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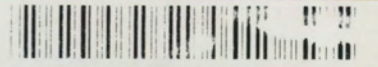
THE WORLD BANK
Washington, D.C.

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Lending Rate Formula - Correspondence 02

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813/7/11

FORM NO. 75
(7-73)

WORLD BANK GROUP

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|--|----------------------|--------------------|
| ROUTING SLIP | | DATE Feb. 21/76 |
| NAME | | ROOM NO. |
| ✓ Mr. McNamara | | |
| cc: Messrs. Knapp | | |
| Cargill | | |
| Goodman | | |
| Rotberg | | |
| APPROPRIATE DISPOSITION | NOTE AND RETURN | |
| APPROVAL | NOTE AND SEND ON | |
| COMMENT | PER OUR CONVERSATION | |
| FOR ACTION | PER YOUR REQUEST | |
| INFORMATION | PREPARE REPLY | |
| INITIAL | RECOMMENDATION | |
| NOTE AND FILE | SIGNATURE | |
| REMARKS | | |
| <p>2/22 Please find attached a set of notes on the issues raised by the U.S. Treasury Working Party. The notes are not yet full-fledged "position papers" because in the time available it has not been possible to complete all the analytical work needed to support definite recommendations and to review these recommendations within the Financial Staff. This accounts for the absence of a section in each note detailing a recommended position for the Bank.</p> | | |
| FROM Joe Wood <i>WJW</i> | ROOM NO. E624 | EXTENSION 6264 |



February 21, 1976

813/7/10 RMW

SELECTIVE CAPITAL INCREASE
ISSUES RAISED BY U.S. TREASURY TEAM



- #1. Ratio of reserves to loans outstanding:
 - (a) relevance to IBRD standing in financial markets
 - (b) determination of appropriate target
 - (c) measures to achieve that target

- #2. Degree of IBRD exposure to risk of interest rate changes:
 - (a) can this risk be measured by comparison of average maturities of loans and borrowings
 - (b) effects on the risk of changing the average maturities
 - (c) effects on the risk of altering IBRD lending rate policy (including setting the rate on disbursements rather than commitments)

- #3. Subsidy element in IBRD lending rate:
 - (a) present policy for setting rate; IBRD net income objective; relationship between pre- and post-risk targets
 - (b) alternative policy: "full-cost lending rate"
 - (c) significance of various "spreads"

- #4. Trend in IBRD borrowing costs relative to other borrowers

Also attached is a table showing the principal amounts outstanding at year end for loans with various loan terms and amortization schedules.

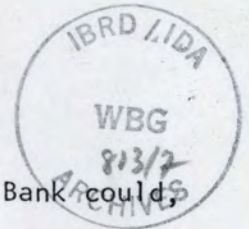
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Selective Capital Increase: Issues Raised
by U.S. Treasury Team

Note #1: DECLINING RATIOS

A. U.S. Perception of the Problem

1. Continued deterioration in the financial ratios of the Bank could, in the Treasury view, threaten the standing of the Bank in private capital markets. Treasury staff claim that even if these ratios have not played an important part in investors' evaluation of Bank bonds in the past, this is no guarantee that they will not do so in the future. Moreover, since no outside financial analyst has any satisfactory way of determining what absolute level is appropriate for the various ratios, particular attention is likely to be focussed on trends in the ratios.
2. Most of our discussion centered upon the ratio of "reserves" (i.e. retained earnings plus the special reserve) to disbursed loans, though other financial indicators (e.g. interest coverage ratio; "spread" on lending) were also mentioned in passing. The question was initially posed as follows: what financial policy changes would be required to halt the decline in the "reserve" ratio and restore it to the level prevailing at the end of FY75 (i.e. 17.9%)? Bushnell was particularly concerned with identifying measures which would result in the earliest possible reversal of the downward trend. Cooper seemed more interested in policy changes which would lead to a levelling off in the "reserve" ratio. He would not be pinned down as to what target level might be desirable (he said "somewhere between 5% and 20%"), though he indicated an interest in policy packages which would maintain the "reserve" ratio at various levels between 10% and 14%.



B. Analysis of the Problem

3. The first point to make about the Treasury position is that the ratio chosen to illustrate their case is unlikely to be regarded as critical by the rating services or private investors--at least not as a measure of the security of Bank obligations. An analyst concerned about the ultimate security of Bank bonds would presumably look first to the callable capital. If the callable capital of countries considered "relevant" by the analyst were to be greater than the Bank's funded debt, then that fact alone could well take care of the problem. It is true, of course, that the degree of protection afforded by callable capital has been declining over the last several years using almost any definition of "relevant" countries. Hence, even if the analyst were satisfied with the present position, he might reasonably question whether a continuation of recent trends could not lead to an unsatisfactory situation in future years. But the recent trend cannot continue indefinitely for the simple reason that the Bank's Articles of Agreement would not permit it. Unless amended, Article III, Section 3 implies that the Bank's funded debt may not exceed its total callable capital except in so far as it is used to finance liquid holdings.^{1/} This implicit limit on funded debt is unaffected by the size of undisbursed commitments or by the possibility of defaults on IBRD loans.

4. Thus, the rating services or private investors would have grounds for questioning the security of Bank bonds only if they feared that the Articles might be amended or if they doubted the value of a substantial part of the Bank's total callable capital. It would not be

^{1/} This point is spelled out in para. 87 of the Capital Structure paper.

surprising to encounter fairly serious doubts on the latter point. But the way of dealing with these doubts is not by increasing the Bank's "reserve" ratio. Whether that ratio is 8% or 18% has only a minimal effect on the risk which bondholders face under the Bank's present Articles.^{1/} A more appropriate way of allaying fears about the quality of callable capital would be to increase the total of callable capital. This is what was done in 1960 when the Bank was approaching the point at which its funded debt would exceed the U.S. callable capital. Such action need not involve additional paid-in capital.

5. The real significance of the "reserve" ratio, therefore, is not that it may be used by the rating services or private investors to gauge the security of Bank bonds. To the extent the ratio has any significance at all, it is in relation to the possibility of a call on shareholders' unpaid capital subscriptions. If a significant part of "reserves" were to be lost through defaults or to be perceived as being compromised through reschedulings, then the Bank's borrowing program could be adversely affected. This in turn could provoke a liquidity crisis which might force a call on callable capital. While such a scenario is obviously something the shareholders are anxious to avoid, it could be a matter of concern to bondholders as well since it could pose threat to the marketability of Bank bonds.

^{1/} With an 8% ratio, disbursed loans and liquid holdings will always be at least 2.9 times that part of funded debt which is not covered by "relevant" callable capital; with an 18% ratio, the minimum coverage increases to 3.2 times. These figures assume that 70% of total callable capital is considered "relevant."

6. That the Treasury team should single out the "reserve" ratio as a barometer of the Bank's standing in the private capital markets would seem to reflect either a misunderstanding of the Bank's financial position (especially, the significance of its callable capital as a source of security to investors) or at least a very incomplete statement of how their concerns might be expected to operate in practice. In our final meeting on February 19th, Bushnell seemed to be shifting his ground somewhat and basing his concern about the "reserve" ratio on the need to protect the U.S. from a call on its unpaid subscription.

Appropriate Level of "Reserve" Target

7. The ability of the Bank to avoid a call on callable capital arising from loan defaults or reschedulings was explicitly considered in the Capital Structure paper (paras. 58-62). The conclusion reached was that "usable equity equal to 4%-8% of the Bank's disbursed loans--2.5% to 5% being related to adverse economic or financial developments and 1.5% to 3% as allowance for political risk--ought to be sufficient protection against losses on loans." The analysis in the Capital Structure paper did not consider the possibility that partial loss (or compromise) of "reserves" could damage the Bank's borrowing ability and provoke a liquidity crisis. This scenario is one of several which is to be examined in the "Sources and Applications" study, currently scheduled for completion in April. Until this study is completed, it would be premature to say whether this particular form of liquidity risk can best be dealt with by increasing the level of usable equity, or increasing liquid holdings or by following some other course of action.

8. Abstracting from the liquidity risk, a level of usable equity equal to 8% of disbursed loans would appear to be quite sufficient. If

*but the
major ratio
to determine
"call" is "partly"
+ "cash flows"
= part each-*

the liquidity risk were to be met by increasing the level of usable equity, then a much higher figure could be justified. Could the Bank continue to borrow if half (but no more than half) of its usable equity were lost (or compromised)? If so, then usable equity equal to 16% of disbursed loans could be defended as a target. The implications of any particular usable equity target for the "reserve" target will obviously depend on the existing levels of reserves and paid-in capital as well as the prospects for additional usable paid-in capital.^{1/} The U.S. team would like us to assume no further receipts of usable paid-in capital. Operating on this assumptions, the following table expresses the presently projected level of usable paid-in capital (after the Selective Increase) as a proportion of disbursed loans for various lending programs:

Usable Paid-In Capital/Disbursed Loans

| | <u>FY80</u> | <u>FY85</u> | <u>FY90</u> |
|--------------------|-------------|-------------|-------------|
| Current Projection | 12.5% | 6.5% | 4.3% |
| Program "D" | 12.5% | 7.9% | 7.1% |
| \$5000 m per annum | 13.0% | 8.3% | 7.0% |

These figures can easily be used to establish a "reserve" target once the target for total usable equity is set.

Attaining a "Reserve" Target

9. The impact of various financial policy changes on the Bank's "reserve" position was summarized in Item #14 given to the U.S. team. A copy of this is attached for ease of reference. The principal conclusions

^{1/} While agreeing that usable equity is a more appropriate basis for a target than "reserves" alone, the Treasury team has nevertheless suggested that we use a "reserve" ratio because (assuming no more paid-in capital) it will be easier to keep this ratio from declining. This is hardly a sound approach to establishing the Bank's financial policies.

to be drawn from this data--which the U.S. team seemed to accept--are the following:

- (a) the only measure which has much impact in the short-run is the cessation of IDA transfers.
- (b) boosting the lending rate by .50% has an impact roughly equivalent to eliminating half the planned growth in commitments. (We expressed the judgment that, if forced to choose, the developing countries were likely to prefer the former course.)

Measures to Stabilize the Ratio of
Reserves to Disbursed Loans

Attached are two tables which relate to this point. The first indicates various policy "packages" which would be consistent with target ratios of 8%, 10% and 12%. If a target of 8% or less were to be accepted, no change in current policies or lending program would be required. On the contrary, IDA transfers could be increased in the next few years. A target of 10% would also be consistent with the present lending program, assuming either that IDA transfers were stopped or the lending rate were increased by .50%. A target of 12% would require more severe changes. With a cessation of IDA transfers, the target could be attained either by increasing the lending rate by .75% or, if this degree of increase were unacceptable, by adopting a smaller lending rate increase (.25%) and reducing the planned growth in lending by one-half.

A target of 14% is not practicable in the short-run. It would technically be possible to attain this objective only by large scale sale of loans from portfolio in the near future, a major reduction in the absolute level of commitments, or a substantial increase in the commitment fee or other special lending charges. Without resorting to measures such as these, the earliest date a decline in the ratio can be achieved is FY79 at a level of about 13.4%. This could be done by stopping IDA transfers, raising the lending rate by 1.0%, holding lending to a constant nominal amount of \$5,000 million per annum, shortening maturities on new loans by 2 year and grace periods by 1 year, and by shifting to an amortization pattern involving equal repayment of principal. There must obviously be a question as to whether a difference as small as the one between 13.4% and 12% could justify such added measures, irrespective of the position one takes on the appropriate level of the reserve ratio.

The timing and relative scale of impact attributable to various policy measures are illustrated in the second table. A downward trend in the average ratio of "reserves" to disbursed loans will only be halted or reversed when the marginal ratio equals or exceeds the average. By examining the marginal ratios and in particular the action needed to raise the marginal ratios above the target, it is possible to isolate and compare the specific impact of various policy changes. It is evident, for example, that cessation of IDA transfers has the largest immediate impact. Increases in the lending rate and reduction in the planned growth of future commitments have approximately the same time profile. An increase of .50% in the lending rate has about the same impact as cutting planned future growth in half. Altering the maturities of loans or the amortization pattern only begin to have an impact in FY80, though they could be quite important in the later years.

POLICY "PACKAGES" CONSISTENT WITH VARIOUS TARGET RATIOS
OF RESERVES TO DISBURSED LOANS

| | <u>FY77</u> | <u>FY78</u> | <u>FY79</u> | <u>FY80</u> | <u>FY81</u> | <u>FY82</u> | <u>FY83</u> | <u>FY84</u> | <u>FY85</u> |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <u>With Target of 8%</u> | | | | | | | | | |
| Present Lending Program No Change in Terms of Loans Continued IDA Transfers | | | | | | | | | |
| Excess of Reserves over Target (\$m) | 1010 | 906 | 805 | 710 | 629 | 545 | 476 | 415 | 395 |
| Reserves/Disbursed Loans | 14.2% | 12.7% | 11.5% | 10.6% | 10.0% | 9.5% | 9.1% | 8.9% | 8.8% |
| <u>With Target of 10%</u> | | | | | | | | | |
| Present Lending Program No Change in Terms of Loans Cessation of IDA Transfers | | | | | | | | | |
| Excess of Reserves over Target (\$m) | 786 | 718 | 642 | 565 | 597 | 418 | 349 | 280 | 252 |
| Reserves/Disbursed Loans | 14.8% | 13.7% | 12.8% | 12.1% | 11.6% | 11.1% | 10.8% | 10.6% | 10.5% |
| or | | | | | | | | | |
| Present Lending Program Lending Rate up by .50% Continued IDA Transfers | | | | | | | | | |
| Excess of Reserves over Target (\$m) | 688 | 528 | 372 | 232 | 130 | 49 | 22 | 137 | 155 |
| Reserves/Disbursed Loans | 14.2% | 12.7% | 11.6% | 10.9% | 10.4% | 10.1% | 10.1% | 10.3% | 10.3% |
| <u>With Target of 12%</u> | | | | | | | | | |
| Present Lending Program Lending Rate up by .75% Cessation of IDA Transfers | | | | | | | | | |
| Excess of Reserves over Target (\$m) | 465 | 345 | 225 | 121 | 66 | 40 | 80 | 178 | 397 |
| Reserves/Disbursed Loans | 14.9% | 13.8% | 13.0% | 12.4% | 12.2% | 12.1% | 12.2% | 12.4% | 12.8% |
| or | | | | | | | | | |
| Growth in Lending Reduced by 50% Lending Rate up by .25% Cessation of IDA Transfers | | | | | | | | | |
| Excess of Reserves over Target (\$m) | 466 | 347 | 236 | 120 | 57 | 11 | 10 | 33 | 131 |
| Reserves/Disbursed Loans | 14.9% | 13.8% | 13.0% | 12.4% | 12.2% | 12.0% | 12.0% | 12.1% | 12.3% |

**IMPACT OF SELECTED FINANCIAL POLICY CHANGES ON TREND IN
RATIO OF "RESERVES" TO DISBURSED LOANS**

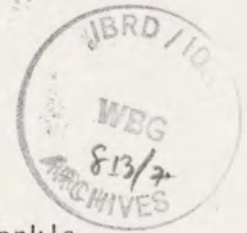
(%)

| | <u>FY77</u> | <u>FY78</u> | <u>FY79</u> | <u>FY80</u> | <u>FY81</u> | <u>FY82</u> | <u>FY83</u> | <u>FY84</u> | <u>FY85</u> |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <u>Average Ratio of "Reserves" to Disbursed Loans</u> (standard projection with selective increase) | 14.2% | 12.7% | 11.5% | 10.6% | 10.0% | 9.5% | 9.1% | 8.9% | 8.8% |
| <u>Marginal Ratio; i.e. Annual Increase in "Reserves" Compared to Annual Increase in Disbursed Loans</u> | | | | | | | | | |
| Present Lending Program | 4.7% | 4.7% | 5.2% | 5.7% | -6.1% | 6.3% | 6.6% | 6.9% | 7.6% |
| (a) With cessation of IDA transfers | 8.8% | 8.1% | 8.2% | 8.4% | 8.7% | 8.6% | 9.0% | 9.1% | 9.9% |
| (b) With increase in lending rate | | | | | | | | | |
| by .50% | 4.8% | 5.0% | 5.8% | 6.6% | 7.6% | 8.4% | 9.4% | 10.3% | 12.0% |
| by 1.00% | 4.8% | 5.2% | 6.3% | 7.7% | 9.2% | 10.4% | 12.2% | 13.7% | 16.4% |
| (c) With cessation of IDA transfers and lending rate up by .50% | 8.9% | 8.3% | 8.7% | 9.3% | 10.2% | 10.7% | 11.8% | 12.5% | 14.3% |
| <u>Reduction in Disbursed Loans</u> | | | | | | | | | |
| (a) 1/2 planned growth | 4.8% | 5.2% | 6.0% | 6.8% | 7.8% | 8.2% | 9.0% | 9.5% | 11.0% |
| (b) constant at \$5000 m/yr. | 4.9% | 5.6% | 6.8% | 8.2% | 9.9% | 11.0% | 12.8% | 13.9% | 17.9% |
| (c) constant at \$5000 m/yr. and shorter maturities and faster amortization | 4.9% | 5.6% | 6.8% | 9.1% | 11.8% | 14.1% | 17.9% | 20.6% | 31.4% |

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Selective Capital Increase: Issues Raised
by U.S. Treasury Team

Note #3: SUBSIDY ELEMENT IN IBRD LENDING RATE



A. U.S. Perception of the Problem

1. The U.S. Treasury working party raised questions about the Bank's lending rate policy on the grounds that it unduly subsidizes borrowers by failing to fully recover the Bank's cost of lending operations. These unrecovered costs are, in the Treasury's view, of two types: (a) implicit costs stemming from Bank shareholders' bearing interest rate and default risks that should be passed on to borrowers, as indicated by an insufficient rate of return on shareholders' equity and failure to match maturities of lending and borrowing, and (b) explicit financial costs, evidenced by a "negative spread".

2. Specifically, the Treasury staff argued that the Bank's lending rate should be set at a level that would recover the cost of borrowed funds administrative expenses, and the cost of carrying liquidity. Moreover, the Treasury staff argued that the Bank's present lending rate policy fails to provide a level of net income sufficient to: (a) increase reserves at the rate necessary to provide full protection for bondholders' and shareholders' interest; and (b) provide adequate protection for the Bank against the risk of interest rate changes to which it is exposed because of the mismatch of maturities in its lending and borrowing.^{1/}

^{1/} The issue of matching the maturities of borrowing and lending is discussed in Note #2. In principle, the risk to net income of unforeseen changes in interest rates could be covered by special charges to borrowers but in the discussions with the Treasury it was treated as a problem of varying maturities, not risk premiums. The sensitivity of the so-called "full-cost" lending rate to this risk is quantified in para 12 below.

3. The main premise of the Treasury's argument is that the paid-in capital is not provided for the purpose of subsidizing borrowers. Borrowers are indirectly subsidized by the callable capital which in effect gives them a high credit rating and therefore access to finance on terms (maturity and interest rate) that they could not obtain on their own. The original purpose of paid-in capital was to provide additional assurance to bondholders; its function now is to generate "dividends" to be used in transfers to IDA.

B. Analysis of the Issue

4. The Treasury position on this issue focusses on the spread of the lending rate over the cost of borrowing. A superficial look at the Bank's past financial performance would tend to confirm the view that the Bank is subsidizing its borrowers, since the average lending rate on new disbursements has been below the interest rate on new borrowing in recent years. However, this way of looking at the Bank's lending rate may be questioned for four major reasons:

- First, it is not clear that a subsidy free lending rate is a desirable goal for the Bank.
- Second, the Bank's lending rate is not set on the basis of a spread over the cost of borrowings but on the basis of a target net income that takes into account all the factors affecting the Bank's finances.
- Third, the notional "full cost" lending rate is only marginally higher--30 basis points--than the present rate.
- Fourth, the spread that is most relevant to the Bank is the return on earning assets compared to the cost of all

funds used; this has always been positive and is projected to remain positive.

Desirability of a Subsidy-Free Rate

5. Whether the Bank should pursue a policy of charging borrowers the "full cost" of lending operations is essentially a political question, not a financial one. It depends mainly on the willingness of the U.S. and other Part I countries to provide development finance on a concessional basis. This issue was addressed in the "Review of IBRD/IDA Program Financial Policies" (R74-256, December 11, 1974) under the heading of multiple lending rates (paras 55-66). That paper concluded that the benefits from a redistribution of the lending rate subsidy among borrowers by charging multiple lending rates would not be worthwhile, since:

- Only 1/6th of the subsidy benefits countries with per capita incomes above \$850.
- Graduation of higher income borrowers is a more efficient way in dealing with the problem.
- Benefits to lower income borrowers would be small.

6. If the U.S. were to insist on a "full-cost" lending rate for all borrowers, the difficulties arising from the discriminatory effects of multiple rates would be reduced, but might be replaced in part by problems arising from (a) increased financial burdens on the poorer countries and (b) the redistributive issues associated with transferring larger amounts of IBRD net income to IDA.

Present Lending Rate Policy

7. The second major point to be made about a "full cost" lending rate is that it tends to oversimplify a number of important questions about

changed as a result of excessive or insufficient net income and the build-up in reserves is determined by the behavior of net income rather than as a specific financial objective. The importance of setting objectives for both net income and reserves was pointed out in "Review of IBRD/IDA Program and Financial Policies" and back-up Note #5 to that paper (copy attached) discussed the relationship between these pre- and post-risk targets.

"Full-Cost" Lending Rate

10. If, as the Treasury staff requested, the Bank were to follow a policy of charging borrowers the "full cost" of Bank lending, the lending rate would need to be set on the basis of the total cost of making and servicing a notional average loan. Such a loan in FY76 would be about \$36 million and would have a 20-year final maturity including a 4-year grace period. The expenses to be recovered under this approach would include a proportionate share of all administrative expenses, interest expense, the cost of carrying liquidity and a notional charge for risk of loss.

11. In order to recover the total of these expenses from its borrowers, the IBRD would need to obtain an average spread of its lending rate over the cost of borrowing of about 55 basis points, i.e. to set its lending rate at 8.80% for an average cost of borrowing of 8.25%. At this rate, the present value of net income from a notional average IBRD loan would be zero. The following table shows the present value of net income from such a loan at different lending rates:

| | <u>Notional Average IBRD Loan Present Value of Net Income^{a/}</u> ((\$000)) | | | | |
|------------------|---|------------------|--------------------|--------------------|---------------------|
| Lending rate of: | <u>8.50</u> (540) | <u>8.80</u> - | <u>9.00</u> 350 | <u>9.25</u> 790 | <u>9.50</u> 1230 |

a/ Discount rate of 8.25%.

12. These figures make allowance for the Bank's normal liquidity policy but assume that the interest rate on borrowed funds does not change over the life of the loans. Although matching of maturities is a reasonable assumption for an individual loan within a large portfolio, complete absence of exposure to interest rate changes would not be. If the assumption of an 8.25% interest rate were to turn out to be wrong and the interest rate on half of the debt used to finance the loan were increased by 50 basis points over the entire life of the loan, the present value of net income from the loan would be reduced by about \$470,000.^{1/}

Significance of Various "Spreads"

13. If the Bank were a for-profit institution with private shareholders, then the Treasury's contention that the "negative spread" (return on new disbursements over the average cost of new borrowing) is a problem for the Bank might have some validity. For such an institution this particular spread would indicate that it was not profitable for its shareholders as a financial intermediary. For the Bank, however, this spread is only a rough indicator of the combined effect of its debt-equity ratio and its lending rate policies. A negative spread simply means that the Bank is charging its borrowers less than would be required if it were a commercial institution.

14. Item 18 supplied to Mr. Cooper (copy attached) drew attention to the spread of the return on earning assets over the average cost of

^{1/} This assumes that there is no effect on income from securities i.e. that only long term rates of interest increase.

all funds. It is this spread which must remain positive for the Bank to have a positive net income. This spread declined from 2.77 in FY70 to 2.69 in FY75 and is projected to decline further to .89 in FY85, at which level it is expected to remain. The absolute size of the spread is determined by the Bank's net income target relative to the scale of its operations: the spread will increase as net income as a percent of gross income increases. For this reason, conclusions about the appropriate size of the spread of return on earning assets over the total cost of all funds must be drawn on the basis of the Bank's net income and reserves objectives, not on the spread itself. Thus, the U.S. concern about the Bank's "negative spread" is for the most part unwarranted since it is based on application of financial principles appropriate for commercial institutions to the Bank and because it focusses on "spread" rather than income and reserves objectives.

Item 18

RETURN ON EARNING ASSETS AND RETURN ON LOANS
VERSUS "ADJUSTED INTEREST RATE" ON FUNDED DEBT (%) a/

| Fiscal Year | Return on Earning Assets b/ (1) | Return on Loans c/ (2) | "Adjusted Interest Rate" on Funded Debt d/ (3) | Average Cost of all Funds e/ (4) | Difference | | |
|-------------|--|------------------------------|---|--|----------------------|----------------------|----------------------|
| | | | | | Between (1) & (3) | Between (2) & (3) | Between (1) & (4) |
| 65 | 5.09 | 5.61 | 4.89 | 2.42 | .20 | .72 | 2.67 |
| 66 | 5.24 | 5.63 | 5.26 | 2.63 | -.02 | .37 | 2.61 |
| 67 | 5.61 | 5.70 | 5.23 | 2.68 | .38 | .47 | 2.93 |
| 68 | 5.63 | 5.70 | 5.41 | 2.86 | .22 | .29 | 2.77 |
| 69 | 5.88 | 5.81 | 6.09 | 3.33 | -.21 | -.28 | 2.55 |
| 70 | 6.47 | 5.99 | 6.50 | 3.70 | -.03 | -.51 | 2.77 |
| 71 | 6.68 | 6.14 | 7.18 | 4.23 | -.50 | -1.04 | 2.45 |
| 72 | 6.32 | 6.25 | 7.39 | 4.60 | -1.07 | -1.14 | 1.72 |
| 73 | 6.14 | 6.12 | 7.13 | 4.67 | -.99 | -1.01 | 1.47 |
| 74 | 6.63 | 6.47 | 7.59 | 5.12 | -.96 | -1.12 | 1.51 |
| 75 | 7.26 | 6.74 | 7.93 | 5.57 | -.67 | -1.19 | 1.69 |
| 76 | 7.21 | 6.87 | 8.25 | 6.07 | -1.04 | -1.38 | 1.14 |
| 77 | 7.55 | 7.53 | 8.63 | 6.60 | -1.08 | -1.10 | .95 |
| 78 | 7.77 | 7.84 | 8.71 | 6.86 | -.94 | -.87 | .91 |
| 79 | 7.96 | 8.09 | 8.73 | 7.01 | -.77 | -.64 | .95 |
| 80 | 8.11 | 8.27 | 8.77 | 7.14 | -.66 | -.50 | .97 |
| 81 | 8.20 | 8.36 | 8.76 | 7.25 | -.56 | -.40 | .95 |
| 82 | 8.29 | 8.46 | 8.75 | 7.36 | -.46 | -.29 | .93 |
| 83 | 8.40 | 8.58 | 8.80 | 7.50 | -.40 | -.22 | .90 |
| 84 | 8.48 | 8.66 | 8.82 | 7.58 | -.34 | -.16 | .90 |
| 85 | 8.51 | 8.67 | 8.79 | 7.62 | -.28 | -.12 | .89 |

a/ Sources: FY65-67 from Executive Directors' Table A.1
FY68-85 from Annex Table 2, "Review of IBRD Capital Structure,"
November 4, 1975.

b/ Income from cash and securities plus income from loans divided by average balance of cash and securities plus average balance of loans disbursed and outstanding.

c/ Income from loans divided by average balance of loans disbursed and outstanding.

d/ Interest expense plus administrative expenses divided by the average balance of funded debt.

e/ Interest Expense plus administrative expenses divided by the average balance of funded debt plus average usable equity.

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Selective Capital Increase: Issues Raised
by U.S. Treasury Team

Note #2: IBRD EXPOSURE TO INTEREST RATE INCREASES



A. U.S. Perception of the Problem

1. If the Bank's cost of borrowing goes up, its net income may be adversely affected even if the interest rate on new loans is raised simultaneously by the same amount. There are various ways in which this exposure to loss of net income may be dealt with. The Treasury team focussed on two points (a) the difference between the average life of loans and average life of borrowings, and (b) the fact that borrowings to finance disbursements under a given loan occur considerably after the loan has been committed. They advocated that consideration be given to passing more of the risk of interest rate fluctuations onto the borrowers either by narrowing the gap between the average life of loans and funded debt or by adopting a lending rate policy which would provide for periodic adjustment of the rate during the disbursement period of each loan.

B. Analysis of the Problem

2. The impact of an increase in interest rates on the Bank's net income may be divided into three parts: (a) the increased cost of borrowing (which is directly proportional to the scale of the Bank's gross borrowings in the year)^{1/}; (b) the increased interest income (which is directly proportional to the volume of disbursements made under loans committed after the lending rate has been increased); and (c) the change in income from securities (which will depend upon a number of factors, including the extent of

^{1/} More precisely, the increase will be proportional to the volume of new borrowings outstanding. This is the same as gross borrowings initially, but is net of repayments of new borrowings in later years. The same distinction applies to the volume of new loans outstanding, which is net of repayments on new loans.

realized capital losses). There will also be a secondary impact reflecting the cumulative reduction in retained earnings arising from the net loss in income caused by the three primary factors. Assuming continuation of the present lending rate policy, the Bank's exposure to income loss will only be lessened to the extent gross borrowings are reduced in relation to disbursements under new loan commitments.

3. Matching Maturities^{1/} Against this background, it is easy to appreciate how changes in the average life of loans or borrowings can affect the Bank's "exposure". Shortening the average life of loans will - other things the same - advance repayments and hence reduce net borrowing requirements in relation to any given level of commitments. Similarly, lengthening the average life of borrowings will postpone repayments due from the Bank, thereby lowering borrowing requirements. But it is also clear that single figures for the average life of loans or borrowings give a very imprecise measure of the Bank's "exposure". Any number of different repayment profiles will yield the same figure for average life. Each such profile will have a different implication for the Bank's borrowing requirements and hence also a different implication for the Bank's "exposure".

4. A simple comparison of average lives leaves out of account a number of other factors which also affect "exposure". This point can be demonstrated by imagining two sets of financial projections, each with the same figures for past and future commitments. In each case the repayment profiles for loan commitments are the same and borrowings are arranged in such a way as to yield the same average life of funded debt. The two projections may nevertheless result in very different degrees of "exposure" if, for example, there are differences in average disbursement rates,^{2/}

1/ The figure describing the present level and prospective trends in average lives are set forth in Item #20. (Copy attached)

2/ The Bank calculation of the average life of a loan is not affected by the rate at which the loan is disbursed.

the level of net income, receipts of paid-in capital or drawings on transfers to IDA.

5. To alter significantly the degree of Bank "exposure" through changes in the average life of new loans or new borrowings could take a considerable period, depending on how the changes were made. Shifting some borrowing from a 12-year maturity to a 20-year maturity, for instance, would alter the average life of funded debt and yet have no effect on Bank "exposure" for nearly a decade to come. If, as one would expect, longer maturities were to carry higher interest rates, there would be a readily identifiable cost to obtaining a reduction in "exposure".^{1/} The financial cost to the Bank of shortening the average life of loans would normally be less but, for any given level of commitments, it would have the effect of reducing the Bank's net disbursements to its borrowers. In either case, it is far from obvious that the cost of reducing Bank "exposure" is worth the lower degree of risk which is thereby achieved.

6. Adjustable Lending Rate The Treasury team's second suggestion is that the Bank's lending rate be adjusted periodically (say at 6-monthly intervals) during the disbursement period, so that disbursements in each period carry an interest rate which is at least as high as the cost of borrowing during that period. Once this condition was applicable to all loans being disbursed (which would take several years), it would mean that an increase in the lending rate would affect not merely the disbursements under new loans but rather total disbursements. Since total disbursements are projected to be between 73% and 97% of gross borrowings over the next

^{1/} Bushnell agreed that the Bank should be willing to pay a premium for longer maturity borrowings because they postpone the costs of carrying liquidity incurred during the three years prior to maturity. A rough calculation of the premium which could be justified in this way for a shift from a 12-year to a 20-year maturity is 2 basis points.

decade (assuming the present program with the Selective Increase), the ability to adjust the lending rate on all disbursements would give the Bank the capacity to increase income from loans by the same amount as interest expenses on borrowings were going up. To completely eliminate net income variation in the year when the interest rate on borrowing goes up would require an upward adjustment in the lending rate of between 1.03 and 1.37 times the increase in the (single-weighted) average cost of borrowing.^{1/}

7. While the Treasury suggestion certainly would have the effect of passing more of the risk of interest rate fluctuations onto the borrowers, it would raise administrative difficulties. If the Bank were to move in the direction of passing this risk onto borrowers, then it would be desirable to consider several alternative mechanisms for adjusting income from loans. Some limited degree of flexibility in the lending rate on already disbursed loans (perhaps applying only to higher income borrowers) or in the commitment charge are obvious alternatives. Each mechanism would have rather different implications for the distribution of risk among borrowers. Without further study in detail, it is not possible to say which of these alternatives is likely to be preferable.

8. Whether the Bank should move in the direction of passing more of the interest rate risk onto its borrowers is an issue which will be greatly influenced by one's judgment about the likelihood of increasing interest rates over the next several years. This in turn is closely related to the prospects for global inflation. Cooper seemed to take the position that greater flexibility in the Bank's lending rate policy would only be necessary

^{1/} This ignores the impact of interest rate changes on the return on liquid holdings.

if inflation and interest rates were to show signs of a renewed and rapid escalation. He interpreted Item #19 (copy attached) - which compared a simple version of the "Treasury policy" with a simplified version of the Bank's current policy - as demonstrating that "there is not much in it" if only a modest (100 basis point) rise in rates is the maximum expectation. Bushnell interpreted the results differently and noted (correctly) that the full impact of the "Treasury policy" is not felt until after 1980.

Back-Up Note #5

Section 3, para. 23

Projected vs. Desired IBRD Net Income

The Board paper cites two reasons why the Bank seeks a substantial net income (para. 23). One is to guard against the risk of income fluctuations. We want projected net income to be \$275 to \$300 million in FY80 in order to have a high probability of actually exceeding \$100 million in that year. But net income is also sought so that the Bank may add to retained earnings or transfer funds to IDA. These purposes are served only by actually realized net income; hence it is an evaluation of these needs which is relevant in determining a desired net income for the Bank.

The net income projected for a given year need not be the same as the actual net income desired for addition to retained earnings or transfer to IDA. Suppose, for instance, that further analysis of the Bank's loan portfolio were to establish that IBRD equity equal to 10% of loans outstanding would be sufficient to protect the Bank against the risk of loan defaults. Then the income projected on the basis of the policies proposed in the Board paper would, if attained, imply either "excessive" accumulation of retained earnings or transfers to IDA (or other grants) above \$100 million per annum. Our response to such a situation should not be to lower the target for projected net income - since that would expose the Bank to an unacceptable risk of net income falling below \$100 million - but rather to devise ways of disposing of "excess" net income if and when it is actually earned. Larger IDA transfers would be one way of doing this, though this is presumably not a means which would have much appeal for our middle and upper income borrowers. Another alternative would be to contribute to an interest subsidization account to help finance a Third Window scheme.

While the net income shown in our projections may be higher than what is actually needed, the reverse situation is not permissible. If our reserve target were to increase to 20% of loans outstanding, we would have either to modify the lending program or to increase the net income target above the level required as a buffer against fluctuations. In this case, however, the new and higher level of net income projected would represent a goal we actually mean to obtain and not just a target we have set ourselves in order to avoid falling below \$100 million. Since the projections closely approximate our best estimate of what is actually expected to happen in the future,^{1/} realized net income is as likely to exceed the projection as it is to fall short of it. If it falls short in a particular year, then the target for subsequent years would have to be increased. Similarly, if actual net income exceeds the projection, the target for future years may be lowered.

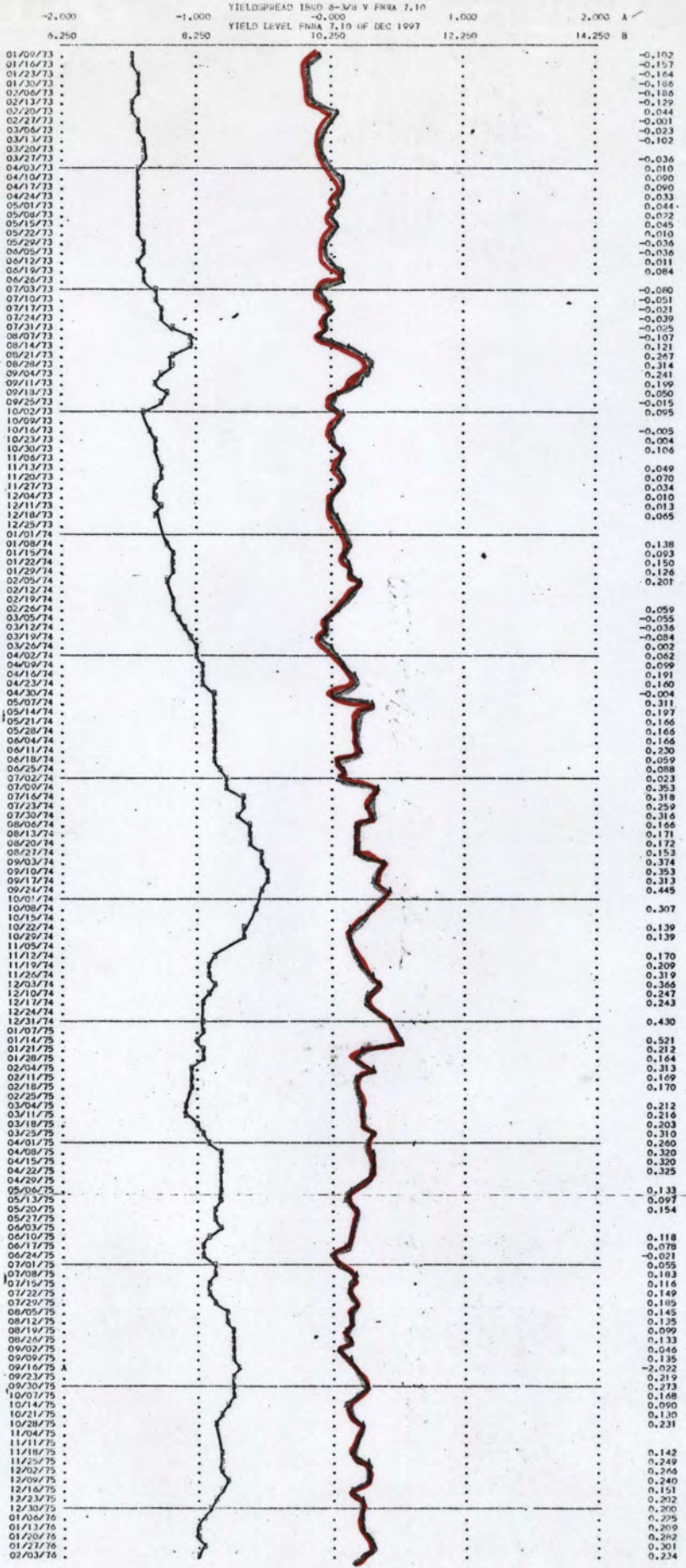
^{1/} We remain conservative with respect to commitment levels, inflation rates and short-term forecasts of income from securities.

4. As it happens, the target for projected net income which has been chosen for FY80 (\$275 to \$300 million) is approximately the desired net income which the Bank would need to obtain if it is to meet the 15% reserve target in FY85 and maintain an average IDA transfer of \$100 million over the FY76 to FY85 period.^{1/} The recommended policies produce a projected net income in FY85 of about \$420 million, which is quite close to the minimum which our analysis suggests as a buffer in that year (i.e. \$450 million). Because the net income which is projected is also the net income which is desired, deviations from projected net income have to be made good over time. If next year, for example, we were to fall short of our projected net income, the income targets for subsequent year should in principle be adjusted upward to make up for this deficit in desired income. This would be so even though the projected net income target for FY80 (required as a buffer) could well have decreased in the interim due to a reduction in risk of fluctuation in administrative expenses or less exposure to the risk of subsequent increases in borrowing costs.

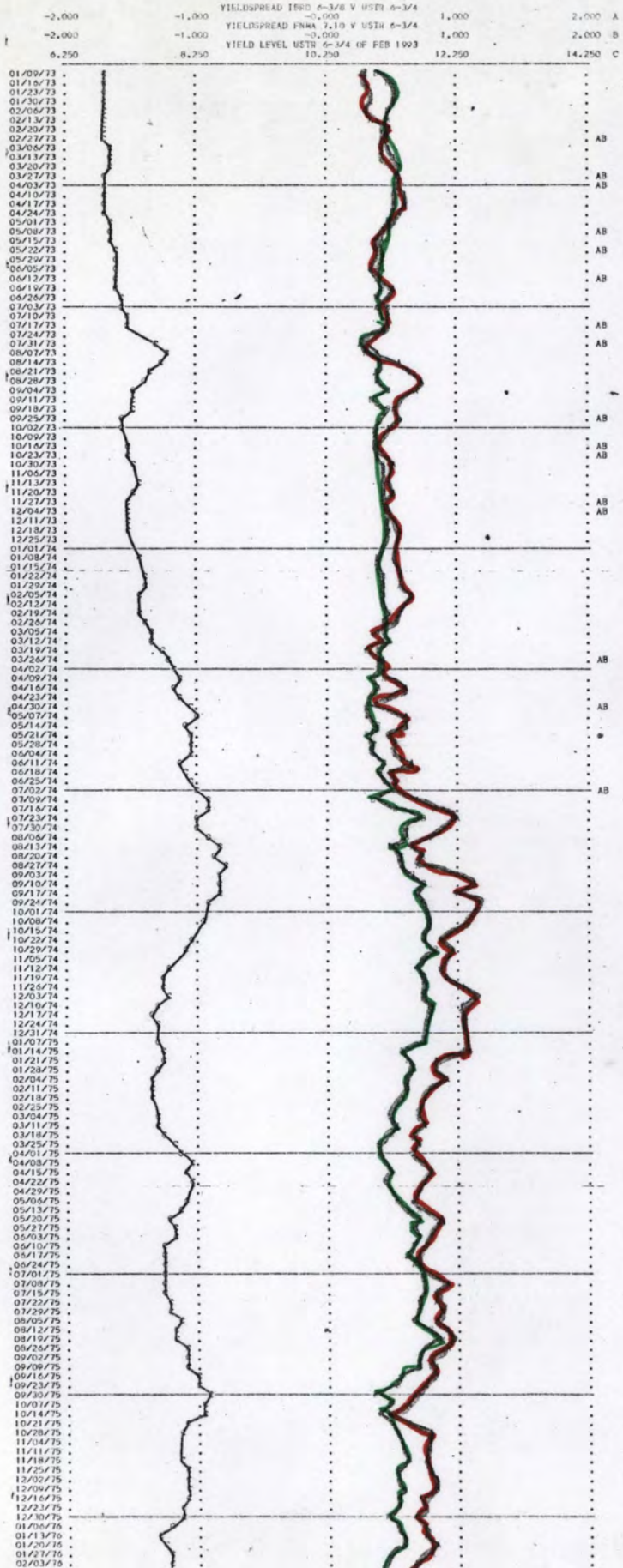
5. In summary, then we may say that our assessment of potential income fluctuations establishes a floor for projected net income in any given year. If the desired net income for that year is below the projected level, then the Bank would have "excess" income which could be used to supplement IDA transfers or in other ways. Under these circumstances it would not be necessary to make good the difference between actual and projected net income (unless actual net income was not only less than projected net income but also less than desired net income). If, on the other hand, desired net income is above the minimum required as a buffer, then we would have to aim for the desired level and differences between projected and actual net income would have to be made good over time.

^{1/} Of course, the same total of net income over the FY76-FY85 period can be earned in any number of different ways. But if less net income is earned in the early part of the period (i.e. up to FY80), then this would have to be compensated for by higher receipts in the later years when the absolute levels of net income are already projected to be uncomfortably high.

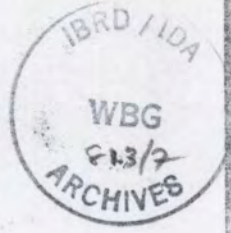
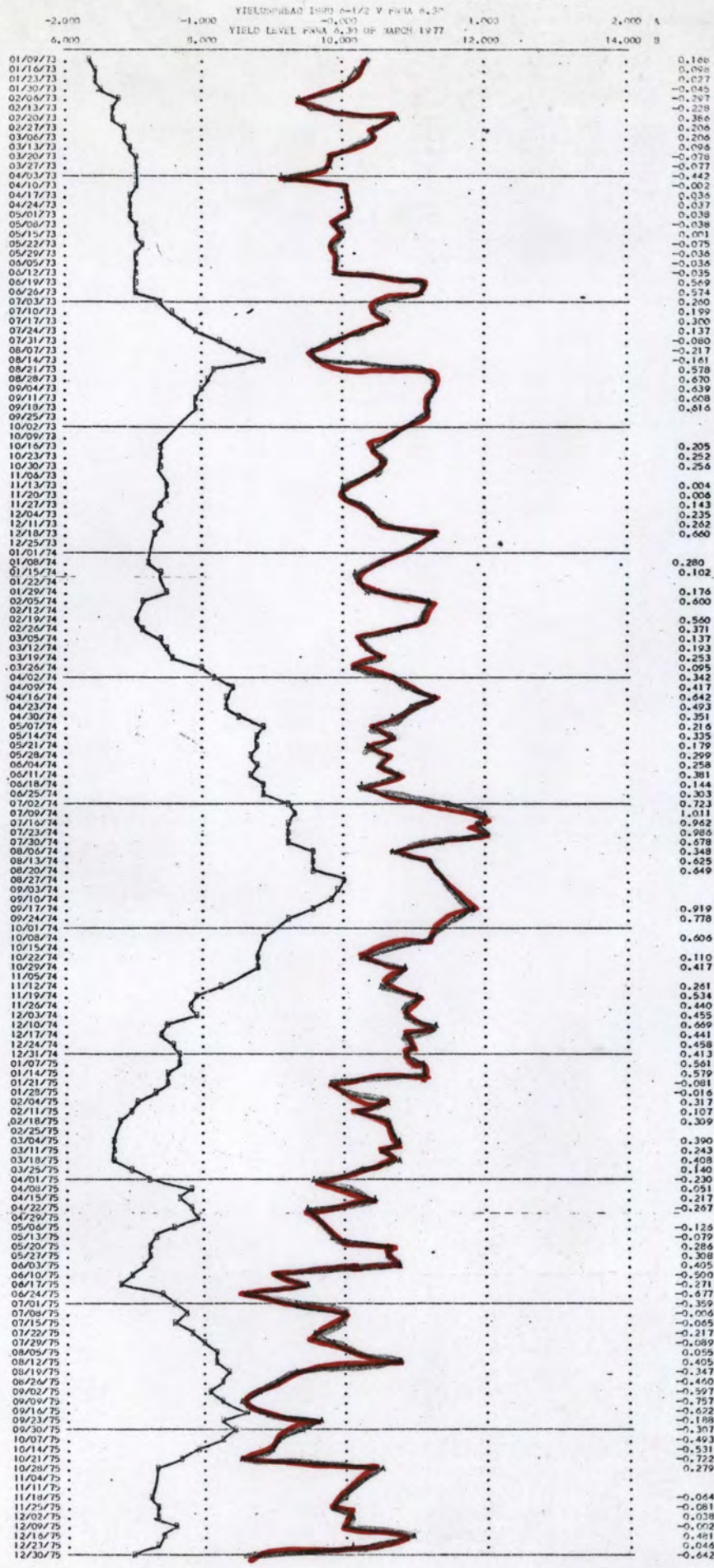
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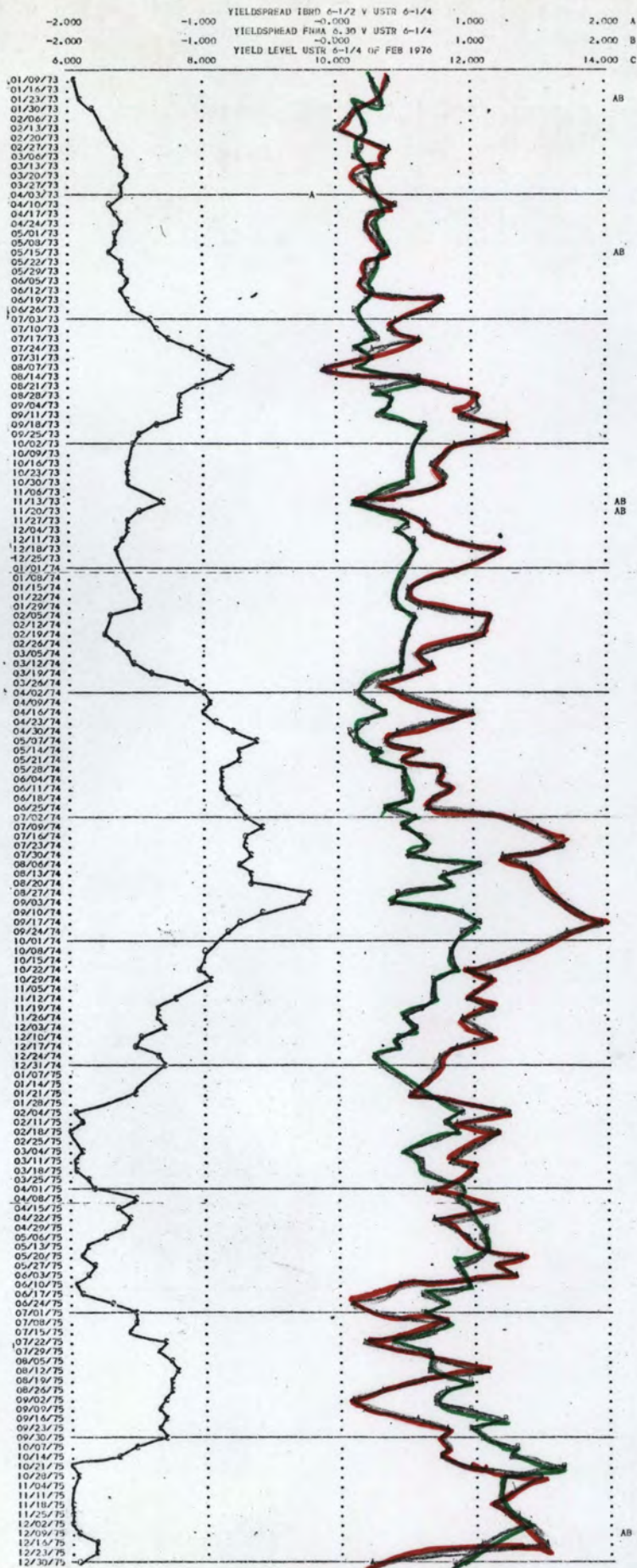
PLOT LEGEND
 — A IBRD-FNMA
 — B FNMA
 WORLD BANK SECURITY ANALYSIS SYSTEM
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 B FIRM-USIR
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1 PLOT LEGEND
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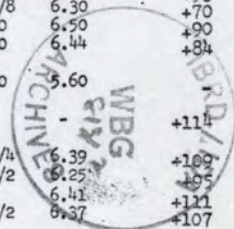
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 C USTR

WORLD BANK SECURITY ANALYSIS SYSTEM
 PLOT COMMAND

APPENDIX V

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

| Offering Date | Issuer | Amount ('000) | Rate | Maturity | Moody's/ S&P's Ratings | Call Protection | Offering Terms | | Estimated Markets on Date of Pricing | | Yield Spreads in basis points) | |
|---------------|---|---------------|--------|-----------|---------------------------|------------------|----------------|-------|--------------------------------------|-------|--------------------------------|-------|
| | | | | | | | Price | Yield | Bid | Yield | (A)* | (B)* |
| 1/14/65 | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | \$200,000 | + 1/2% | 2/1/90 | Aaa/AAA | NC - 10 Yrs. | 100.375 | 4.475 | - | - | + 25 | |
| 12/3/64 | Pacific Northwest Bell Telephone Co. | 50,000 | + 1/2 | 12/1/2000 | Aaa/AAA | NC - 5 Yrs. | 101.25 | 4.43 | 101 3/4 | 4.39 | + 16 | +9 |
| 7/8/64 | Baltimore Gas & Electric Co. | 30,000 | + 1/2 | 7/15/94 | Aaa/AAA | NRF - 5 Yrs. | 101.75 | 4.394 | 101 1/4 | 4.43 | + 20 | |
| 12/2/64 | Pacific Gas & Electric Co. | 65,000 | + 1/2 | 12/1/96 | Aa/AA | NRF - 5 Yrs. | 100.00 | 4.50 | 101 1/2 | 4.41 | + 18 | |
| 1/24/62 | International Bank for Reconstruction and Development | 100,000 | + 1/2 | 2/1/82 | Aaa/AAA | NC - 10 Yrs. | 100.00 | 4.50 | 100 1/4 | 4.48 | + 25 | |
| | U.S. Treasury | | + 1/4 | 8/15/92 | | | | | 100.8 | 4.23 | - | |
| 6/28/66 | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | 175,000 | 5 3/8 | 7/1/91 | Aaa/AAA | NC - 10 Yrs. | 99.75 | 5.393 | - | - | +68 | |
| 4/28/66 | Chesapeake & Potomac Telephone Co. | 50,000 | 5 1/4 | 5/1/2005 | Aaa/AAA | NC - 5 Yrs. | 101.50 | 5.16 | 98 1/4 | 5.37 | +66 | +2 |
| 5/14/66 | Weyerhaeuser Co. | 150,000 | 5.20 | 5/1/91 | Aa/AA | NRF - 10 Yrs. | 100.00 | 5.20 | 99 1/2 | 5.24 | +53 | |
| 5/12/66 | Southern California Edison Co. | 75,000 | 5 1/4 | 5/15/91 | Aa/AA | NRF - 5 Yrs. | 100.00 | 5.25 | 98 1/2 | 5.36 | +65 | |
| 2/9/60 | International Bank for Reconstruction and Development | 125,000 | 5 | 2/15/85 | Aaa/AAA | NC - 10 Yrs. | 100.00 | 5.00 | 97 1/2 | 5.21 | +50 | |
| | U.S. Treasury | | + 1/4 | 8/15/92 | | | | | 93.4 | 4.71 | - | |
| 3/14/67 | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | 250,000 | 5 3/8 | 4/1/92 | Aaa/AAA | NC - 10 Yrs. | 100.375 | 5.348 | - | - | +78 | |
| 3/1/67 | Chesapeake & Potomac Telephone Co. of Va. | 65,000 | 5 5/8 | 3/1/2007 | Aaa/AAA | NC - 5 Yrs. | 101.20 | 5.55 | 102 1/2 | 5.47 | +90 | (-12) |
| 3/8/67 | Shell Oil Co. | 150,000 | 5.30 | 3/15/92 | Aaa/AAA | NRF - 10 Yrs. | 99.75 | 5.32 | 100 5/8 | 5.26 | +69 | |
| 2/8/67 | Virginia Electric and Power Co. | 50,000 | 5 1/8 | 2/1/97 | Aa/AA | NRF - 5 Yrs. | 100.25 | 5.11 | 97 1/8 | 5.32 | +75 | |
| 6/28/66 | International Bank for Reconstruction and Development | 175,000 | 5 3/8 | 7/1/91 | Aaa/AAA | NC - 10 Yrs. | 99.75 | 5.393 | 100.00 | 5.375 | +81 | |
| | U.S. Treasury | | + 1/4 | 8/15/92 | | | | | 95.28 | 4.57 | - | |
| 8/22/67 | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | 150,000 | 5 7/8 | 9/1/93 | Aaa/AAA | NC - 10 Yrs. | 99.00 | 5.95 | - | - | +61 | |
| 8/1/67 | American Tel. & Tel. Co. | 250,000 | 5 | 8/1/2000 | Aaa/AAA | NC - 5 Yrs. | 100.718 | 5.95 | 100 3/8 | 5.97 | +83 | (-2) |
| 8/8/67 | Standard Oil Co. of California | 200,000 | 5 3/4 | 8/1/92 | Aaa/AAA | NRF - 10 Yrs. | 98.69 | 5.85 | 98 1/2 | 5.87 | +73 | |
| 5/9/67 | Southern California Edison Co. | 80,000 | 5 7/8 | 5/15/92 | Aa/AA | NR - 5 Yrs. | 101.248 | 5.78 | 98 3/4 | 5.97 | +83 | |
| 3/14/67 | International Bank for Reconstruction and Development | 150,000 | 5 3/8 | 4/1/92 | Aaa/AAA | NC - 10 Yrs. | 100.375 | 5.35 | 93 1/2 | 5.88 | +74 | |
| | U.S. Treasury | | + 1/4 | 8/15/92 | | | | | 87 1/2 | 5.14 | - | |
| 3/31/68 | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | 150,000 | 5 1/2 | 3/15/94 | Aaa/AAA | NC - 12 1/2 Yrs. | 99.50 | 6.54 | - | - | +94 | |
| 2/7/68 | Michigan Bell Telephone Co. | 125,000 | 5 3/8 | 2/1/2005 | Aaa/AAA | NC - 5 Yrs. | 100.783 | 6.32 | 97 7/8 | 6.53 | +93 | +1 |
| 2/16/68 | International Harvester Co. | 50,000 | 5 1/4 | 3/1/98 | Aa/A | NRF - 10 Yrs. | 100.00 | 6.25 | 99 3/8 | 6.30 | +70 | |
| 3/11/68 | Philadelphia Electric Co. | 60,000 | 5 1/2 | 3/1/93 | Aaa/AAA | NRF - 5 Yrs. | 100.00 | 6.50 | 100.00 | 6.50 | +90 | |
| 8/22/67 | International Bank for Reconstruction and Development | 150,000 | 5 7/8 | 9/1/93 | Aaa/AAA | NC - 10 Yrs. | 99.00 | 5.95 | 93.00 | 6.44 | +84 | |
| | U.S. Treasury | | + 1/8 | 5/15/94 | | | | | 80.00 | 5.60 | - | |
| 9/17/68 | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | 250,000 | 5 3/8 | 10/1/94 | Aaa/AAA | NC - 12 1/2 Yrs. | 99.25 | 6.435 | - | - | +114 | |
| 8/13/68 | Wisconsin Telephone & Telegraph Co. | 50,000 | 5 1/4 | 8/1/2004 | Aaa/AAA | NC - 5 Yrs. | 100.00 | 6.25 | 98 1/4 | 6.39 | +109 | +5 |
| 7/11/68 | Standard Oil Co. (New Jersey) | 250,000 | 5 1/2 | 7/15/98 | Aaa/AAA | NRF - 10 Yrs. | 100.00 | 6.50 | 103 1/2 | 6.25 | +95 | |
| 8/26/68 | Wisconsin Power & Light Co. | 25,000 | 5 1/4 | 8/1/98 | Aa/AA | NRF - 5 Yrs. | 100.00 | 6.25 | 98 | 6.41 | +121 | |
| 3/31/68 | International Bank For Reconstruction and Development | 150,000 | 5 1/2 | 3/15/94 | Aaa/AAA | NC - 12 1/2 Yrs. | 99.50 | 6.54 | 101 1/2 | 6.37 | +107 | |
| | U.S. Treasury | | | | | | | | 86 | 5.30 | - | |



INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

| Offering Date | Issuer | Amount (000) | Rate | Maturity | Moody's S&P's Ratings | Call Protection | Offering Terms | | Estimated Markets on Date of Pricing | | Yield Spreads (in basis points) | |
|---------------|---|-----------------|--------|------------|--------------------------|------------------|----------------|-------|--|-------|------------------------------------|------|
| | | | | | | | Price | Yield | Bid | Yield | (A)* | (B)* |
| 7/23/70 | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | \$200,000 | 8 5/8% | 8/1/95 | Aaa/AAA | NC - 12 1/2 Yrs. | 100.00 | 8.625 | - | - | | |
| 7/21/70 | Bell Telephone Co. of Pennsylvania | 100,000 | 8 5/8 | 7/1/2006 | Aaa/AAA | NC - 5 Yrs. | 100.397 | 8.50 | Snyd. | 8.50 | | +169 |
| 6/23/70 | General Foods Corp. | 75,000 | 8 7/8 | 7/1/90 | Aa/AAA | NRF - 10 Yrs. | 99.50 | 8.92 | 103 3/4 | 8.48 | | +156 |
| 7/7/70 | Consolidated Natural Gas Co. | 40,000 | 9 | 7/1/95 | Aa/AA | NRF - 5 Yrs. | 101.00 | 8.90 | 102 1/4 | 8.77 | | +154 |
| 9/17/68 | International Bank for Reconstruction and Development | 250,000 | 6 3/8 | 10/1/94 | Aaa/AAA | NC - 12 1/2 Yrs. | 99.25 | 6.43 | 79 | 8.42 | | +183 |
| | U.S. Treasury | | 4 1/4 | 8/15/92 | | | | | 69.24 | 6.94 | | +158 |
| 8/11/71 | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | 175,000 | 8 1/8 | 8/1/96 | Aaa/AAA | NC - 12 1/2 Yrs. | 100.00 | 8.125 | | | | - |
| 8/3/71 | Indiana Bell Telephone Co. | 100,000 | 8 1/8 | 8/1/2011 | Aaa/AAA | NC - 5 Yrs. | 99.122 | 8.20 | 100 1/8 | 8.11 | | +164 |
| 7/22/71 | Flintkote Company | 40,000 | 8 1/4 | 7/15/96 | A/A | NRF - 10 Yrs. | 100.00 | 8.25 | 100 1/8 | 8.24 | | +162 |
| 7/20/71 | Commonwealth Edison Co. | 100,000 | 8 | 8/1/2001 | Aaa/AAA | NRF - 5 Yrs. | 100.568 | 7.95 | 99 1/2 | 8.04 | | +175 |
| 7/15/71 | Columbia Broadcasting System, Inc. | 50,000 | 7.85 | 8/1/2001 | Aa/A | NRF - 10 Yrs. | 100.00 | 7.85 | 99 1/8 | 7.92 | | +155 |
| 5/26/71 | Stauffer Chemical Company | 60,000 | 8 1/8 | 6/1/96 | A/A | NRF - 10 Yrs. | 99.00 | 8.22 | 100 1/8 | 8.11 | | +144 |
| | U.S. Treasury | | 4 1/4 | 8/15/92 | | | | | 74 1/2 | 6.45 | | +162 |
| 12/9/75 | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | 250,000 | 9.35 | | Aaa/AAA | NC - 12 1/2 Yrs. | 100.00 | 9.35 | - | - | | - |
| 12/9/75 | Chesapeake & Potomac Telephone Co. | 100,000 | 9 1/4 | 12/15/2015 | AAA/AAA | NC - 5 Yrs. | 99.00 | 9.35 | | 9.35 | | + 94 |
| 10/29/74 | Continental Oil | 150,000 | 9 1/8 | 11/1/99 | Aa/AA | NRF - 10 Yrs. | 99.75 | 9.15 | | 9.16 | | + 74 |
| 4/10/75 | Anheuser Busch | 150,000 | 9.20 | 4/1/2005 | Aa/AA | NRF - 10 Yrs. | 100.00 | 9.20 | | 9.10 | | + 73 |
| 6/4/74 | GMAC | 250,000 | 8 7/8 | 6/1/99 | Aaa/AA | NC - 10 Yrs. | 99.625 | 8.91 | | 9.19 | | + 69 |
| 7/23/70 | International Bank for Reconstruction and Development | 200,000 | 8 5/8 | 8/1/95 | Aaa/AAA | NC - 12 1/2 Yrs. | 100.00 | 8.625 | | 9.18 | | + 78 |
| | U.S. Treasury | | 8 1/4 | 5/15/90 | | | | | | 8.41 | | + 77 |

Column (A): Yield spread between obligations listed (at new offering or market yields) and U.S. Treasury bonds, at about the time of various IBRD offerings.

Column (B): Yield spread between IBRD bond offering terms and market yields of AT&T system obligations (at or about the time of IBRD offerings).

2/4/76



8 13 17 / 16
2/20/76

Selective Capital Increase: Issues Raised
by U.S. Treasury Team

Note #4: YIELD SPREAD ON IBRD BONDS



1. This issue was not discussed at length with the Treasury team. Mr. Cooper was given a copy of Mr. Rotberg's note on yield spreads. (A copy of this note is attached for ease of reference.)

2. Following up on this note, Treasurer's Department has undertaken a more extensive study. Monthly market price data now has been collected for seven sets of long term World Bank, United States Treasury and American Telephone securities over a ten year period commencing January 1965. These data will be converted into yield spreads among the three categories which will then be subjected to the following statistical analysis:

(a) A detailed statistical description of the yield spreads between the three categories. This description will include:

- mean
- standard deviation
- trend line over time
- graph of the time series.

(b) A multiple regression analysis will be used to determine the factors which contribute to a change in the yield spread from time to time. For this purpose the following variables have been identified:

- the nominal rate of interest
- the relative supply of U.S. Treasury securities and other close substitutes of World Bank bonds
- the amount of outstanding World Bank obligations in the market
- the time to maturity of the issues in the yield spread pair.

The analysis described under (a) will be performed in the week ending February 27. The results of that study will be used to refine the hypothesis of the multiple regression analysis outlined under (b).

Attachments