976 were released by Bank for International Settlements on June 6, 1977; those collected from U.S. banks were released on June 3

by the Board of Governors of the U.S. Federal Reserve System.

36. "Neither the Fund nor any other official body should be asked, or allowed, to become an international credit-rating body with effective control over the allocation of foreign credit." See his statement before the Senate Banking Subcommittee on International Finance, *op. cit.*

37. Gabriel Hauge, *op. cit.*, pp. 59-60.

38. See Robert Johnston's article in this issue.

39. For a discussion of this subject, see Henry C. Wallich, "Central Banks As Regulators and Lenders of Last Resort in an International Context," remarks at the Federal Reserve Bank of Boston Confer-

ence on International Banking, October 6, 1977; and "Discussion" by Donald Hodgman.

40. See Senate Subcommittee report citation on the first page of this article.

41. For a description of the Penn Central episode, see Evelyn M. Hurley, "The Commercial Paper Market," *Federal Reserve Bulletin*, June 1977, pp. 532-533.

42. Henry Wallich, "Central Banks as Regulators," *op. cit.*, pp. 14-15.

43. *Ibid.*, p. 11.

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Economic Indicators and Country Risk Appraisal

Nicholas Sargen*

The current debate over commercial-bank lending to less-developed countries (LDCs) has primarily centered on the question of whether private banks have extended too much credit to the group of non-oil exporting developing countries. Despite the considerable attention given to the subject in the financial press, the major international banks by and large dismiss the possibility of widespread defaults or reschedulings on developing-country loans as being highly remote. A more likely scenario, according to the banks, is that individual countries occasionally may experience repayment difficulties requiring some refinancing or rescheduling. Most banks, therefore, believe that the crucial problem is to be able to detect in advance which countries are likely to experience repayment problems and when these difficulties may arise.

The banking community has recently shown great interest in the utilization of analytical techniques to detect potential default or rescheduling situations. Relatively little information is currently available to appraise the various techniques now in use, and, as a result, it is often difficult for bankers to judge the adequacy of their own internal rating systems as compared with those employed by other institutions, public or private.

The difficulty is illustrated by a recent Export-Import Bank survey on bank practices in assessing country risk.¹ That study found that a large percentage of the 37 U.S. banks surveyed are dissatisfied with their present country-appraisal methods and are actively seeking new procedures. From the survey responses, though, it is not possible to determine how much of their

dissatisfaction relates to their own procedures, and how much has to do with limitations in the current state of the art in assessing country risks.

This paper is designed to facilitate appraisal of existing procedures by comparing techniques commonly used by commercial banks and official institutions, along with techniques that have been developed in the economic literature. The scope of the paper is limited to only one aspect of country-risk appraisal—namely, the use of economic indicators to rank countries according to the probability of default. The analysis addresses the following questions: (1) What are the economic causes of debt reschedulings? (2) Which set of economic indicators does the best job of distinguishing between rescheduling countries and non-rescheduling countries? (3) How reliable are econometric techniques in predicting debt reschedulings?

Section I briefly reviews the experience with LDC debt reschedulings since the late 1950's, and describes techniques employed by commercial banks and official institutions for assessing country risk. Section II compares two conceptual approaches used in the analysis of debt reschedulings. The first approach views reschedulings as resulting from fluctuations in prices of primary products which then lead to a rapid accumulation of external debt relative to export earnings. The second approach treats debt reschedulings as a monetary phenomenon, in which domestic inflation and an overvalued exchange rate contribute to increased demand for imports and to export stagnation, and consequently to a rapid build-up of external debts. Section III employs a statistical procedure—discriminant analysis—to identify the set of economic indicators which best distinguish rescheduling countries from non-rescheduling countries. (A brief discussion of the

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statistical procedure is included for interested readers.) The final section assesses the relevance of the empirical findings to country-risk appraisal and the desirability of using statistical procedures for this purpose.

Our analysis suggests the importance of distinguishing "liquidity" reschedulings from long-term debt reschedulings. The first type is associated with a bunching of short-term commercial credits (typical of most Latin American resched-

ulings), and the second type of rescheduling is identified with long-term debt relief on official credits (e.g. reschedulings for South Asian countries and Ghana). In the "liquidity" cases, monetary (and fiscal) factors appear to be at the root of the problem, and the inflation rate turns out to be the most important explanatory variable. Cases of chronic-debt relief, on the other hand, appear less amenable to a monetary framework of analysis, and it is necessary to include the debt-service ratio to explain these reschedulings.

I. Assessing Country Risk

Commercial banks encounter two types of repayment risk in international-lending operations which do not arise in domestic-banking operations. The first type of risk, commonly referred to as "sovereign risk," occurs when a national government refuses to permit foreign loans to be repaid, or when a government seizes bank assets without adequate compensation. The second type of risk, often called "transfer risk," is associated with foreign borrowers' problems in converting domestic currency into foreign exchange. Credits extended to foreign borrowers by banks in the U.S. market or in the Euro-currency market are typically denominated in U.S. dollars (or in a key currency), and government foreign-exchange restrictions sometimes make it difficult for borrowers to acquire sufficient foreign exchange to repay their loans.² Foreign-exchange controls are particularly common in developing countries, where fixed exchange-rate policies are still prevalent.

Commercial banks assess both types of risk in their country-risk appraisals. Cases of expropriation or outright default on bank loans have been quite rare in the postwar period, however, and have been confined mostly to Communist takeovers in Cuba or Southeast Asia. The more common case has been the formal restructuring or refinancing of external-debt obligations in the wake of foreign-exchange crises. Restructuring has usually involved a stretching of principal payments on a previous credit, while refinancing has involved new credits.

Close to 40 such instances have occurred since 1956, involving about a dozen developing countries which formally negotiated with creditor

countries to postpone payments of their interest or principal. The total amount of debt service rescheduled was on the order of \$7.7 billion, of

Table 1
International Debt Reschedulings 1960-76¹
(Millions of U.S. \$)

Country	Year	Total Amount Rescheduled	Amount of U.S. Debt Rescheduled
Argentina*	1962	240	0
	1965	76	18
Brazil*	1961	300	0
	1964	200	44.5
Chile*	1965	96	43
	1972	160	65
	1974-75	597	231
Egypt	1966	N.A.	N.A.
	1971	145	145
Ghana*	1966-70	295	0.7
India*	1974	290	0
	1968-72	545	65
	1973-76	688	74
Indonesia*	1965-68	427	96
	1970	2100	215
Pakistan*	1971-74	987	270
Peru*	1968-69	128	0
Philippines	1970	N.A.	N.A.
	1965	220	15
Turkey*	1972	114	0
	1965	N.A.	N.A.
Uruguay	1965	N.A.	N.A.
Yugoslavia	1965	N.A.	N.A.
	1972	59	59
Zaire	1976	N.A.	N.A.

* Denotes countries which have experienced multilateral debt reschedulings.

¹Note: Information on debt reschedulings was compiled from a variety of sources including Bitterman [6], Cohen [7], Feder-Just [11], Frank-Cline [12], IMF [17] [18], OECD [22].

which roughly \$1.3 billion constituted debt owed to the U.S. government or to U.S. nationals (Table 1). However, the economic cost of debt reschedulings—measured as the difference between the present discounted value of the repayments stream before and after rescheduling—was considerably smaller.³

Most multilateral debt reschedulings have either involved suppliers' credits (which frequently carry government guarantees) or official credits. Many of the Latin American reschedulings, for example, have involved short- and medium-term commercial debt, so that negotiations were arranged through ad hoc meetings of major private creditors (the so-called "Paris Club" or "Hague Club" meetings). Debt-relief negotiations for Ghana, India, Indonesia, Pakistan, and Turkey, on the other hand, have been arranged through government consortia which were responsible for coordinating flows of financial assistance to those countries. Private debts usually have not been rescheduled in these contexts, in part because the amounts involved were relatively small compared with official claims.

LDC workouts of debt to private bank creditors have been much more infrequent and have tended to take the form of refinancing, rather than rescheduling of existing debt. The principal cases in earlier years involved Argentina and Brazil (early 1960's), Peru (1965), and the Philippines (1970).⁴ Because of rapid expansion in international lending, however, banks since 1975 have become even more heavily engaged in negotiations with developing countries, as in the recent negotiations with the governments of Chile and Zaire on debt-relief issues. In addition, they have provided balance-of-payments financing for Argentina and Peru to ease potential debt problems of these countries. In this situation, banks and regulators alike have become concerned about the need to improve methods for assessing individual country risks.

Methods for assessing risk

Country appraisal can come into play at two different stages. One phase involves the approval of individual credits, and thus requires a report by the bank's economics department on the borrowing country's general political and economic situation. The second phase involves the setting

of country targets or limits, for the use of bank management in overseeing the bank's international portfolio. The latter process involves making country comparisons about the risk of non-repayment, and so subjective judgments play an important role.

Most banks are reluctant to assign formal credit ratings to individual countries when setting country guidelines. In the Eximbank survey, for example, only about a fourth of the banks surveyed (8 out of 37) translated their country evaluations into a country rating (usually with a five-grade letter system A to E). Five of the banks which rated countries utilized a weighted checklist system, with economic and political indicators being used to measure a country's repayment prospects. The summary score, or country rating, in each case was obtained by assigning weights to individual indicators and then summing the value of individual indicators.

The checklist approach can be criticized for failing to provide a conceptual framework for selecting individual indicators, and also for its arbitrary selection of weights. However, statistical procedures are currently being developed to circumvent some of these problems, by such agencies as the U.S. Treasury Department and the U.S. Export-Import Bank. Their statistical debt-monitoring systems use a single predictive equation, based on information about past debt reschedulings, to screen "high risk" countries from those with low probabilities of rescheduling. (The methodology underlying the Treasury and Eximbank systems is described in Section III.) Countries singled out as possible rescheduling candidates are then subjected to in-depth economic and political analyses.

The econometric approach provides a means for identifying statistically significant variables and for assigning weights which are not completely subjective. From a commercial-bank standpoint, though, the central issue is whether econometric techniques provide a more reliable means of detecting defaults or debt reschedulings than present procedures. A direct comparison of the two approaches is not possible, since banks which make country ratings do not publicly test their rankings against experience. Published studies which employ econometric techniques, on the other hand, report low error

rates in explaining past reschedulings, although they have been far less successful in anticipating reschedulings than in explaining most reschedulings.⁵

The problems can be traced to the conceptual

framework used to explain debt reschedulings (Section II) and to methodological difficulties encountered in applying statistical procedures to a small sample of rescheduling countries (Section III).

II. Conceptual Approaches to Debt Reschedulings

Part of the difficulty faced by commercial banks and regulatory agencies in assessing risks can be traced to the absence of a well-developed conceptual framework for analyzing debt problems of developing countries. Economic models of "optimal" foreign borrowing largely have been concerned with the effect of foreign borrowing on economic growth and with conditions necessary to ensure an efficient allocation of resources over time.⁶ These studies generally conclude that repayment of external debt is not a problem, provided that the rate of return on domestic investment equals or exceeds the cost of foreign borrowing.⁷ Such models, however, do not allow for the fact that foreign borrowing must be repaid in foreign exchange, and that foreign-exchange receipts may be temporarily scarce. Second, they typically assume that domestic and international capital markets are perfectly competitive—assumptions which are highly unrealistic for most developing countries.

The two approaches presented in this section explicitly deal with the foreign-exchange problems which surround most debt reschedulings. The *debt-service approach* traces the LDC's foreign-exchange problems to their heavy reliance on exports of primary products and to the high volatility of these products on world markets. Financial ratios derived from individual balance-of-payments components hence are used to measure a country's ability to service its external debt in the event of a shortfall of export receipts. The *monetary approach*, on the other hand, is primarily concerned with the overall determination of a country's balance of payments, and thus focuses attention on that country's monetary-fiscal policy and exchange-rate policy. From this perspective, the underlying causes of debt reschedulings are internally, rather than externally, generated.

Debt-service approach

The analytic approach used in most statistical

debt-monitoring systems is based on the financial-ratio analysis pioneered by Avramovic and associates at the World Bank [3]. The approach views reschedulings as a problem of external debt management, and thus focuses attention on the determinants of a country's "debt-service capacity". We are concerned here with that approach's underlying assumptions and their implications for the analysis of LDC debt problems.

In the Avramovic study, one type of debt problem involves the near-term bunching of debt-service payments, while a second involves debt rescheduling over a longer time interval.⁸ The Latin American reschedulings typified the first type of problem: debt-service payments on short- and medium-term commercial debt were rescheduled over a fairly short time span—e.g., one to five years. But in the case of the consortia creditors to Ghana, India, Indonesia, and Pakistan, long-term official lending formed a significant portion of debt-service payments. In these cases, the reschedulings covered such a long time-span—up to 30 years in the case of Indonesia—that they had a noticeable impact on debt-service burdens.

Avramovic analyzes the short-run debt problem as if the developing country were a firm facing a cash-flow or liquidity squeeze. The liquidity problem in this case reflects a temporary shortfall in foreign-exchange receipts, brought about by an exogenous decline in the world price of the LDC's principal export product. Under these circumstances, the country can try to cover payments abroad by expanding its export volume, by curtailing imports, by further borrowing or by drawing down foreign-exchange reserves. Avramovic's analysis, however, assumes that most LDC's cannot expand export proceeds easily in the short run, and that they cannot easily "roll-over" debt by borrowing from private capital markets. Under these assumptions, a developing country has only two viable options available in

the short run—namely, to draw down reserves (including drawings from the International Monetary Fund) or to reduce its import volume.

The Avramovic approach attempts to measure a country's ability to withstand an export shortfall (or a situation of capital flight) by constructing financial ratios from individual balance-of-payments components. The principal measure of "reserve adequacy," for example, is the ratio of foreign-exchange reserves to annual imports of goods and services. The higher the ratio, the better equipped the country is to cover imports by temporarily drawing down foreign-exchange reserves.

The traditional indicator of debt-service capacity, on the other hand, is the debt-service ratio—the proportion of foreign-exchange earnings on current account (exports of goods and services) absorbed by interest payments and amortization on external debt. Those analysts using this indicator do so because debt-service payments represent contractually fixed obligations which cannot be easily adjusted; hence, a higher ratio implies a larger relative burden on import reduction for a given shortfall in export receipts. The reasoning behind this traditional indicator is that there is a limit on a country's ability to tolerate a reduction in its import volume.⁹

One of the principal conclusions of the Avramovic study is that the debt-service ratio is a relevant indicator of potential "cash squeeze" problems associated with foreign-exchange crises, but that it is less useful for analyzing debt problems of a long-run nature. The reason is that domestic savings rates normally rise during the process of economic development, in which case foreign-borrowing requirements needed to sustain a given target growth rate will diminish through time. A country's debt-service ratio thus will tend to rise in the early stages of development, when domestic saving rates are low, but will tend to level off or decline with the later rise in domestic savings. The ability to repay external debt over the long run, therefore, hinges on the difference between the marginal savings rate and the initial savings rate, as well as on the relationship between the rate of return on investment and the cost of foreign borrowing.¹⁰

The usefulness of the debt-service approach as an analytical tool hinges critically on the exis-

tence of assumed balance-of-payments rigidities and on the nature of foreign-exchange bottlenecks. In Avramovic's analysis, the foreign-exchange constraint reflects two factors: (1) limited possibilities for short-run expansion for export production, and (2) inelastic demand for a country's major export product. It is assumed that if a country attempts to expand its export volume by increasing export production or by reducing domestic consumption, the increased export volume will lead to a deterioration in the country's terms of trade; so that export receipts are not increased.¹¹ But if the "small-country assumption" is applicable—if the country's share of the world market is so small as to leave the world price unaffected—the foreign-exchange bottleneck disappears. That is, the country can increase its export volume (and its export receipts) through increased domestic savings or through expanded production.

The assumption of limited (or zero) capital mobility is also critical to the analysis. If a country is able to borrow from world capital markets (including commercial banks) to cover a temporary shortage of foreign exchange, the concepts of "reserve adequacy" or "debt service capacity" become much more difficult to define. Under these circumstances, it is not the country's lack of foreign-exchange reserves or the country's export earnings *per se* which are important, but rather the country's ability to acquire foreign exchange.¹² In this case, the country must decide whether the cost of foreign borrowing exceeds the cost of adjusting to an export shortfall through import reductions—i.e., profitability considerations are relevant even in the short run.

The main limitation of the approach, however, is that it focuses on the events immediately surrounding a rescheduling, rather than on the underlying causes. It provides few clues to explain why countries borrow heavily, and it allows little scope for domestic policies to influence foreign borrowings or repayment prospects. Avramovic's analysis, for example, completely ignores the role which the domestic price level, the exchange rate, and interest rates play in the process of balance-of-payments adjustment. The key variables—the debt-service ratio, the reserves-import ratio, the export growth rate, or the domestic savings rate—are either exogenous or

structurally determined. As a result, the scope for balance-of-payments adjustment appears quite limited.

Monetary approach

The alternative approach uses a monetary framework of analysis to study the problem of debt-reschedulings. The monetary approach (like the debt-service approach) treats reschedulings as consequences of foreign-exchange shortages. However, it is primarily concerned with the overall determination of the balance of payments, rather than with individual balance-of-payments components. The scarcity of foreign exchange in this case results from: (1) rapid money-supply expansion (associated with the financing of fiscal deficits) and consequent increase in domestic inflationary pressures, and (2) maintenance of an overvalued fixed exchange rate. From this perspective, the underlying causes of debt reschedulings are rooted in domestic economic policies.

An analysis of this monetary framework involves: (1) the effects of domestic inflation and an overvalued exchange rate on the supply and demand for foreign funds, and (2) the implications of exchange-rate flexibility for debt reschedulings. Consider first the case of a developing country which maintains a fixed exchange rate and which suffers from a higher inflation rate than the rest of the world.

Inflation can influence the demand for foreign funds in such a case through its adverse impact on the trade accounts. That is, inflation would tend to cause export demand to fall and import demand to rise, and the growing trade deficit, in turn, would increase trade-financing requirements. A second type of inflation impact, noted by Friedrich Lutz [19], concerns the effect of an over-valued exchange rate on the cost of borrowing funds from abroad. Lutz's analysis assumes that nominal interest rates in the domestic economy (i_d) and abroad (i_f) reflect the real rate of return on capital (r) and the expected inflation rate (\dot{p}):

$$\begin{aligned} i_d &= r_d + \dot{p}_d, \quad \text{and} & (1) \\ i_f &= r_f + \dot{p}_f. \end{aligned}$$

In financing domestic investment, borrowers compare the real cost of borrowing in the domestic capital market (r_d) with the real cost of bor-

rowing foreign currency from abroad (r'):

$$r' = i_f - \dot{p}_d + \dot{e}, \quad (2)$$

where: \dot{e} = expected appreciation of foreign currency.

Real borrowing costs in the two markets (and real rates of return on capital in the two countries) will be equated only if the expected exchange-rate change is equal to the expected inflation-rate differential at home and abroad:

$$\dot{e} = \dot{p}_d - \dot{p}_f. \quad (3)$$

If investors believe authorities can maintain a fixed exchange rate temporarily (despite a higher domestic rate of inflation), incentives will exist to borrow more heavily from abroad, since real borrowing costs are then perceived to be lower in the foreign market than in the domestic market.¹³

A more common situation, however, is one in which authorities impose interest-rate ceilings to keep domestic borrowing costs low. Such a policy tends to lower domestic saving and to ration potential borrowers out of the domestic market. The imposition of interest ceilings, therefore, may also create incentives resulting in increased demand for foreign funds.

The amount of foreign borrowing, however, also depends on lenders' expectations about repayment prospects. In a highly competitive market, such as the Eurocurrency market, loans to developing countries include an interest premium—the spread over the London inter-bank offer rate—which reflects the higher risk of repayment. An increased demand for foreign funds associated with an over-valued exchange rate, therefore, need not result in an increased volume of foreign borrowing—provided that there is a contraction (leftward shift) in the supply schedule of foreign funds to offset that increased demand.

While economic theory provides no clear-cut reasons for expecting domestic inflation to lead to an increased volume of foreign borrowing, the effect may not be completely neutral, judging from the experience of those LDC's which have rescheduled suppliers' credits. For instance, most of the Latin American countries of this type were able to obtain ample suppliers' credits (usually government-guaranteed) in the early stages of inflation, but fewer such credits as the inflation progressed. In these cases, domestic inflation re-

sulted in rapid growth of debt-service payments in the early stages of inflation, but then in subsequent export stagnation, which contributed to rising debt-service ratios.

Thus far, we have assumed that authorities in developing countries maintain fixed exchange rates. Actually, most LDC's today continue to peg their exchange rates to some key currency, although a growing number of them have experimented with some form of exchange-rate flexibility in recent years. Under a freely-floating exchange rate, a country cannot experience a shortage of foreign exchange, since there is no official intervention in the foreign-exchange market. The absence of a "foreign-exchange problem," however, does not imply a smaller bur-

den of transferring real resources abroad to service external debt. Rather, exchange-rate flexibility is relevant to debt reschedulings because exchange-rate movements are part of the overall adjustment process, whether the resource-transfer problem is "real" or monetary. Currency depreciation resulting from a price decline for some major export product, for example, will create incentives towards increased export production. Similarly, depreciation resulting from domestic inflation will offset the adverse effects of inflation on the trade accounts. In this sense, exchange-rate flexibility can help reduce the necessity for debt rescheduling. Therefore, one would probably expect fewer debt reschedulings under flexible exchange rates, although not necessarily so in every case.

III. Empirical Evidence on Debt Reschedulings

This section presents empirical evidence on the determinants of debt rescheduling, with emphasis on the characteristics distinguishing those countries which have rescheduled their debt from those which have not—previous empirical studies have largely concentrated on variables suggested in the Avramovic study. The statistical results confirm that reschedulings are associated with a high debt-service ratio and a bunching of external-debt obligations, but there is disagreement about the importance of other economic variables.

Frank and Cline [12] used discriminant analysis to investigate the importance of eight indicators for the period 1960-68. They found only three variables to be important: the debt-service ratio, the debt-amortization ratio, and the ratio of imports to reserves. Feder and Just [11], using a similar set of explanatory variables, applied logit analysis to explain reschedulings during the 1965-72 period. Their results showed the importance of the three variables identified by Frank and Cline, but three other indicators as well—the export growth rate, the level of per capita income, and the ratio of capital inflows to debt-service payments.

Both studies report low error rates in identifying past reschedulings.¹⁴ Nonetheless, questions arise about the availability of data for testing the two basic (debt-service and monetary) approaches. For example, the debt-service ap-

proach is difficult to use in any "early-warning" system, at least partly because World Bank data on external debt are available only after a two- or three-year lag for most countries. The U.S. Treasury Department actually discontinued use of its debt-monitoring system because of the problem of obtaining up-to-date, accurate information on LDC external debt.

With respect to the monetary approach, however, inflation rates and exchange rates are generally available with relatively short time lags. Hence, an indicator system relying on the monetary approach is more likely than one based on debt information to detect likely candidates for debt rescheduling. To date, however, there has been little empirical work on the relationship between monetary variables and debt reschedulings, so this study attempts to establish whether such a relationship exists.

Inflation and debt rescheduling

A clear relationship between inflation and debt rescheduling is apparent for the 1960-76 period (Table 2).¹⁵ Altogether, 70 percent of the countries with long-term inflation rates above 10 percent (measured by wholesale prices) rescheduled their debts at some time during that period. Moreover, all six countries in the "high inflation" group had to reschedule at least once between 1960 and 1976.

Other data suggest the important contribu-

tion of currency overvaluation—as well as inflation—to balance-of-payments difficulties prior to debt reschedulings (Table 3). In every case cited, except Egypt and Turkey, a major currency devaluation was undertaken around the period when debt was rescheduled. Yet with frequent exchange-rate adjustments, countries such as Colombia, Israel, Korea, Chile (1965-70 and 1975-76) and Brazil (1965-76) have successfully avoided repayment difficulties despite their relatively high inflation. These countries at times have pursued “crawling peg” policies, where exchange-rate changes are linked to the difference between their own inflation rate and those of their principal trading partners. Their experience suggests that increased exchange-rate flexibility may help mitigate the adverse effects of inflation on export and import performance, on borrowing incentives, and thus on debt reschedulings.

Exchange-rate depreciation, however, may not always be successful in avoiding rescheduling. Four of the five countries which experienced very high inflation, for example, allowed the exchange rate to depreciate on more than one occa-

sion in the period preceding rescheduling. The depreciation, however, was insufficient in each case to offset the adverse effects of sustained high inflation on the trade account.

Application of discriminant analysis

The evidence presented above suggests that monetary factors may be important for understanding previous debt renegotiations. The question still remains, however, as to whether indicators utilized in the monetary approach can perform as well or better than those utilized in the debt-service approach. To answer this question we applied a statistical technique (discriminant analysis) to data on two groups of developing countries—those which rescheduled their debt at least once in the 1960-76 period, and those which did not. The statistical procedure is the same as that employed in the Frank-Cline study and in the debt-monitoring systems used by the U.S. Treasury Department and the U.S. Export-Import Bank.

Discriminant analysis¹⁶ provides a rule (or discriminant function) for classifying observations

Table 2
Inflation and Debt Reschedulings: 1960-1976¹

Very High Inflation Group (above 20% p.a.)		High-Inflation Group (10-20% p.a.)		Middle-Inflation Group (5-10% p.a.)		Low-Inflation ² Group (less than 5% p.a.)	
1. Argentina*	(33%)	1. Bolivia	(10.2%)	1. Afghanistan	(8.4%)	1. Algeria	(2.8%)
2. Brazil*	(35%)	2. Colombia	(14.6%)	2. Burma	(7.9%)	2. Egypt*	(3.9%)
3. Chile*	(161%)	3. Ghana*	(11.3%)	3. Costa Rica	(7.3%)	3. El Salvador	(3.2%)
4. Indonesia*	(186%)	4. Israel	(11.0%)	4. Dominican		4. Ethiopia	(4.0%)
5. Uruguay*	(53%)	5. Peru*	(10.4%)	5. Repub.	(5.1%)	5. Guatemala	(3.9%)
6. Zaire*	(25%)	6. Philippines*	(10.5%)	6. Ecuador	(7.3%)	6. Guyana	(4.0%)
		7. South Korea	(14.6%)	7. Greece	(6.2%)	7. Honduras	(3.6%)
		8. Yugoslavia*	(14.6%)	8. India*	(7.7%)	8. Iran	(3.6%)
				9. Ivory Coast	(5.1%)	9. Iraq	(3.0%)
				10. Jamaica	(7.2%)	10. Jordan	(4.4%)
				11. Mexico	(5.1%)	11. Malaysia	(3.0%)
				12. Pakistan*	(7.0%)	12. Sri Lanka	(4.4%)
				13. Paraguay	(9.1%)	13. Syria	(4.5%)
				14. Spain	(5.8%)	14. Venezuela	(4.4%)
				15. Thailand	(5.5%)		
				16. Tunisia	(5.5%)		
				17. Turkey*	(9.5%)		

¹ Figures in parentheses represent annual compound (WPI) inflation rates over the period 1960-1975. Asterisks denote debt reschedulings in the period 1960-76. (See Table 1). Data from *International Financial Statistics*.

² U.S. annual compound WPI inflation rate is 4.2% for 1960-75.

(e.g., countries) into two or more groups (e.g., "rescheduling country" vs. "non-rescheduling country"). The rule is selected so as to minimize the expected cost of making two types of errors in classifying observations. In our analysis, Type I error occurs when a rescheduling country is classified as a non-rescheduling country, and Type II error results when a non-rescheduling country is classified as a rescheduling country.

Suppose, for example, that the only difference between rescheduling countries and non-rescheduling countries is that the inflation rate is higher on average in the first group than in the second group. Under these circumstances a simple way to classify countries would be to select some cut-off inflation rate, say 10 percent, and to categorize countries with inflation rates above

this value in the rescheduling group, and to categorize countries with lower inflation rates in the non-rescheduling group. Applying the "10 percent cut-off rule" to the countries listed in Table 2 yields the following set of results:

	Inflation Rate > 10 %	Inflation Rate ≤ 10 %
Rescheduling group (14 countries)	71% (classified correctly)	29% (Type I error rate)
Non-Rescheduling group (30 countries)	13% (Type II error rate)	87% (Classified correctly)

Table 3
Debt Reschedulings and Exchange Rate Devaluations¹

<u>Debt Reschedulings</u>		<u>3 year CPI Inflation Rate (%)</u>	<u>3 year Money-Supply (M₁) Growth Rate (%)</u>	<u>Exchange Rate Devaluation</u>
<u>Very High Inflation Group</u>				
Argentina	1962	23.3	9.9	1962
	1965	24.7	31.1	1964, 1965
Brazil	1961	31.6	43.9	1961
	1964	69.7	70.5	1962-65
Chile	1965	37.3	48.8	1962-65
	1974	43.2	110.3	1972-76
Indonesia	1965	173.8	386.2	1966-68
	1970	185.0	73.3	1970
Uruguay	1965	40.3	58.8	1965
Zaire	1976	24.6	25.5	1976
<u>High Inflation Group</u>				
Ghana	1966	12.6	14.0	1967
	1974	16.0	29.9	none
Peru	1968	12.6	14.4	1967
Philippines	1970	6.2	10.9	1970
Yugoslavia	1965	16.3	16.1	1965
	1972	11.4	15.8	1971
<u>Middle or Low Inflation Groups</u>				
India	1968	9.4	7.8	1966
	1973	8.8	14.5	1972
Pakistan	1971	5.0	14.3	1971
Egypt	1966	9.2	10.1	none
Turkey	1965	3.3	14.5	none
	1972	11.4	21.6	none

¹ Data from *International Financial Statistics*.

Thus, four of fourteen countries (29 percent) which rescheduled their debt had long-term inflation rates less than 10 percent, so that use of a 10 percent cut-off value caused those four to be classified incorrectly (Type I error). Four of the thirty countries (13 percent) which did not reschedule, on the other hand, had a long-term inflation rate above 10 percent, resulting in Type II error.

The same principle applies to a situation in which there are a number of variables which differentiate the two groups. In this case, a discriminant "score" (or composite variable) is computed as a weighted average of the individual variables for purposes of classifying individual observations. The weights of the composite variable are selected so as to maximize the difference in mean values for the two groups, given the specified set of variables.

The ability to classify countries correctly depends on how close the group means are relative to the group dispersions. This point is illustrated in Figures 1a and 1b, which assume normal "bell-shaped" distributions for the two-group case and a cutoff inflation value, c . The probability of Type II error (i.e., of misclassifying an observation from the nonrescheduling group) with a value of $\hat{p} > c$ ($= 10$ percent), thus, is the shaded area under the bell-shaped function for group 1 to the right of c , while the probability of misclassifying an observation from group 2 (Type I error) is the shaded area to the left of c under the density function for group 2. Error rates in classifying observations (i.e., the percentage of observations misclassified) will be much greater when there is considerable group overlap (Figure 1a) than if there is only a small degree of group overlap (Figure 1b). Differences in group means, therefore, do not always guarantee that the rules will yield a useful classification scheme in which the errors are small.

Finally, the proportion of Type I and Type II errors depends on the particular cutoff point selected for classifying countries. Moving the cutoff value, c , to the right in Figure 1, for example, increases the probability of Type I error and reduces the probability of Type II error, while the opposite is true if the cutoff value is moved to the left. Selection of the cutoff point hinges on an assessment of the cost of making each type of error

(which may entail a subjective judgment) and on the frequency of reschedulings relative to non-reschedulings.¹⁷

Methodological issues

The main problem encountered in applying discriminant analysis (or other statistical procedures) to debt-rescheduling data arises from the small number of observations of this type. Pooled time series and cross-section data are typically used to increase the number of rescheduling observations, and this procedure is adopted here. Each observation thus corresponds to a country and a year. The Argentine multilateral rescheduling of 1962, for example, is treated as a separate observation from the Argentine rescheduling of 1965.

The procedure of pooling time series and cross-section data leads to further complications, however, which must be considered in interpreting our results (and those of other published studies):

1. The number of rescheduling cases (24) is still small in comparison with the non-rescheduling cases (442).¹⁸ Plots of variables for the rescheduling group, moreover, suggest that the data are not normally distributed. Thus, one of the theoretical assumptions underlying discriminant analysis is violated.¹⁹

2. The individual observations are "serially correlated." A country which exhibits a high (or low) inflation rate or debt-service ratio in one year, for instance, tends to exhibit the same characteristic in other years. This will affect the error rates, since a country which is misclassified (or correctly classified) in one year will tend to be misclassified (or correctly classified) in other years.²⁰

3. A problem arises with countries which have rescheduled debt more than once. Ghana and India, for example, have had debt rescheduled in a number of years since 1966 and 1968, respectively, in the process of coordinating aid flows to those countries. Thus, do those reschedulings represent "new events" or extensions of the original reschedulings?²¹ A question also arises regarding the treatment of observations of rescheduling countries in non-rescheduling years. The results reported here delete such observation, since we are primarily interested in

identifying characteristics which distinguish rescheduling from non-rescheduling countries, rather than identifying the times of rescheduling.²²

4. The implicit assumption is that the factors contributing to reschedulings are the same in one period as in other periods—i.e., there are no “structural” changes affecting reschedulings (or distributions) during the sample period. It is dif-

ficult to test this proposition because of the limited number of reschedulings, although the discriminant rule appears to explain recent cases as well as earlier cases.

Several further pitfalls are often encountered in interpreting results from discriminant analysis. One of the most widely misunderstood aspects relates to the problem of determining the importance of individual variables. Unlike the

Chart 1A

NORMAL DISTRIBUTION WITH LARGE GROUP OVERLAP

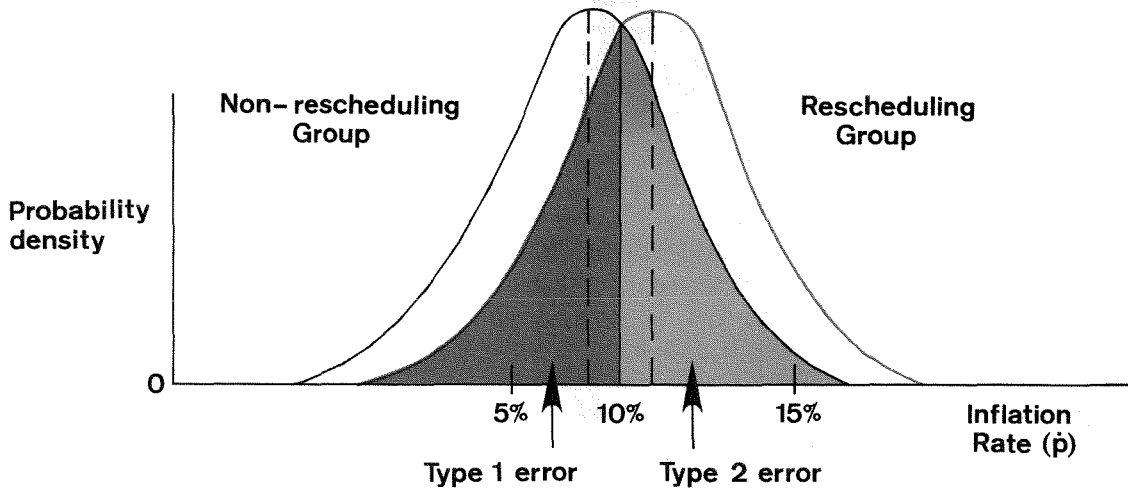
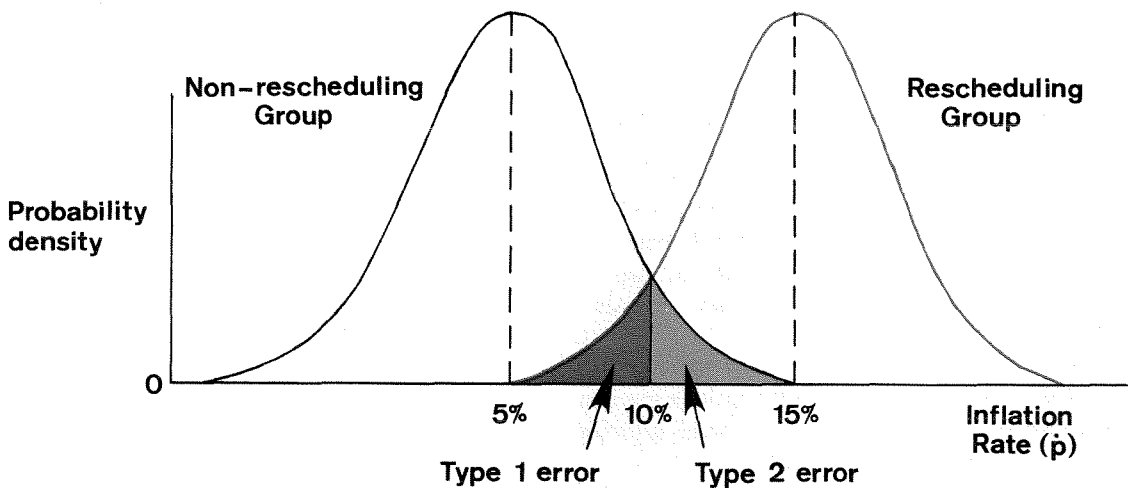


Chart 1B

NORMAL DISTRIBUTION WITH SMALL GROUP OVERLAP



coefficients in the linear-regression model, the discriminant-function coefficients are not unique. (However, the ratios of those coefficients are unique.) Consequently, no test can be made for the *absolute* importance of a particular variable (i.e., setting a particular coefficient equal to zero or to some other value), although a number of methods have been proposed to determine the relative importance of individual variables.²³

Empirical results

Two sets of explanatory variables were used to differentiate rescheduling and non-rescheduling cases in the 1960-75 period. The first set included variables identified in previous empirical studies: (1) the debt-service ratio; (2) the reserve-import ratio; (3) the export growth rate (in U.S. dollars); (4) the growth rate of real GNP and (5) the level of per capita GNP (in 1970 U.S. dollars). The second set contained variables suggested by the monetary approach, and also (6) the (consumer-price) inflation rate; (7) the growth rate of the M₁ money supply; and (8) a measure of relative purchasing-power parity (the difference between the domestic and U.S. inflation rates, on a wholesale-price basis, less the rate of domestic currency depreciation vis-a-vis the U.S. dollar). All explanatory variables were expressed as three-year annual averages, with the explanatory variables lagging the dependent variable an average of one year—e.g., with the 1960-62 average inflation rate distinguishing rescheduling and non-rescheduling cases in 1962. The debt-service ratio was also adjusted to include *scheduled* (rather than actual) debt-service payments.²⁴

A forward step-wise regression procedure was used to obtain a measure of the relative importance of each variable, prior to applying the discriminant sub-routine.²⁵ The results suggested that the inflation rate and the adjusted debt-service ratio were the most important explanatory variables (Table 4). The inflation rate and the money-supply growth rate were highly correlated, however, so that the relative importance of the money-supply variable increased considerably when the inflation rate was excluded. Two of the variables, the reserve-import ratio and the level of per capita income, added little in the way of explanatory power, and thus were omitted from the discriminant sub-routine.

The mean inflation rate for the rescheduling group was nearly seven times larger than the non-rescheduling group; the money-supply growth rate was nearly four times larger, and the adjusted debt-service ratio was about three times greater. The standard deviation of the inflation rate and money-supply growth rate for the rescheduling group, however, were also considerably larger than for the non-rescheduling group, owing to the incidence of hyper-inflation and the small sample size. As a result, differences in the coefficients of variation (i.e., the standard deviation divided by the mean) for the two groups were much smaller than the differences in group means.

Tests for equality of the multivariate group means and variance-covariance matrices indicated that group differences were statistically significant.²⁶ Under these circumstances, the appropriate rule for classifying countries would be a quadratic (rather than linear) function. In most cases tested, however, the linear function yielded comparable results to the quadratic function. The linear rule also had the advantage of being easier to interpret, because of the smaller number of terms involved.

Two separate linear functions were obtained:

- (1) *Inflation Rate Included*

$$8.72 - .21(\text{CPI}) - .01(\text{MS}) + .04(\text{EX}) - .35(\text{DSA}) + .03(\text{PP}) + .07(\text{GNP})$$
- (2) *Inflation Rate Excluded*

$$7.72 - .10(\text{MS}) + .05(\text{EX}) - .36(\text{DSA}) - .05(\text{PP}) + .11(\text{GNP})$$

where:

- CPI = average annual rate of consumer price inflation over three-year period
- MS = average annual rate of M₁ growth over three-year period
- EX = average annual rate of growth of exports (in U.S. dollars) over three-year period
- DSA = average debt-service ratio over three-year period (adjusted to include *scheduled* debt-service payments for rescheduling countries)
- PP = purchasing-power parity (i.e., a three-year average of the difference between the domestic and the U.S. WPI inflation rates, less the rate of domestic currency depreciation vis-a-vis the \$).
- GNP = average annual rate of growth of real output over three-year period.

The functions were constructed so that the

more the negative value, the more likely the country would be classified in the rescheduling group. The prominence of the inflation rate in equation 1 (or money-supply growth rate in equation 2) and the adjusted debt-service ratio is apparent from the weights of these variables in the discriminant functions, which corroborates the finding from the step-wise regression procedure. In addition, the negative signs of the coefficients of these variables are consistent with the hypothesis that the probability of rescheduling increases as their value increases.

The percentage of countries classified incorrectly with these functions ranges from 3 percent to 11 percent, depending on the cutoff value se-

lected. (The cutoff value for the results reported assumes the expected cost of Type I error is three times the expected cost of Type II error.) The overall error rate is not very meaningful, however, in view of the large difference in sample size for the two groups of countries. The percentage of rescheduling cases in the sample is roughly 5 percent; hence, a rule which classifies all countries as non-rescheduling cases will have an overall error rate of 5 percent. For this reason, it is important to examine the incidence of Type I and Type II errors and to see how they vary with the cutoff point.

Type I error rates vary from 15 to 54 percent, while Type II error rates range from less than 1

Table 4
Sample Characteristics of Rescheduling and Non-Rescheduling Groups *

Variable	Non-Rescheduling Group			Rescheduling Group		
	Mean	Standard Deviation	Coefficient of Variation ¹	Mean	Standard Deviation	Coefficient of Variation ¹
Inflation(CPI) Rate	5.6	5.7	1.02	36.7 (23.8) ²	48.5 (21.5) ²	1.32 (0.9) ²
M ₁ Growth Rate	13.9	8.2	0.59	49.6 (33.2) ²	78.0 (31.2) ²	1.57 (0.94) ²
Export Growth Rate	16.3	18.1	1.11	9.7	13.3	1.37
Debt Service Ratio	7.6	5.8	0.76	21.1	8.5	0.40
Real GNP Per Capita Growth Rate	3.7	3.9	1.05	2.3	2.6	1.13
Purchasing Power Parity	4.3	7.2	1.67	8.1	15.0	1.85

Measure of Relative Importance
(Percent of explanatory power accounted for by each variable)

Variable	Inflation rate included	Inflation rate excluded
Inflation(CPI) Rate	42.7%	
M ₁ Growth Rate	2.0	33.0%
Export Growth Rate	11.3	14.5
Debt Service Ratio	35.5	37.9
Real GNP Per Capita Growth Rate	4.6	7.3
Purchasing Power Parity	3.9	7.2

¹ Standard deviation ÷ mean

² These figures are affected by the experience of hyper-inflation surrounding the Indonesian reschedulings. Values excluding data for Indonesia are in parentheses.

* Country data are from *International Financial Statistics* and from IBRD, *World Tables*.

Table 5
Discriminant Analysis Results:
Classification of Rescheduling Countries¹

<u>Results Including Debt-Service Ratio in Discriminant Function</u>		<u>Results Excluding Debt-Service Ratio in Discriminant Function</u>	
<u>Countries Correctly Classified</u>		<u>Countries Correctly Classified</u>	
Argentina	(1965)	Argentina	(1965)
Argentina	(1976)	Argentina	(1976)
Brazil	(1961)	Brazil	(1961)
Brazil	(1964)	Brazil	(1964)
Chile	(1965)	Chile	(1965)
Chile	(1972)	Chile	(1972)
Ghana	(1966)		
India	(1968)		
India	(1973)		
Indonesia	(1966)	Indonesia	(1966)
Indonesia	(1970)	Indonesia	(1970)
Pakistan	(1971)		
Peru	(1975)		
Turkey	(1965)		
Turkey	(1972)		
Uruguay	(1965)	Uruguay	(1965)
<u>Countries Incorrectly Classified</u>		<u>Countries Incorrectly Classified</u>	
Argentina	(1962)	Argentina	(1962)
Egypt	(1966)	Egypt	(1966)
		Ghana	(1966)
Ghana	(1974)	Ghana	(1974)
		India	(1968)
		India	(1973)
		Pakistan	(1971)
Peru	(1968)	Peru	(1968)
		Peru	(1976)
Philippines	(1970)	Philippines	(1970)
		Turkey	(1965)
		Turkey	(1972)
Yugoslavia	(1965)	Yugoslavia	(1965)
Yugoslavia	(1971)	Yugoslavia	(1971)
Zaire	(1976)	Zaire	(1976)

¹ Results based on two sets of linear discriminant functions; assuming expected costs of Type I error is three times the expected cost of Type II error:

Debt Service Ratio Included

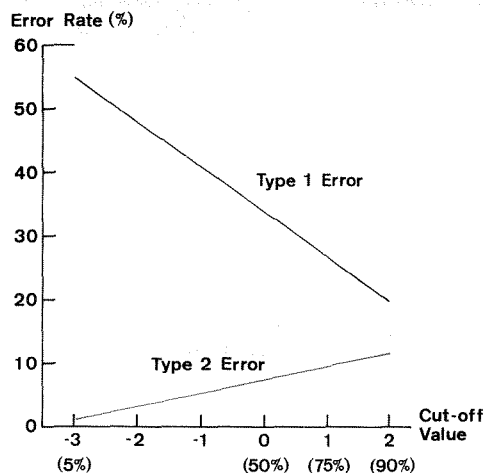
$$8.72 - .21 (\text{CPI}) - .01 (\text{MS}) + .04 (\text{EX}) \\ - .35 (\text{DSA}) + .03 (\text{PP}) + .07 (\text{GNP})$$

Debt Service Ratio Excluded

$$4.07 - .22 (\text{CPI}) - .01 (\text{MS}) + .04 (\text{EX}) \\ + .03 (\text{PP}) + .03 (\text{GNP})$$

Chart 2

RELATION OF ERROR RATES TO VALUE OF CUT-OFF POINT
(Linear Discriminant Function)



percent to 11 percent (Figure 2). The ability to classify non-rescheduling cases more precisely than rescheduling cases reflects the absence of a "well-behaved" distribution for the rescheduling countries—i.e., the variables are highly skewed and exhibit large variances.

The discriminant rules perform best in explaining reschedulings in South American countries (Argentina, Brazil, Chile, Peru, Uruguay) and Indonesia, where 10 out of 12 cases are cor-

rectly classified (Table 5). Reschedulings in these countries are associated with high inflation and rapid money-supply growth, and the discriminant rule assigns a relatively large weight to these variables. These countries also tend to have high debt-service ratios, but that ratio need not be included to explain their reschedulings.

Reschedulings in South Asian countries, on the other hand, require some information on the adjusted debt-service ratio. India and Pakistan experienced relatively low inflation rates for the group of rescheduling countries (partly owing to the use of extensive price controls), but debt relief for these countries (and for Ghana) has become a means of supplementing aid flows. The debt-service ratio, in particular, has been used as an indicator of need for debt relief by the consortia of aid donors.

The results are somewhat paradoxical in the light of the traditional approach taken by Avramovic et al. On the one hand, the debt-service ratio is found to be an accurate—but largely redundant—indicator of those reschedulings associated with short-run balance of payments crises. On the other hand, the debt-service ratio is found to be a critical factor explaining those reschedulings associated with long-run debt problems. In the latter cases, the reasons are political as well as economic.

IV. Summary and Conclusions

This paper has examined two sets of issues involved in country-risk appraisal—the causes of past debt reschedulings, and the ability to anticipate future reschedulings. The evidence suggests, first, that there is a systematic pattern of debt reschedulings which is amenable to economic analysis. Reschedulings, in short, are not isolated or random events, even though their underlying causes are not the same for all countries.

The analysis distinguishes between "liquidity" reschedulings, which are associated with the bunching of short-term commercial credits, and other reschedulings, which are identified with long-term debt relief on official credits.

Monetary (and fiscal) factors appear to be closely involved in the "liquidity" cases. Inflation and over-valued exchange rates lead to excessive reliance on foreign borrowing and thence to ex-

port stagnation and over-importing—and generally to foreign-exchange crises. Cases of chronic debt relief, on the other hand, appear less amenable to a monetary framework of analysis. In particular, it becomes difficult to measure the extent of over-valuation on the basis of inflation-rate differentials, because of the LDC's tendency to resort to price controls, capital controls, exchange controls, and high tariff barriers.

Knowledge of the causes of past reschedulings does not necessarily imply an ability to anticipate future reschedulings. The latter is affected by the difficulty of correctly forecasting exogenous variables, by changes in structural parameters of estimating equations, and by problems caused by the small samples used in analyses of previous reschedulings. Even so, statistical procedures have an advantage over commercial-bank check-

list systems because they provide a systematic method for identifying variables and for explicitly considering trade-offs.

An understanding of past reschedulings, moreover, can be useful in delineating what is

important for country-risk appraisal. The analysis in this paper suggests that banks should focus on the inflation rate (and its determinants) and the debt-service ratio as the key economic variables affecting a country's borrowings and its ability to repay.

FOOTNOTES

1. See Goodman [13]. The Federal Reserve has also recently conducted an informal survey of bank practices in defining, monitoring, and controlling foreign lending exposure.
2. By denominating a loan to an LDC in a key currency, a commercial bank can avoid the risk of exchange rate depreciation of the LDC currency, but not the risk of non-repayment.
3. Estimates of the cost of rescheduling are difficult to obtain since fairly detailed information on the repayment stream is required to compute the present discounted values. In case of reschedulings of official credits it is customary to compute the "grant element" of the rescheduling—i.e., the value of the repayment stream after rescheduling as a fraction of the value of the repayment stream at commercial interest rates.
4. For purposes of this study, refinancings of individual bank credits are treated as a problem of **credit risk**, rather than as a problem of **country risk**. The distinction between refinancings and reschedulings in many cases is moot, although technically a refinancing involves an extension of new credit as compared to a "stretch-out" of an existing credit.
5. Forecasting precision is affected by the ability to forecast exogenous variables accurately and by changes in structural parameters, as well as by the standard error in the estimating equation.
6. See Bade [4], Bardhan [5], and McCabe and Sibley [20].
7. Aliber [1] discusses the analogy of the optimum indebtedness of the firm and that of developing countries. His paper examines whether bank lending to developing countries constitutes an efficient allocation of the world's resources and whether risk premiums on LDC loans are too large relative to the cost of rescheduling.
8. Avramovic uses a separate analytic framework to examine each type of problem. Our discussion is primarily concerned with debt problems associated with a foreign exchange crisis, rather than with problems stemming from slow economic growth.
- The theoretical underpinnings for separating the two types of problems are the "two-gap" models of economic development, which assume that foreign exchange earnings are limited by inelastic export demand, and that technical substitution possibilities between foreign and domestically produced capital goods are fixed. Under these circumstances, the *ex-ante* condition for trade balance and for equality of domestic savings and investment are written separately, rather than in the usual fashion, $S-I = X-M$. The foreign exchange constraint is assumed to be binding in the short run, while the savings constraint is binding over the long run. For a critique of the two gap models, see Nelson [21].
9. The popularity of the debt-service ratios as a default indicator dates back to the 1930's, when a number of Latin American countries with high debt service ratios (15% or more) defaulted. See Avramovic [3], p.194. Primary producing countries experienced sharp declines in prices of their export products, increasing their real debt burden; at the same time, new credits were not forthcoming. On the other hand, there are several examples of countries with high debt-service ratios which have not experienced debt difficulties. These include Australia and Canada during the 1930's (with investment service-export earnings ratio above 30 percent) and Mexico, Brazil, and Israel in recent years.
10. Avramovic examines the properties of a model of foreign borrowing which assumes a Harrod-Domar (fixed coefficient) model of

economic growth. The condition for equi-proportionate growth of debt and GNP is written:

$$i = \frac{r(s_0 - s')}{(s_0 - Kr)}$$

- where i = average interest on foreign debt
 s_0, s' = average and marginal savings rate
 K = incremental capital-output ratio
 r = growth rate of GNP

See Avramovic [3], Mathematical Appendix, pp. 188-192.

11. "Hitherto, the discussion has been in terms of 'domestic' growth variables, in particular the savings-investment balance. The savings-investment gap is equal to the foreign exchange gap, by definition. However, this is no more than an *ex-post* accounting equality. More interesting is the mechanism by which this equality is brought about. The capacity to transfer savings abroad may be undermined by a deterioration in terms of trade. The foreign exchange gap, allowing for the movement of export and import prices, may be much larger than the savings-investment gap at constant prices. The quality is restored *ex-post*, by a reduction in the 'international value' of domestic savings and, also, by an actual reduction in the domestic savings rate as income growth decelerates under the impact of the deterioration of the terms of trade." Avramovic [3], p. 50.
12. The fact that countries such as Brazil, Mexico, and Israel have ready access to international capital markets helps to explain why they are able to successfully sustain high debt-service ratios. In these countries debt can be "rolled-over" much more easily than in most other developing countries.
13. This situation existed in Korea in the period immediately following the financial reforms of 1964-65. For further discussion of this point, see Sargen [23].
14. Feder-Just report overall error rates in classifying countries (i.e., Type I and Type II errors as a percent of the total number of observations) ranging from 2 to 5 percent, while Frank-Cline report error rates between 8 and 18 percent of the sample.
15. Countries listed in Table 2 coincide with those used in our statistical analysis discussed in Section III. Countries were selected using two criteria: (1) whether they had a debt-service ratio above 5 percent; and (2) whether time series data on key series were available dating back to 1960. The main group of developing countries omitted from the sample are African nations.
16. For a description of the technique, see Eisenbeis and Avery [9].
17. The discriminant technique attempts to minimize the following "loss" function:

$$L = C_1 \cdot P(1/2) \pi_2 + C_2 P(2/1) \pi_1,$$

where $P(1/2)$ is the probability of assigning an observation to group 1, given it arose from group 2; C_1 is the cost of misclassifying an observation to group 1, given it is from group 2; π_1 and π_2 are the a priori probabilities of an observation being drawn from groups 1 and 2 respectively.

The cutoff value corresponds to $\ln \frac{C_1\pi_1}{C_2\pi_2}$.

18. The countries in the sample are listed in Table 2. Most of the data cover the period 1960-1975. However, three countries which experienced debt difficulties in 1976 (Argentina, Peru, and Zaire) were also included as rescheduling cases. Information on rescheduling was obtained from Bitterman [6], IMF [17] [18] and OECD [22].

19. Non-normality does not necessarily imply that the results are invalid, but it may affect the error rate in ways that are not quantifiable. We are presently experimenting with transformations that more closely approximate a normal distribution.

20. The presence of serial correlation means that the number of independent observations is considerably smaller than the total number of observations. At present, there are no procedures to correct for serial correlation using discriminant analysis as there are with regression analysis. To get around the problem, one can use each country in the 1960-76 period as one observation, but the number of rescheduling cases is much smaller.

21. Reschedulings for India in 1973 and Ghana in 1974 have been treated as new events, because major decisions were reached on

continuing long-term debt relief to these countries.

22. This procedure is used by Feder and Just in their study. If one is interested in identifying the year that a rescheduling occurs, one can follow the procedure of treating the observations as "hold-outs" and seeing how they are classified by the discriminant rule. Alternatively, one may choose to assign observations to three groups, instead of two.

23. See Eisenbeis [10], pp. 13-14.

24. The differences in the adjusted debt service ratios and those reported by the IBRD (based on actual repayments) are especially large for Chile (1974), Ghana (1966), and Turkey (1966), (1971). Our revisions are based on information contained in Bitterman [6], IMF [17] [18], OECD [22].

25. See Eisenbeis and Avery [9], pp. 70-75, for a discussion of the procedure.

26. The test of quality of the dispersion matrix between the rescheduling and non-rescheduling groups yields an $F_{21,5646}$ statistic of 63.7, which is statistically significant (i.e. the variances for the two groups are unequal). Similarly, the test for equality of group means (based on the Mahalanobis D^2_1 yields an $F_{6,459}$ statistic of 43.5. The test, however, assures the dispersion matrices are equal; hence, the results may not be fully accurate.

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International Banking, Risk, and U.S. Regulatory Policies

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The overseas expansion of the U.S. banking industry has produced a network of branches and subsidiaries whose assets and liabilities now exceed \$200 billion, primarily on the basis of an upsurge in activity over the past decade. Despite concern about this rapid increase in overseas activity,¹ international banking has exhibited great resiliency in financing world trade in the face of the strains associated with recession and inflation. Nonetheless, the size and character of the banks' foreign assets and liabilities present special problems to regulators in supervising inter-

national banking.

This paper presents an analysis of these international regulatory problems. Section I reviews recent trends in U.S. banks' international operations, showing the increased numbers of participating banks and the growth in international credits. Section II discusses the rationale for regulation in general, and Section III examines the risks in international banking that could require regulation. The last section assesses current regulatory problems and trends in the light of the preceding analysis.

I. Growth of International Operations

As recently as 1965, U.S. foreign banking was dominated by 13 large banks with considerable experience in the field (Table 1). But then there began a rush of new banks to establish foreign offices.² By 1973, when the rush slowed, 125 U.S. banks were operating 737 branches overseas, with total assets of \$129.9 billion. The number of branches has changed little in subsequent years, but total assets have continued to grow, reaching \$222.9 billion by March 1977.³ This figure equalled 22 percent of domestic bank assets and approximately three times U.S. banks' equity capital. Indeed, for some large banks, claims on foreigners amount to as much as one-quarter to one-half of total assets (Table 2).

The decade of the 1960's was marked by rapid growth of international trade, full convertibility of most of the major currencies, and rapid expansion overseas by major U.S. corporations. U.S. banks participated in this overseas movement not only because of a search for new opportunities,

but also because of a need to expand overseas operations in order to meet the needs of their corporate customers. In this period, international trade more than quadrupled and generated additional demand for finance. A major new financial institution arose in the form of the Eurodollar market, enabling foreign branches to raise needed funds outside the United States without being subject to domestic reserve requirements and interest-rate ceilings. In addition, U.S. controls on capital flows affected international banking trends. From 1965 to 1974, U.S. banks were hampered from making foreign loans directly from their domestic offices by the so-called Voluntary Foreign Credit Restraint Program. Therefore, during much of this period, banks were encouraged to fund their overseas lending from external sources, and banks without foreign branches were at a disadvantage in competing for international business. At other times, slow domestic-business demand encouraged U.S. banks to look overseas for customers.

This period of enthusiastic overseas expansion came to an end by 1974. For one reason, the dis-

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mantling of controls on capital flows permitted more lending from home offices. But in addition, many banks by this time found that international banking required skills which they did not have, and many found that the costs were higher and the profits lower than expected.

The international-banking scene took on a new character beginning in 1974. The sharp increase in oil prices that year created massive trade surpluses for oil-exporting nations along with large deficits for the major oil-importing countries. In part, the deficits were financed indirectly by the oil-exporting countries recycling funds through the international-banking system. Commercial banks played a key role in this process by using the oil exporters' deposits to finance the imports of oil importing countries. International lending jumped 44 percent (in dollar terms) between year-end 1974 and 1976—an impressive amount even after allowing for the 12-percent rise in prices over the period (Table 1). This explains much of the increase in the assets and liabilities of U.S. foreign branches during the 1974-76 period.⁴

Despite the movement of many small U.S. banks overseas, the market remains dominated by the giant multinational banks. Just 9 of the 14,000 banks in this country account for 540 of the 737 overseas branches and 77 percent of the overseas assets. Over 70 of the 125 banks operating outside the United States have only "shell branches" in offshore money markets, such as Nassau or the Cayman Islands.⁵

In most cases, "shell branches" are more a legal fiction than a real office, yet transactions as-

Table 2
Assets of Foreign Branches of U.S. Banks
(as of December 31, 1976)

	\$Billion	\$Billion
1. All Foreign Countries		
a. All Currencies		
Claims on United States	8.0	
Parent bank		4.4
Other		3.6
Claims on Foreigners	204.2	
Other branches of parent bank		45.9
Other banks		83.6
Official institutions		10.6
Nonbank foreigners		64.1
Other Assets	7.0	
TOTAL	219.2	
b. Payable in U.S. dollars		
Claims on United States	7.7	
Parent bank		4.4
Other		3.3
Claims on foreigners	156.7	
Other branches of parent bank		37.8
Other bank		66.3
Official institutions		9.0
Nonbank foreigners		43.6
Other Assets	3.2	
TOTAL	167.6	
2. United Kingdom		
Total, all currencies	81.5	
Total, payable in U.S. dollars	61.6	
3. Bahamas and Cayman Islands (British West Indies)		
Total, all currencies	66.8	
Total, payable in U.S. dollars	62.7	

Source: Board of Governors of the Federal Reserve System.

Table 1
Overseas Branches Of U.S Banks
(as of year-end except June 1977)

	1960	1965	1969	1970	1971	1972	1973	1974	1975	1976	(June) 1977
Number of U.S. banks with overseas branches	8	13	53	79	91	108	122	125	126	127	130
Number of overseas branches	131	211	459	536	583	627	697	734	762	731	737
Assets of branches* (\$ billion)	3.5	9.1	35.3	46.5	59.8	78.2	121.9	151.9	176.5	219.2	NA

Source: Board of Governors of the Federal Reserve System.

*Includes inter-branch funds.

signed to such branches are offshore transactions and not subject to domestic reserve requirements. Lending decisions can be made at the U.S. head office or elsewhere, and funds can be raised in London to supply loans to customers outside the United States through the books of these branches. This arrangement allows smaller banks which could not justify the high overhead expense of overseas-branch operation in such locations as London or Frankfurt to obtain offshore funds for their foreign lending. After adjusting for these shell branches, the number of

banks with true foreign branches or subsidiaries is much smaller than the totals indicate.

Indeed, only a few large banks have the resources to maintain extensive branch networks and to raise the funds needed by large international borrowers. Because of their size, these banks can reduce the threat of losses by diversification and can build up the necessary staff to evaluate foreign credits properly. Smaller banks, in contrast, try to reduce their risk exposure by concentrating their efforts in the interbank Euro-dollar market and in the developed countries.

II. Rationale For Banking Regulation

The rationale for banking regulation in this country is based upon the need, first, to promote economic stability and, second, to promote competition. The first goal attempts to minimize disruptions originating in the banking sector that cause fluctuations in output or employment. Because commercial banking in a modern economy is the source of the bulk of the domestic money supply and the provider of crucial financial services, public policy is always concerned with the stability of the banking system as well as the soundness of individual banks. In fact, the Federal Reserve System from its inception has had the responsibility of minimizing financial instability. The System was designed to act as lender of last resort—from which responsibility evolved its monetary-policy role—and also to act as the supervisor for state-chartered member banks. The Comptroller of the Currency, which had been the first Federal supervisory agency, has retained its responsibility for nationally-chartered banks, while the Federal Deposit Insurance Corporation since the 1930's has taken on supervisory responsibilities for state banks which are not members of the Federal Reserve System.

The second regulatory policy goal is maintenance of competition.⁶ Banking is regulated to prevent undue concentration of financial resources in commercial banking, and also to preserve competition among nonbanking institutions by keeping banks out of that arena. Various Federal laws are directed to this end. Under the Glass-Steagall Act of 1932, commercial banking is separated from so-called investment banking.⁷

This is in contrast to the tradition of continental Europe, where French and German banks typically combine both functions. In addition, the Bank Merger Act of 1960 established competitive standards for the approval of banking acquisitions and mergers, while the 1970 amendments to the Bank Holding Company Act set similar rules to limit the expansion of corporations controlling banks into nonbanking financial activities.

Both objectives have resulted in the expansion of government regulation over banking. The competitive goal rests upon well-known theoretical foundations: increased concentration in a market tends to reduce output and to raise market price. It follows that regulation is necessary to prevent undesirable concentration. The value of economic stability can also be readily accepted, although the theoretical case for bank regulation is less obvious in this case. The concept of financial stability—or rather instability—really concerns attitudes toward risk. Would unregulated banks build their portfolios in a way that would expose the financial sector to increased risk, and thus bring about increased (and undesirable) fluctuations in real economic activity? It may be assumed that regulation, by reducing risk, improves the functioning of the financial system by lowering the chance of destabilizing losses.

The banks themselves, as profit-making institutions, have an incentive to protect themselves against risk.⁸ Risk cannot be avoided but portfolio diversification can reduce it. Banks must de-

side how much expected risk they are willing to trade off for an increase in expected return. They may respond to higher risk by charging higher interest rates, or by demanding increased collateral or loan guarantees. The banks themselves certainly are aware of the problem of risk. The policy question comes down to whether, in making individual risk assessments, the banks' private decisions result in risk-taking that is higher than society prefers.

It has been argued that existing institutional arrangements tend to encourage risk-taking.⁹ Deposit insurance, for example, tends to increase incentives for banks to take more risk, by taking over the role traditionally filled by bank capital. Specifically, government-sponsored insurance protects depositors by making them less sensitive to a bank's capital position, and thus encourages bankers to increase their leverage and, therefore, their risk exposure.

In effect, deposit insurance tends to shift risk to the public sector. To the extent that official international-lending arrangements—through (say) the International Monetary Fund—act as a form of international deposit-insurance, banks

may be tempted to increase risk exposure beyond some social optimum. While such support may result in greater overall international stability, regulation may be needed to keep individual banks' risk exposure within acceptable limits.

In addition, regulation may be justified where regulators are better qualified than the banks themselves to assess the banks' own risks. This may seem to be a strong assumption, but examiners develop considerable expertise through their constant evaluation of bank records. Banking regulation can be viewed as imposing standards based on contemporary "best-practice," with those standards shifting over time as experience confirms the safety of new practices. Regulation standards are moving averages which tend to smooth trends in banking, thereby reducing the chance of major variations in riskiness.

Poor internal procedures may induce undue risk-taking and expose a bank to unnecessary losses. Managers may gather insufficient information for assessing loan quality, or they may delegate too much loan authority, or they may concentrate their loans in too few areas. When operating overseas they may face excessive costs

Table 3
Assets Held as Claims on Foreign Countries by Head Offices
and Foreign Branches of U.S. Banks¹
(as of December 1976)

	<u>\$Billion</u>		<u>\$Billion</u>
<u>Group of Ten and Switzerland</u>	100.1	<u>Non-Oil Developing Countries</u>	45.2
Belgium-Luxembourg	6.1	Argentina	1.9
France	10.0	Brazil	11.8
Germany	8.8	Mexico	11.5
Italy	5.8	Other Latin America	6.7
Netherlands	2.8	Korea	3.1
Sweden	1.3	Philippines	2.2
Switzerland	3.0	Taiwan	2.4
United Kingdom	41.4	Other Asia and Africa	5.6
Canada	5.1	<u>Eastern Europe</u>	5.2
Japan	15.8	<u>Offshore Banking Centers</u>	23.9
<u>Other Developed Countries</u>	15.1	Bahamas	9.3
<u>OPEC Countries</u>	12.7	Bermuda and British	
		West Indies	4.3
		Hong Kong	2.3
		Singapore	4.6
		Other Offshore	3.4
		<u>Miscellaneous</u>	5.1
		TOTAL	207.3

Source: Board of Governors of the Federal Reserve System

¹This includes claims on private individuals, businesses, and banks in foreign countries, as well as foreign governments and their agencies.

in obtaining data, or may encounter difficulties in assessing credit risk because of lack of familiarity with local customers. Yet the same problem exists domestically when a bank considers lending to customers outside its usual markets. Similar types of problems occur in assessing banking risk both internationally and domestically, and the basic process of judging credit-worthiness is not fundamentally different.

The factor distinguishing international banking from domestic banking is the presence of "sovereign risk." Even if the foreign customer is financially able to repay a loan—that is, there is no "banking risk" in the sense of commercial bankruptcy—his country's government may prevent the appropriate conversion of foreign exchange to repay the bank loan. This is a default on the national level, not the private level, as will be seen from the discussion in the next section.

International lending thus presents risks similar to the normal commercial risks of domestic lending, with the one exception of sovereign risk. What role then does regulation have to play? Without regulation, commercial banks might

choose a combination of risk and expected return that is unacceptable from a social viewpoint. And even if banks assess risk correctly, they may undertake activities that expose the U.S. banking system to disturbances which are unacceptable on public-policy grounds.

On the other hand, maintenance of competition is not yet a policy problem for international banking supervision. Ordinarily, the foreign operations of U.S. banks have no direct impact on domestic competition. Competitive effects inside other countries are regarded as matters for those countries to assess in terms of their own economic policy. U.S. banks are allowed to engage in many activities overseas that are not permitted for competitive reasons inside their own country—a prime example being investment banking. To forbid such activities would be to put U.S. banks at a disadvantage compared to their foreign competitors. Therefore the principal problem for international-banking regulation concerns risk, not competition. How risky, then, is international banking?

III. Risk in International Banking

Banking risk—one of the major types of risk facing international bankers—involves the assessment of borrowers' credit standing or the forecasting of deposit flows. As noted above, this is the same type of risk that bankers have to face on the domestic scene. It may be more difficult to obtain credit information abroad, but this only means that U.S. banks have less familiarity than their foreign competitors with local conditions. A similar situation exists when a domestic bank attempts to make domestic loans outside its usual markets. Yet as a practical matter, it takes time to build the expertise to interpret foreign financial practices and to develop appropriate sources of information. Consequently, many U.S. banks tend to restrict their foreign lending to major international corporations or financial institutions. This policy reflects the costs of gathering local information, and is not different in character from the basic process of making credit judgments about domestic borrowers.

When operating abroad, bankers must take

into consideration many of the same economic factors that they deal with at home—government fiscal and monetary policy, bank regulatory policy, foreign exchange controls and local economic conditions generally. Although many countries tend to have unstable economies because of undue dependence on a few basic products or because of political difficulties, other countries may have greater economic stability than the United States. Moreover, most developed countries provide ample information on economic conditions that allow reasonable economic forecasting. For others, however, great uncertainty exists about their economic prospects, so banking risks may be considerably higher and sovereign risk may be a greater concern.

Actually, there are few cases where countries refuse to repay (or refuse permission for their citizens to repay) foreign loans, because borrowing countries do not want to foreclose the possibility of obtaining foreign credit again in the future. The word default is usually applied—not to

outright refusal to repay—but rather to a case where loans are rescheduled or renegotiated through agreement with lenders. (This same situation arises domestically when banks change loan terms to help troubled borrowers instead of forcing insolvency.) Because countries generally attempt to avoid outright default, few cases have arisen in the last twenty years where banks experienced serious losses from sovereign risk.

Commercial banks have acted to protect themselves against this type of international risk exposure. They have built up their systems for assessing economic conditions in individual countries—in many cases, systems of considerable sophistication. In addition, they have followed policies of geographic as well as industrial diversification to reduce risk exposure (Table 3). In terms of geographic diversification, most loans are concentrated in developed countries or in interbank transactions, while loans to underdeveloped countries represent only a minor part of the total. In particular, loans to less-developed non-OPEC countries are not unduly large in terms of the relative commitment by U.S. banks and the ability of most of these countries to service their debts.¹⁰ Loans to six countries (Argentina, Brazil, Mexico, the Philippines, Korea, and

Taiwan) represent three-quarters of U.S. banks' credits in this category—but a strong case can be made for lending to these countries because of both their international reserves and their long-run growth prospects.¹¹

A measure of the efficiency of U.S. banking practices is the fact that loan losses on banks' international portfolios have been smaller than on their domestic loans.¹² Recent failures of large banks cannot be attributed simply to risky international loans. Foreign-exchange losses did contribute to the failure of Franklin National Bank, but those losses reflected poor internal controls which were also typical of the bank's domestic operations.

Through diversification, improved information systems, and appropriate internal controls, banks have established a reassuring record of international operations. However, banks' collective risk assessment may still result in a banking system that is too risky from the viewpoint of society, and the function of banking supervision is to keep risk exposure within acceptable boundaries. Foreign risk, to the extent it affects the stability of the domestic banking system, makes supervision of international banking necessary.

IV. Current Regulatory Practices and Problems

Federal supervisory authority over U.S. banks' foreign operations is exercised by the Federal Reserve System and the Comptroller of the Currency.¹³ The Comptroller of the Currency has the responsibility for examining national banks, which make up the majority of those banks operating overseas. The Federal Reserve System has the responsibility for examining state-chartered member banks, and for approving national banks' foreign branches and the investments of foreign subsidiaries (either directly or indirectly through Edge Act subsidiaries). Foreign acquisitions by domestic-bank holding companies also require Federal Reserve approval.

Supervisory authorities rely primarily on banks' home-office records in performing international examinations—and until recently they relied almost entirely on such records. This pro-

cedure was acceptable as long as few banks had overseas offices, since the records at hand were satisfactory for the evaluation of most loans, and the risks from foreign operations were quite small. But as the number and size of foreign assets grew, on-site examination of branches also became necessary. The Comptroller of the Currency now maintains a permanent staff in London, and both Federal agencies are increasing the frequency of their overseas examinations. These on-site examinations are used primarily to check the accuracy of head-office records and the adequacy of internal controls rather than to review the quality of local assets. Regular examination of all foreign offices would be very costly, without any assurance of a compensating increase in supervisory effectiveness.

For a time, the regulatory agencies assumed that foreign banking regulators could help moni-

tor the activities of U.S. banks overseas. However, experience has shown that few banking authorities conduct supervision on the scale practiced in this country. Most countries' authorities emphasize regulation for purposes of monetary policy, foreign-exchange control or other economic-policy objectives. Even in countries having very extensive regulatory systems, such as Japan, the emphasis is upon checking for conformity with banking regulations rather than upon examining for the quality of credit extended by foreign branches. U.S. regulators thus must rely primarily upon their own procedures to supervise U.S. banks' foreign operations.

A particularly difficult supervisory problem in assuring adequate diversification concerns the assessment of the risks assigned to loans in particular countries—that is, country risk, which covers both "sovereign risk" and the impact on "banking risk" of local economic conditions. As noted above, banks are now developing their own systems for evaluating economic conditions in foreign countries. But regulators must also be able to judge independently whether or not a particular bank has too many resources in countries with a high level of country risk. Improved methods of assessing such risks would result in greater uniformity in the treatment of individual banks as well as a better assessment of U.S. banks' overall risk. Both the Comptroller of the Currency and the Federal Reserve System are now developing systems to measure and monitor country risk.

Other considerations must also be taken into account:

"Bank regulators need to be sensitive to the fact that admonishments to banks can result in damage to the credit-worthiness of borrowing countries. As a possible way of dealing with this potential problem, the Federal Reserve is exploring a supervisory approach that would focus on the degree of country concentration of foreign loans in portfolios of individual banks and on the quality of information possessed by banks in assessing the degree of risk attached to their international loans."¹⁴

To help meet regulatory and bank information needs, a number of international agencies are now attempting to improve international financial statistics.¹⁵ For example, the Bank for International Settlements, with the cooperation of major central banks, is now working to develop new data on external private borrowing and lending. Improved statistics of this type should reinforce the effectiveness of banks' own procedures for assessing risk, and should reduce supervisory burdens accordingly.

* * *

In conclusion, there are important differences between banking risk and sovereign risk. Banking risk is essentially the same at home and abroad. Despite greater potential difficulties in obtaining information on foreign borrowers, the credit factors involved are fundamentally the same as in domestic lending. Sovereign risk is a different matter, for which there is no domestic equivalent risk. Foreign governments can prevent the conversion of local currency into foreign currencies—which amounts to default on a national (but not private) level. There have been few cases of such default, but regulators remain concerned about the possibility.

Banks have been successful in reducing their loss exposure, judging by the relatively low losses they have experienced in their foreign operations. However, to the extent that official international lending represents a form of insurance, banks have an incentive to take greater risk, and international supervision must act to counteract that tendency. The public has an interest in ensuring that risk remains within acceptable limits, through appropriate actions by bank regulators. At the same time, this emphasis upon risk-taking should not interfere with the ability of U.S. banks to function as international lenders. Banking plays a major role in encouraging economic development through the financing of world trade and investment. Therefore, efforts to improve international banking supervision must ultimately be judged by their contribution to the world as well as the U.S. banking system.

FOOTNOTES

1. See the recent hearings by the Subcommittee on International Finance, U.S. Senate Committee on Banking, Housing and Urban Affairs, and also the staff report of that subcommittee, **International Debt, The Banks, and U.S. Foreign Policy**, August 1977.

2. In this period, overseas offices became desirable because various controls made it difficult to lend abroad from head offices. Today, however, foreign lending is conducted both from U.S. offices and foreign branches.

3. In addition, foreign subsidiaries of U.S. banks had \$30 billion in assets as of December 13, 1975, the most recent date for which such information is available.

4. See article by Hang-Sheng Cheng in this issue.

5. These locations are chosen partly because of low local taxes on offshore transactions and other tax advantages, and partly because of savings in investment in staff and physical plant.

6. Of course, the U.S. cannot assure competition in foreign markets, so this consideration is less important in regulating U.S. banks' operations overseas.

7. This Act was adopted as a reaction to the investment-banking activities of commercial banks, which were thought to be a cause of the 1929 stock market crash and the ensuing depression. Although passed initially as a means of reducing financial instability,

the Act has been used essentially to prevent financial concentration.

8. In a distribution of expected returns from a given investment, the standard deviation denotes the measure of risk.

9. Sam Peltzman, "Capital Investment in Commercial Banking and its Relationship to Portfolio Regulation," **Journal of Political Economy**, January-February 1970.

10. Henry C. Wallich, Statement before Subcommittee on International Finance, U.S. Senate Committee on Banking, Housing and Urban Affairs, August 29, 1977.

11. *Ibid.*

12. Fred B. Ruckdeschel, "Risk in Foreign and Domestic Lending Activities of U.S. Banks," **Columbia Journal of World Business**, Winter 1975, pp. 50-54. Robert Morris Associates, **Domestic and International Commercial Loan Charge-Offs** (1977).

13. Few nonmember banks are engaged in international banking, and hence their supervising agency (the F.D.I.C.) has only a limited role in international-banking examination.

14. Wallich, *op. cit.*, p. 13.

15. The shortcomings of existing international-credit data are noted in **International Debt, The Banks and U.S. Foreign Policy**, *op. cit.*

Flexible Exchange Rates, Multinational Corporations, and Accounting Standards

John H. Makin*

In October 1975, the Financial Accounting Standards Board (FASB) issued a statement (Statement No. 8) designed to standardize procedures for reporting foreign-currency positions of U.S. multinationals. FASB-8 prompted a storm of protest from many of these firms, which argued that it would result in violent swings in reported earnings not related to the fundamental economic condition of a firm. Any such volatility of earnings would, in the view of a widely accepted body of financial theory, penalize share prices of multinationals and thereby increase their costs of raising capital. In opposition, some analysts argue that investors can be expected to "see through" reported earnings figures to distinguish between fluctuations due to "fundamentals" and those due to accounting standards which don't reflect such "fundamentals."

Despite the obvious inconsistency between these polar views, no systematic statistical test has been made to date of FASB-8's effect upon share prices of multinationals. This reflects the fact that the new standards have only been in effect since January 1976, and that few companies had previously followed the accounting procedures mandated by FASB-8. Sufficient data are now available to test for the effects of FASB-8 upon the costs of capital for multinationals. The results of such tests are reported in this study.

Any such study must recognize that FASB-8 standards were super-imposed upon a system of quasi-floating exchange rates which permitted various degrees of exchange-rate flexibility, selectively since August 1971 and more widely

I. Floating: A New Era for Multinationals

Multinational corporations attract a great deal of attention because of the public's fascination with their size and power.¹ It is useful to con-

sider how multinationals are different from other firms, and in particular, which differences are essential for measuring corporate performance. since March 1973. For multinationals, such flexibility meant increased variability of the dollar value of foreign-currency items on balance sheets and income statements, with possibly increased variability of net earnings. This fact should have been fully appreciated by investors well before FASB-8 went into effect in January 1976. Therefore we need to look for possible effects of floating *per se* on costs of equity capital for multinationals, and then see if any additional effects can be attributed to FASB-8.

At the outset, it is important to limit the questions we shall try to address. No attempt will be made here to argue either for or against any of the specific provisions of FASB-8. Rather, we take its existence as given, and simply ask: what impact has FASB-8 had upon share prices of multinationals over and above the impact of the recent regime of quasi-floating exchange rates? In short, has FASB-8 provided investors with any "new" information on the asset properties of claims on multinationals? The answer given here will be a qualified "yes."

We first describe briefly in Section 1 the nature of the accounting changes mandated by FASB-8. In Section 2, we consider the impact which FASB-8 might produce on share prices of multinationals, over and above the impact resulting from the increased flexibility of exchange rates. Section 3 introduces the methodology used to test for this impact; Section 4 presents the findings of our empirical tests; and Section 5 discusses the implications of these findings.

sider how multinationals are different from other firms, and in particular, which differences are essential for measuring corporate performance.

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Multinationals are corporations which find it advantageous to locate their sales, manufacturing, marketing or financial activities in a number of different countries. Their major advantages include economies of scale from intensive employment of indivisible and highly specialized managerial functions, preferential location vis-à-vis major markets or suppliers of inputs, perhaps some ability to avoid governmental restrictions on operations and, more generally, various benefits flowing from a widely diversified set of operations.

Multinational organizations do, however, face unique costs. Basic problems arise from attempting to manage a far-flung organization whose lines of communication are frequently stretched to the point of extreme frailty. In terms of our main concern, a multinational presence implies a considerable increase in the complexity of financial statements. On the balance sheet, those items dealing with debt, inventories and physical plant—many of which are measured in different currencies—must all be converted back into the base currency employed by the firm for accounting purposes. The same is true of all the flow items in the income account, some of which must reflect changes in the value of balance-sheet items, measured in terms of some base currency.

The problems involved in producing informative financial statements for multinationals become more complicated under flexible exchange rates. The large adjustments of exchange rates after August 1971 and the openly-acknowledged continuous adjustments since March 1973 have made this fact amply clear to financial managers and investors. FASB-8 represents an attempt to replace those accounting standards that had been designed for a regime of fixed-exchange rates with standards more appropriate to a regime of flexible-exchange rates, and moreover, to standardize the diversity of accounting practices followed by multinationals in this period of adaptation to flexible rates.

FASB-8 requires quarterly income statements to report changes in the local-currency value of balance-sheet items, some of which may repre-

sent unrealized gains or losses.² It also standardizes the treatment of a number of major balance-sheet items. For example, all “nonmonetary” items, such as depreciation and cost of goods sold (including inventories), are translated into dollars at “historical” exchange rates; i.e., those prevailing when inventory was acquired or when a plant was built. In contrast, all “monetary” items, such as long-term debt denominated in foreign currencies, are translated into dollars at “current” rates. As a result, quarterly income figures become highly vulnerable to changes in the dollar value of large stock items such as inventories and debt. For example, for goods priced in foreign currencies, a strengthening of the U.S. dollar could lower the dollar value of current receipts relative to the dollar cost of goods sold, and thus could reduce measured net dollar earnings. Alternatively, the same stronger dollar could reduce the value of long-term debt denominated in foreign currency, and thus could lead to higher net dollar earnings. In sum, the effects of FASB-8 can be large and unpredictable. An assessment of their effects on future earnings reports requires detailed information about corporate balance sheets and income statements, as well as forecasts of exchange rates.

Prior to the enactment of FASB-8, accounting practices of U.S. multinationals varied considerably, particularly regarding translation rates (current vs. historical) for inventory and long-term debt.³ More important, most companies employed “reserve accounts” to absorb the impact of changes in the dollar value of balance-sheet items due to exchange-rate changes, thereby preventing such changes from appearing on quarterly income statements. The dollar value of these changes, plus or minus, could be accumulated over time and reported out on the income statement when the impact was as small as possible, thereby minimizing the impact of exchange-rate changes on reported net earnings. With many multinationals having become accustomed to using reserve accounts in this fashion to stabilize reported earnings, the storm of protest which greeted FASB-8 is not surprising.

II. FASB-8: Additional Problem for Multinationals?

The potential for increased earnings variability (measured in U.S. dollars) arises from the in-

creased flexibility of exchange rates, quite independently of a particular set of accounting stan-

dards. Investors are well aware of this fact, and also of the use of reserve accounts to smooth out the impact upon reported earnings of exchange-rate fluctuations. In this situation, does the enactment of FASB-8 place any added burden on multinationals over and above the burden implied by exchange-rate flexibility? Was the cry of protest over FASB-8 justified? Before considering this question, we should first consider what, if any, burden is implied for multinationals by a move toward exchange-rate flexibility *per se*.

Two assumptions are involved in the hypothesis that the increased earnings variability associated with a move toward floating exchange rates will raise capital costs for multinationals. First, we assume that an increase in the *permissible* flexibility of exchange rates implied by reduced official intervention in foreign-exchange markets—which defines our current system of quasi-floating—will result in an increase in the *actual* flexibility of exchange rates.⁴ Second, we assume that an increase in actual rate flexibility raises the variance of multinationals' profits measured in dollars.⁵ Neither proposition is necessarily true. The first depends on conditions affecting the private demand and supply of foreign exchange, as well as the level of central-bank intervention under our quasi-floating system. Even granting the first assumption, however, the variance of multinationals' net dollar profits can rise or fall depending upon the variability and covariability of dollar prices of currencies in which foreign-currency positions exist.⁶

III. Measuring the Impact of FASB-8

It is well known that movements in the overall stock market significantly affect returns on individual stocks. Thus, in testing for the effects of floating and FASB-8, it is necessary to adjust the returns of the companies being tested for movements in the overall market. This section briefly describes one widely-accepted method for taking account of market movements.

Modern financial theory, as developed by W. F. Sharpe and others, has shown the relationship between the rate of return on an individual security or portfolio and the overall "market return" in the following form:⁸

For purposes of exploring the impact of increased rate flexibility, however, we will take these two propositions to be empirically valid. Exchange rates in recent years have in fact fluctuated more, at least on a quarter-to-quarter basis, than during the pre-August 1971 era of "fixed" exchange rates. And although multinationals have the potential of minimizing the earnings impact of exchange-rate variability, they have made only limited progress in this direction.⁷

In this situation, would the application of FASB-8 tend to raise multinationals' capital costs further than would be expected on the basis of the increased flexibility of exchange rates? For comparisons of multinationals with purely domestic firms, the answer depends upon whether pre-FASB-8 accounting standards provide an accurate measure of earnings behavior over time, and whether more accurate measures can be devised. For comparisons among multinationals, the answer depends upon whether reported earnings figures can be standardized by adjusting for differences in accounting techniques and in the use of reserve accounts.

Answers to these questions can be sought with the aid of a model which relates returns on securities both to a systematic (or overall) market component of risk and to an unsystematic (or nonmarket) component of risk. We seek to determine how these two risk components are affected by the increased flexibility of exchange rates, and subsequently by the impact of FASB-8 on corporate earnings reports.

$$(1) E[R_{jt}] = \alpha + \beta_j E[R_{mt}] + \epsilon_t \quad \text{where}$$

$E[R_{jt}]$ = the expected rate of return on security "j" or portfolio "j" at time "t"

$E[R_{mt}]$ = the expected rate of return on the market portfolio at time "t"

β_j = a parameter describing the sensitivity of $E[R_j]$ to changes in $E[R_m]$

α = a measure of the expected return to portfolio "j" in excess of or below the average market return re-

quired for the j th risk class
 $\epsilon_t =$ the impact of random or "outside"
disturbances on R_j at time " t "

Viewed in a straightforward manner, equation (1) says that changes in the expected return on a given asset or portfolio occur because of changes in the overall expected return on all risky assets, $E[R_m]$, and because of changes in "other" factors peculiar to such a given asset or portfolio which are captured in turn by a change in " α ", if they persist, or by ϵ_t if they are essentially random and do not persist. Portfolio risk or movement in $E[R_j]$ that is correlated with returns on risky assets for which the market portfolio is a surrogate is termed *systematic risk*, while that which is uncorrelated is termed *non-systematic risk*. Systematic risk is an unavoidable response of $E[R_j]$ to changes in the overall return on assets, while non-systematic risk ought, in theory, to be avoidable through portfolio diversification.

The relationship given by equation (1) is usually called the *security market line*. It is derived from a consideration of the choices made by investors of which assets to hold in their portfolios. Presumably, investors will demand a higher expected return from a portfolio which they perceive to be riskier (i.e., to have more variable returns). As each investor buys and sells securities in order to put together the portfolio which best satisfies his preferences for return vs. risk, the market prices of securities will adjust until equation (1) is satisfied.

The model just described can be employed to test for the impact of floating and FASB-8 upon costs of capital for multinationals, relative to other firms, by substituting actual measures of past returns for the expected values in equation (1).⁹ When this is done, the " α " and " β " terms retain the interpretation given them in equation (1), except for the substitution of "actual" where

"expected" had previously been employed.

Floating and/or FASB-8 may tend to cause changes in either " α " or " β ". Either event would be likely to affect overall market risk, in view of the heavy concentration of multinationals in the ranks of major U.S. firms. In such a case, some component of the overall movement in returns would reflect the impact of changes in foreign-exchange rates. Multinational firms would tend to be particularly sensitive to the (new) foreign-exchange component of market risk, and therefore returns to multinational equities would tend to respond more sharply to changes in market returns, at least to the extent that such changes reflect the foreign-exchange component of market risk. In short, " β " may rise either after floating or FASB-8.

Alternatively, if either floating or FASB-8 causes " α " to vary significantly from zero, then *ex post*, over the sample period in question, some persistent, exogenous "non-market" disturbance must be at work. Such a disturbance may or may not be associated with a change in " β ," depending upon whether or not it is associated with a change in perceived systematic ("market") risk. A negative value of " α " with no significant shift in " β " would suggest the existence of new information, causing a persistent reduction in the market's perceived value of multinational firms. Costs of raising a given amount of capital, which would now represent a larger share of such firms' discounted present value, would then rise.

In contrast, negative error terms at a particular point in time would suggest a one-time reduction in *ex post* returns on multinationals' shares as a result of floating or FASB-8. In any case, the results obtained by estimating equation (1) for various portfolios of multinationals, along with a control group of domestic firms, indicate the degree to which these events affected the multinationals' costs of capital.

IV. Empirical Tests of the Impact of FASB-8

Our empirical tests use Equation (1) to measure the performance of share prices of three groups of firms over five time periods. The firms investigated include a control group of non-multinational firms (trucking), a group of multinationals influenced to some extent by FASB-8 (chemicals, international oils and drugs), and a "sensitive" group selected specifically because of

the large FASB-8 impact upon their earnings. The five time periods investigated are the "fixed exchange-rate" period (January 7, 1970 through August 11, 1971), the "transition" period (August 25, 1971 through March 21, 1973), and three subsequent "floating" periods—the "floating without FASB-8" period (April 4, 1973 through October 15, 1975), the "floating with

FASB-8 expected" period (October 22, 1975 through March 31, 1976) and finally the "floating with FASB-8" period (April 7, 1976 through March 30, 1977).

The grouping of firms is designed to distinguish between the performance of multinationals and that of domestic firms, and to distinguish between the performance of "typical" multinationals and that of more "sensitive" firms. Since "floating" alone could adversely affect performance, we measure their actions during the fixed-rate period and again during each of the two periods of quasi-floating after August 15, 1971. Since FASB-8 was officially adopted on October 15, 1975 to apply effectively to first-quarter 1976 earnings reports, we consider also the period from October 22, 1975 through March 31, 1976, when FASB-8's existence was known but before the appearance of any first-quarter earnings figures. In effect, this period isolates any impact arising from the application of a known form of FASB-8. The final period from April 7, 1976 through the end of our sample, March 30, 1977, tests for the "new information," if any, that was contained in actual earnings reports under FASB-8 that were then beginning to appear.

The control group "trucking" is Standard and Poor's stock index of five trucking firms.¹⁰ Selection of this "non-multinational" control group required a careful search, because almost any grouping of major U.S.-based firms contains a significant multinational component, and multinational firms dominate the Fortune 500 list of major corporations.¹¹ However, the S & P "trucking" group is a readily available composite with virtually no multinational involvement.

The "typical" multinational group was selected on the basis of substantial multinational involvement of the firms in certain S & P composites. Chemicals, drugs and international oil companies were most consistently represented in samples of major multinationals, as is evident from the listings in the Appendix. The "sensitive" group of multinationals was selected to represent those firms whose earnings reports during 1976 were most clearly affected by the application of

FASB-8 standards.¹² Those firms vary significantly in terms of size and industry grouping, and *ex post* their only common characteristic is a high level of sensitivity to FASB-8 standards.¹³ The "negative impact on earnings under FASB-8" (Table 1) measures the ratio of the change in earnings under FASB-8 to what total earnings would have been under previous accounting rules. For example, the 1976 per share earnings of American Brands were 28 percent less under FASB-8 than they would have been under previous accounting rules. In short, Table 1 suggests the degree to which FASB-8 affected the earnings of the "sensitive" group.

Application of FASB-8 standards apparently depressed earnings for most U.S. multinationals during 1976. This result reflected both the particular form of the standards and the behavior of the U.S. dollar during that period—and as most corporate reports carefully pointed out, the impact could subsequently be reversed given different exchange-rate behavior. Negative earnings effects under FASB-8 during 1976 possibly reflected the conjunction of a generally strengthening U.S. dollar and the multinationals' typically heavy investment abroad in inventories, plant and equipment. Circumstances of this type raise the cost of goods-sold relative to sales receipts when each is measured in U.S. dollars, and thereby lower corporate profit margins. Should the U.S. dollar weaken consistently during 1977, the losses recorded under FASB-8 in 1976 would become gains. The overall impact would be increased volatility of reported net earnings.

It should be emphasized that the earnings of firms in the "sensitive" group are generally expected to be *more variable* under FASB-8, and not necessarily higher or lower. While the FASB-8 impact was universally negative during 1976, *overall* earnings figures for the firms in Table 1 varied considerably during that year. Seven of the thirteen reported higher earnings in the first quarter of 1976 than in the comparable period of 1975. Earnings performance for the "sensitive" group as a whole, which had lagged behind the overall corporate average in earlier years, continued to do so in 1976 (Table 2).

"Relative earnings growth" remained rela-

tively stable over the 1975-76 period. Relative earnings growth is the difference between overall corporate earnings performance, as measured by the percentage change in current quarterly earnings over those for a year earlier, and that for the "sensitive" group, divided by overall earnings performance. (The one exception, in the third quarter of 1975, reflected the very small improvement in overall earnings in that quarter.) In contrast, the *absolute* difference in performance between overall earnings and sensitive-group earnings generally widened over the two-year period. However, the figure for first-quarter 1976—a crucial period for earnings variability under FASB-8—was less than a third of a standard deviation from the mean absolute difference for the 1975-76 period.¹⁴ In short, there was nothing particularly unusual in the first quarter of 1976 about the *level* of earnings performance of the "sensitive" group *relative* to the *level* of overall corporate-earnings performance.

Next, by considering movements within different time periods, we try to distinguish between the impact on share prices associated with float-

ing *per se* and the impact resulting from the expected or actual application of FASB-8. The two earlier ("fixed rate" and "transition") periods are rather clearly delineated. (See p. 47 above.) In contrast, it is difficult to identify a date when we might expect that FASB-8 would begin to affect the share prices of multinationals. The Financial Accounting Standards Board began preliminary consideration of new standards for multinationals in April 1973. There followed a series of exposure drafts, memos and public hearings, and FASB-8 was officially released on October 15, 1975. By the end of 1974 analysts generally expected that new regulations would be forthcoming, although a powerful negative reaction by multinationals to FASB's Exposure Draft of December 31, 1974 caused some to anticipate a fairly significant softening of the terms in that draft. Because of such continuing uncertainty, we would expect any possible effects of FASB-8 to surface only when the new standards had become "official"—hence our specific identification of the period from October 22, 1975 through March 31, 1976 as "floating with FASB-8 ex-

Table 1
The Effect of FASB-8 Accounting Standards on
1976 Reported Earnings of "Sensitive Firms"

	Impact (%) on 1976		Rank in Fortune 500	Assets (billions) ^d	Industry and SIC Code	
	Earnings Resulting from FASB-8 Standards*					
1. American Brands	28	(EPS) ^c	57	\$2.456	Tobacco	(21)
2. Armco Steel	12 ^a	(NI)	50	\$2.834	Primary metals	(33)
3. Bell & Howell	11 ^a	(EPS)	338	\$.408	Photographic	(38)
4. Celanese	13	(NI)	85	\$1.910	Chemicals	(28)
5. Chemetron	25	(NI)	336	\$.412	Chemicals	(28)
6. Chicago Pneumatic	39	(NI/EPS)	531	\$.255	Air Transport	(45)
7. Eastman Kodak	8.6	(EPS)	22	\$5.524	Photographic	(38)
8. Ferro	17	(NI)	445	\$.246	Chemicals	(28)
9. Gardner Denver	20 ^a	(EPS)	332	\$.416	Air Transport	(45)
10. Gillette	20	(NI)	170	\$1.071	Fabricated Metal Products	(34)
11. Hoover	59	(EPS)	341	\$.391	Electrical Equipment	(36)
12. Norton	13	(EPS/NI)	295	\$.483	Stone, Clay, Glass and Concrete	(32)
13. Sherwin Williams	15	(EPS)	266	\$.587	Petroleum Refining & Related Industries	(28)
Group Average	21.6		140 ^b	\$1.307		

a. First three quarters of 1976.

b. Rank of firm in Fortune 500 with comparable (1.307 b.) assets.

c. Percent reduction in earnings per share (EPS) or net income (NI) due specifically to the implementation of FASB-8 standards.

d. Source: Fortune 500 list of U.S. firms in 1976.

*Negative

pected." In other words, we would expect that the maximum impact from *anticipation* of FASB-8, as opposed to its actual application, would arise only after this "official" release, when the specific content of the regulations had been absorbed by analysts.

Two events distinguished the beginning of the "FASB-8" period. First was the appearance of the initial set of earnings reports prepared under FASB-8 standards. Second was the crucial FASB decision (April 29, 1976) not to re-consider the "controversial" standards contained in FASB-8. In reporting the decision, the *Wall Street Journal* observed:

The standard (FASB-8) has drawn more criticism than any other issued by the three-year-old standards board, the private sector's top authority on accounting rules. Business critics contend that the new rule introduces erratic and meaningless fluctuations in earnings that will only confuse investors. Some companies have protested to the Securities and Exchange Commission and a few have threatened to ignore the rule.¹⁵

Thus, until late April 1976, many firms and investors still had reason to believe that FASB-8 would be rescinded or altered. Again, many financial managers remained unconvinced that investors had already discounted into share prices (prior to FASB-8's enactment) all the information which its application might be expected to reveal.

The results obtained from estimating equation (1) over five time periods are reported in Table 3. R_{jt} , the return on portfolio j , is measured by the rate of change of the price of portfolio j at time t ; that is, $(P_{jt} - P_{jt-1})/P_{jt-1}$. R_{mt} is measured by the weekly rate of change of Standard and Poor's value-weighted composite index of 500 stocks.¹⁶ The prices of the non-multinational and "typical" multinational portfolios are taken from Standard & Poor's value-weighted indices, and the price of the "sensitive" portfolio is measured both as the average and the value-weighted average of the share prices of the 13 firms listed in Table 1.¹⁷

The results reported here suggest that the only significant and persistent impact upon multinational share prices occurred in the "sensitive" group, and then only during the "FASB-8" period (April 1976-March 1977). During that period, three factors were present together for the first time—the adoption of FASB-8, the availability of new earnings reports and the Accounting Board's reiteration of its intention to stand firm on the new standards. Our results for the "sensitive" group suggest a reduction in the *ex post* annual rate of return during the FASB-8 period of about one half of one percent below that for a typical portfolio with the same market risk (measured by " β ").¹⁸ This outcome is based upon the significant negative level for the estimated value of " α " for a weighted portfolio of "sensitive" firms in the "after FASB-8" time period—see column (5) in the "weighted-sensitive" group. Such a result implies that some force exogenous

Table 2
Earnings Performance of "Sensitive" Group Relative to Overall Performance of U.S. Corporations¹

Time Period	Relative Earnings Growth	Difference in Earnings Growth
	(Overall-Sensitive) Overall	(Overall-Sensitive)
1975 I	0.58	8.3%
II	1.98	12.5
III	22.60	11.3
IV	1.92	25.1
1976 I	0.64	31.0
II	1.79	65.4
III	2.20	34.1
IV	1.47	13.8

¹ Earnings performance is measured by the percentage change in quarterly earnings over the quarterly figure for a year earlier.

Sources: U.S. Department of Commerce, Commerce News, July 21, 1977 for overall corporate earnings and *Wall Street Journal*, various issues, for earnings of the sensitive group.

to overall market factors persistently depressed the performance of “sensitive” shares beginning in April, 1976. This result is also apparent from plots of indices of these share prices against the S&P 500 from January, 1975 through March, 1977 (Chart 1). Since the appearance of this depressive factor coincided with the appearance of the first set of earnings reports under FASB-8 and the FASB’s reaffirmation of its new standards, we cannot reject the hypothesis that the share prices in this group were depressed by an increase in their perceived riskiness. Such firms would have to offer risk-averse investors subsequent issues of shares at a lower price, and would therefore experience a higher cost of raising capital.

Our conclusions are strengthened by two factors which reduce the probability that the observed behavior of the “sensitive” group was due to some phenomenon not related to the impact of foreign-exchange risk on expected variability of earnings. First, the diversity in size and industry-mix of the “sensitive” group sharply reduces the probability that some other unspecified event common to all companies could have depressed their expected rates of return after April 1976 (Table 1). Second, the fact that the earnings performance of the “sensitive” group, relative to that of all U.S. corporations, was fairly steady

over the period (Table 2), suggests that a rise in expected earnings variability—not a fall in the expected level of earnings—depressed the “sensitive” group’s expected returns in the FASB-8 period. In short, an alternative explanation for the behavior of the firms in the “sensitive” group would have to include identification of some other event(s) which reduced their attractiveness after April 1976.

Despite the previous reference to rising values of “ β ” as a possible result of floating rates, that effect was not evident in the one-year post-FASB-8 period. “ β ” rose in various “floating” periods for the chemical and drug groupings, but it also rose for the control (trucking) group while failing to rise significantly for the rest of the multinationals. The impact of floating on market rates apparently was not powerful enough to affect the responsiveness of multinational shares to market volatility, to an extent that would dominate the usual instability of “ β ” values for industry aggregates over relatively short periods of time.

Several other conclusions emerge from the results reported in Table 3. “Floating” rates *per se* apparently produced no significant and persistent negative pressure on share prices of any group of multinationals. In view of the considerable discretion which multinationals had avail-

Chart 1

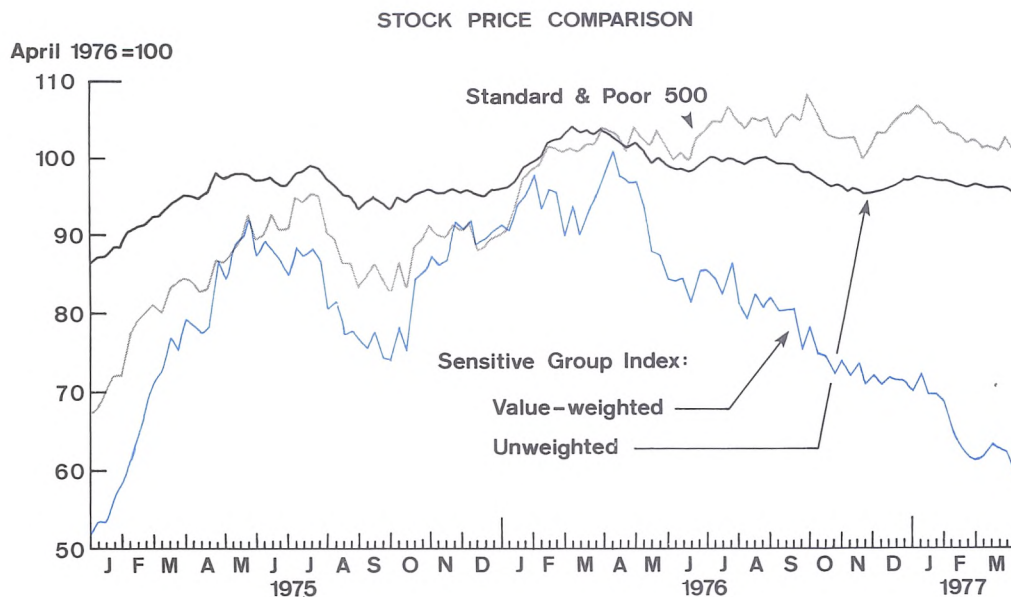


Table 3
Impact of "Floating" and FASB-8 on Security Prices
(Estimation of equation (1))

Portfolios	Time Periods					
	Fixed	Transition	Floating			Overall
			Pre-FASB-8	Expected FASB-8	After FASB-8	
1/70- 8/71	8/71- 3/73	3/73- 10/75	10/75- 3/76	3/76- 3/77	1/70- 3/77	
	(1)	(2)	(3)	(4)	(5)	(6)
Non-Multinationals						
(Truckers)						
$\hat{\alpha}$	.0059 (1.67)	.0028 (.96)	.0044 (1.28)	-.0024 (.35)	-.0030 (.75)	.0031 (1.84)
$\hat{\beta}$	.885 (5.32)	1.330 (7.37)	1.110 (9.37)	.858 (2.22)	.616 (2.39)	1.042 (13.83)
\bar{R}^2	.25	.39	.40	.15	.08	.34
DW	1.52	1.58	2.24	2.10	1.98	1.99
SEE	.0321	.0270	.0390	.0310	.0289	.0332
"Typical" Multinationals						
(Chemicals)						
$\hat{\alpha}$	.0026 (1.66)	.000 (.00)	.0029 (1.82)	.0015 (.46)	-.00335 (1.51)	.0012 (1.54)
$\hat{\beta}$	.809 (10.97)	1.090 (13.78)	1.080 (19.49)	1.200 (6.56)	1.077 (7.55)	1.033 (28.93)
\bar{R}^2	.59	.70	.74	.66	.52	.69
DW	1.94	1.70	1.54	1.77	1.50	1.61
SEE	.0142	.0120	.0180	.0150	.0160	.0157
(Drugs)						
$\hat{\alpha}$	.0002 (.17)	.0033 (2.43)	-.0004 (.22)	-.0042 (.73)	-.0035 (1.82)	-.0002 (.27)
$\hat{\beta}$	.891 (14.81)	.956 (11.55)	1.11 (18.37)	.845 (2.67)	1.290 (10.47)	1.055 (28.06)
\bar{R}^2	.73	.62	.72	.22	.68	.68
DW	1.34	1.40	1.50	1.50	1.46	1.47
SEE	.0116	.0120	.0200	.0250	.0140	.0166
(International Oils)						
$\hat{\alpha}$	.0012 (.45)	.0014 (.73)	.0003 (.14)	-.0015 (.46)	.0026 (1.39)	.0007 (.71)
$\hat{\beta}$	.900 (6.95)	.789 (6.96)	.876 (13.56)	.884 (4.77)	.929 (7.64)	.854 (18.54)
\bar{R}^2	.37	.37	.58	.50	.53	.48
RW	2.24	2.13	1.98	1.16	1.68	2.05
SEE	.0250	.0170	.0210	.0150	.0140	.0203
"Sensitive" Multinationals						
(weighted)						
$\hat{\alpha}$	.0009 (.32)	.005 (1.89)	-.0001 (.09)	.0004 (.09)	-.00975 (3.35)	-.0004 (.29)
$\hat{\beta}$	1.02 (8.23)	1.12 (7.24)	1.21 (14.61)	1.15 (4.19)	1.18 (6.36)	1.18 (20.77)
\bar{R}^2	.45	.39	.62	.42	.44	.53
DW	2.55	1.96	2.31	2.26	2.23	2.21
SEE	.0230	.0230	.0280	.0220	.0200	.0250
(unweighted)						
$\hat{\alpha}$	.00 (.00)	-.0013 (1.23)	-.0003 (.23)	.0019 (.83)	-.0034 (2.43)	-.0005 (.83)
$\hat{\beta}$	.938 (17.48)	.981 (14.62)	.851 (20.06)	1.04 (7.94)	.808 (8.95)	.900 (32.83)
\bar{R}^2	.79	.72	.76	.73	.61	.74
DW	2.01	1.98	1.93	1.14	1.90	1.94
SEE	.0100	.0099	.0140	.0107	.0101	.0120

able in the pre-FASB-8 period in the use of reserve accounts and in the application of historical or current exchange rates to balance-sheet valuations, analysts may have become persuaded that floating rates needn't increase profits variability for multicurrency firms. Alternatively, the effects of floating rates on multinational share prices may have been spread widely enough, over time and across firms, so that statistically significant shifts in performance would become difficult to detect at any single point in time. Inspection of the error terms in the regressions underlying Table 3 supports the latter hypothesis, since the standard error of the estimate tended to rise when moving from the "fixed" to the "early floating" and "general floating" periods.

The *expected* application of FASB-8 apparently had little impact in the fourth of the five time periods, although to some slight extent, investors may have anticipated a more harmful impact of FASB-8 on oil-company earnings during that period than was justified by the actual results which later appeared. The data strongly suggest, however, that the events surrounding the application of FASB-8 caused investors to downgrade multinationals in the "sensitive" group. In other words, FASB-8 strongly affected relative returns within the multinational group, although a broad aggregate index of multinationals would likely show little if any deterioration relative to domestics in this respect. These

results are reinforced by the sharp departure, in late April 1976, of share prices of the weighted and unweighted "sensitive" group from a path which had previously followed movements of the S & P 500 (Chart 1).

The more pronounced earnings response of the "weighted-sensitive" group suggests of course that the larger firms in the sample were more powerfully affected. This is confirmed by the estimation of equation (1) for each of the 13 companies in this group—especially Eastman Kodak, which performed very much like the value-weighted "sensitive" group as a whole.¹⁹ Why should shares of relatively large firms—which suffer a smaller impact in percentage terms—respond more sharply to an expected increase in earnings volatility reported under FASB-8? The proximate answer is that the results under the new standards were more of a "surprise" for relatively large firms than for smaller firms. Perhaps analysts anticipated more of a rise in the volatility of earnings for relatively small firms under FASB-8, while at the same time expecting no significant impact upon earnings volatility for larger firms. Further, the rise in expected volatility probably was *relatively* large for large firms when compared with past volatility. For smaller firms, the larger absolute effect under FASB-8 was more fully anticipated and relatively less significant when compared with past levels of earnings volatility.

V. Concluding Observations

The application of FASB-8-mandated accounting standards has apparently produced few unanticipated effects on earnings, and therefore on share prices, of typical multinational firms such as the oils, drugs and chemicals. The performance of such groupings is generally indistinguishable from that of a control group of domestic firms—whether in the face of "floating", anticipation of FASB-8, or actual application of that new standard. Our results suggest, however, that earnings reports which resulted from application of FASB-8 did provide new information which helped investors distinguish *between* multinational groupings regarding the impact of exchange-rate adjustments upon (actual and expected) volatility of reported net dollar earnings. The new standards are significant, then, not so

much because of their specific form but because they apply a single standard to all multinationals, and thereby enable the market to judge more accurately the relative performance of firms within the overall multinational grouping. Prior to the application of FASB-8 standards, cross comparisons between multinationals were very difficult, because of different conventions regarding the use of reserve accounts and the employment of historical or current exchange rates for translation of such balance-sheet items as long-term debt, inventories and physical plant.

Given the problems which some firms encounter under FASB-8, it can be argued that they should leave diversification of foreign-exchange risks to the investment community, which would choose among claims on a group of firms whose

fortunes are weakly correlated so as to cushion the impact of foreign-exchange gains and losses on portfolio values. This diversification argument presumes, however, that investors possess very detailed accounting information about multinationals, are able almost immediately to foresee accurately the impact of expected exchange-rate changes upon the value of a collection of their shares, and are able to act subsequently to bid multinational share prices to levels which fully reflect such information. Given the high cost of obtaining such information and given the considerable pressures from boards of directors, financial officers in multinational firms can probably be excused for taking little consolation in the investor-diversification argument. At the very least, some period of time may be required to gather the information necessary to make the new system operable. FASB-8 can have—and undoubtedly has had—powerful short-run implications for the cost of capital of certain individual multinational firms.²⁰

Finally, some consideration should be given to the implications of our findings for the manage-

rial behavior of multinational firms. Nothing in our findings specifically suggests that multinationals as a group should expend much effort to alter the specific form of accounting standards. The important thing is that the same standards be applied to all firms. Beyond that, accounting standards can do little to change the fact that multinationals' net cash flows (expressed in some numeraire currency) become subject to variation whenever exchange rates move up or down. Managers cannot escape the fact, for example, that if they have borrowed large amounts of deutschmarks but hold only dollar-denominated receivables and assets, an appreciation of deutschmarks against the dollar will force them to allocate more of their dollar receipts simply to pay off the deutschmark liability. Consideration of problems of this sort may suggest to managers of multinationals that, like it or not, they are in the foreign-exchange business. Consequently, they may find an attractive return at the margin if they utilize their resources to minimize the impact of exchange-rate fluctuations on net earnings expressed in local currencies.

FOOTNOTES

1. See for example, *Global Reach: The Power of the Multinationals* by R. J. Barnett and R. E. Muller (Simon & Schuster, New York, 1975). For a somewhat more even-handed treatment, see R. Vernon, *Storm over the Multinationals: The Real Issues* (Harvard Univ. Press, Cambridge, 1977).

2. For a detailed description of the new standards see FASB's Statement of Finance Standards No. 8, October 1975, Financial Accounting Standards Board, Stamford, Connecticut. A useful discussion of the new standards and their background is given by Burns (1976).

3. For a survey of such practices see Rodriguez (1977).

4. It may be that the very existence of a higher level of permissible flexibility of exchange rates will cause investors, for a time at least, to expect more exchange rate variability and more earnings variability, thereby leading to a demand for high rates of return on shares of multinationals.

5. This argument about the "costs" of floating was advanced by Lanyi (1969).

6. See Makin (1977) for a proof and further discussion.

7. Of course firms hedge receivables or payables in forward markets and frequently borrow and lend to reduce exposure. But efforts have generally been confined to a currency-by-currency hedging strategy rather than moving to a comprehensive hedging strategy. For a discussion of such strategies see Makin (1976) (1977).

8. For a derivation of equation (1) and a fuller discussion of its meaning see Sharpe (1970). A good conceptual discussion appears in Sharpe (1972).

9. Expected rates of return represented in equation (1) will be measured, for use in empirical tests below, by actual rates of change of share prices. Dividends are not included in calculations of expected returns since we are interested in behavior of share

prices of multinationals relative to share prices in general and to a control group of non multi-nationals. There is no reason to expect a systematic difference in dividend policies between such broad aggregate firm groupings, and therefore consistent omission of dividend should not affect the relative rates of return on multinational shares. For the application of the market model to actual (ex post) data, see Jensen (1969).

10. All groups of firms are described in the Appendix.

11. See, for example, the list of 70 companies in the sample studies by Rodriguez (1977).

12. To discover this group I relied heavily on articles in various periodicals reporting upon the firms for which earnings were most sensitive to FASB-8 and exchange rate changes. Periodicals and dates of appearance of articles included, *Barrons* 12/6/76 and 8/8/77; *Business Week* 1/26/76, 9/6/76 and 6/20/77; *Chemical Week* 3/9/77; and the *Wall Street Journal* 3/13/75 and 12/8/76.

13. Enactment of FASB-8 required a major change in the accounting procedures for virtually all multinational firms examined, either in the form of termination of reserve accounts or a switch to historical/current translation rates for inventory/long term debt items on the balance sheet. A survey of such practices by Rodriguez (1977) showed that in 1975 only Pfizer (part of the chemicals group) had adopted standards generally in line with those required by FASB-8 in January, 1976.

14. The mean of the absolute differences between overall and "sensitive" earnings performance for the eight quarters of 1975-76 was 25.2 with a standard deviation of 18.8.

15. *The Wall Street Journal*, April 29, 1976, p. 12.

16. Weekly series of Wednesday closing prices were employed to calculate rates of change of share prices.

17. Wednesday closing prices for the "sensitive" group were taken from Standard and Poor's *Daily Stock Price Record*.

18. The figures reported in Table 3 refer to weekly returns which must be compounded over 52 weeks to be converted to annual rates.

19. This finding brings to mind the possible role played by foreign exchange problems in explaining the recent sharp deterioration in the value of Kodak's shares. **Business Week** ("The Market Manhandles a Blue Chip," June 20, 1977) reported on the situation at Kodak, indicating the view of Kodak's management that, "We don't think it is good management to try to protect against that (foreign exchange) loss by taking out large overseas borrowings, which is one of the devices used to try to offset that." (p. 37)

20. When interpreting the results reported here, it is important to remember that earnings reports measure net returns in terms of current dollars, and not necessarily in "real" terms. It is possible, although not necessarily true, that an earnings stream which is more volatile when measured in current-dollar terms is less volatile in terms of its real purchasing power over some multinational (or even national) basket of goods and services. In such a case, a rise in nominal variability may not mean any rise in real risk, and hence may not mean any rise in share prices. Of course, if the bulk of investors buying shares come from a single local-currency area and concentrate their purchases on local goods, there is greater likelihood of volatility in the real purchasing power as well as the local-currency value of the earnings stream.

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APPENDIX

A. Firms appearing in "domestic" and "typical multinationals" groupings:

Truckers

Consolidated Freightway
McLean Trucking
Overnite Transportation
Roadway Express
Yellow Freight Systems

Oil (Integrated International)

Exxon
Gulf Oil
Mobil Oil
Royal Dutch Petroleum
Standard Oil of California
Texaco

Drugs

Abbott Laboratories
American Home Products
Bristol-Meyers
Johnson & Johnson
Lilly (Eli) & Co.
Merck & Co.
Pfizer Inc.
Schering Plough Corp.
Searle (G.P.)
Sterling Drugs
Warner Lambert

Chemicals

Allied Chemical Corp.
American Cyanamid
Dow Chemical
duPont de Nemours
Hercules Inc.
Monsanto Chemical
Union Carbide

(All are from Standard and Poor's Stock Price Indexes.)