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Some Remarks on the Management of the World Bank  
Investment Portfolio

1. The Role of the Investment Portfolio

At the end of the last fiscal year, June 30, 1979, the assets of the World Bank, expressed in United States dollars, amounted to \$51.4 billion, out of which \$9.7 billion were invested in obligations of governments, banks and financial institutions of its members. These resources constituted the Bank's liquid assets. The bulk of our investment portfolio was in US dollars (\$7 billion), Deutsche Mark (\$800 million equivalent), Pound Sterling (\$500 million equivalent), French Francs (\$200 million equivalent).

These liquid resources give us the flexibility to decide on the timing of our borrowing operations and, to some extent, permit us to delay entering markets when they are deteriorating. When bond markets deteriorate, we will draw down this liquidity until these markets stabilize. The liquidity was specifically built up over the years to permit us to have such flexibility. Because the liquidity is derived from "advance" borrowing, it was and is necessary to actively manage the portfolio in order to minimize the cost of carrying the borrowings. The borrowings, of course, provide the main resources in support of our lending program.

2. The Constraints

The Bank matches its borrowing obligations in any one currency by investing or lending the proceeds of its borrowings in the same currencies in which they are borrowed. The Bank, therefore, maintains

a neutral currency position with respect to its resources by not converting one currency into another. Thus, the Bank is perfectly hedged with respect to foreign exchange. It never takes a currency risk on its borrowings. If we borrow Deutsche Mark, we invest the proceeds in DM as part of our liquidity, and later we lend and are repaid those same DM.

3. Investment Vehicles

The Bank places its liquidity in negotiable instruments, namely, government guaranteed bonds and bank obligations such as certificates of deposits or eligible bankers' acceptances. No instrument can have a maturity in excess of five years and three months. The Bank invests in instruments which have a liquid secondary market. The portfolio is actively managed. Trading volume is approximately \$120 billion equivalent a year.

4. Portfolio Management Philosophy

The liquid portfolio is substantial compared to our disbursement requirements, and there is no constraint in going out to, for instance, an average life of three or four years. The portfolio is managed for the purpose of maximizing its financial return. Opportunities lost and unrealized gains and losses are always monitored. We measure what we could have done if we had made optimum decisions. Little attention is paid to book income in making investment decisions. The ability to choose between maturities of one day to over five years provides flexibility in the management of the portfolio. The accounting consequences of our financial decisions, i.e., our capital gains or losses from changing the maturity structure of our portfolio, are not

considered in making shifts. We look to maximize our future return and do not hesitate to take losses if we believe the market will deteriorate further. Thus, if we buy a bond at a 10% yield and it deteriorates in price to yield 11%, we sell it if we believe that it will trade later at 11.25% -- irrespective of the "accounting" loss -- if there is a better alternative use of the proceeds based on our interest rate anticipations. We have already made our mistake in the initial purchase -- the sale merely recognizes the error. We always wish to admit an error and measure what we could have done to optimize our return. More important, we look to the future rate of return of the proceeds of a sale, not the loss incurred by reason of the sale.

5. Performance Measurement

The performance of the portfolio is carefully monitored, in particular to assess whether our performance is due to one or two decisions (which we believe is not indicative of future good performance), or whether it is due to daily market trading or a proper assessment of risk and reward relationships. The portfolio is marked-to-market every week even though gains and losses are not taken in our Profit and Loss Statement until realized. Financial rates of return (not "accounting" or book yields) are calculated for the portfolio as a whole as well as for specific sectors such as Treasury Bills, CD's, Notes, Eurobonds, etc. Often we will shift from domestic CD's to Euro CD's depending on spread differentials, or from CD's generally to Treasury Bills, depending on spread differentials, or from short-term to long-term instruments quite quickly. Or we will shift from one instrument to another because of market pressure or market aberrations which make virtually identical

securities more (or less) valuable than they should be on the basis of historic relationships. Financial rates of return (inclusive of unrealized gains and losses) are calculated not just for our own portfolio but also for a wide variety of indices against which we measure our own performance. For example, we compare our performance to a random selection of investments; or to a selection of only 3-month instruments; or against a portfolio of only 5-year instruments; or as compared to a mix of maturities, or as compared to a non-managed portfolio. We also compare our performance to perfect decision-making --with hindsight.

6. The Generation of Quantified Forecasts

The point of our interest rate forecasts is to enable us to make investment decisions on whether we should hold short or long instruments. We review the major outputs of the econometric models which describe the status and the projected status of the US economy. We talk to many banks to assess loan demand. We talk to perhaps half-a-dozen economists a week. We review 30 to 50 different economic write-ups and publications each week. We monitor the position of Wall Street. We discuss the general technical condition of the market with a dozen major dealers in New York. We have open lines to about 20 firms in New York, Chicago, and San Francisco. Similarly, we have daily telephone communications concerning European markets with the largest banks and dealers active in each market. We develop in-house forecasting models using financial variables such as money supply, Federal funds, foreign exchange, and "real economy" variables (e.g., business loans, housing starts, retail sales, CPI, etc.) In short, we try to predict

interest rates and do so for a variety of maturities and instruments. We assess the certainty of our predictions of rates for a variety of different maturities and for various time periods in the future at probabilities of 1:2; 1:4; and 1:10. Then we make investment decisions with respect to how we wish our liquidity invested.

7. Financial Modelling

We also closely review technical market conditions. Thus, we have done work monitoring aberrations in the market caused either by coupon differentials, or by tax effects due to the different tax treatment of income and capital gains. We produce a daily trading report which monitors the behavior of the market, showing, for instance, which securities are out of line with each other, or with a yield curve, and monitor and produce historical yield-spread analyses.

8. Application of Quantified Forecasting into Portfolio Decisions

The various approaches described above provide inputs into the subjective formulation of possible future yield curves. These subjective probability distributions of future yields are in turn used as inputs to some models, such as a mean-variance model à la Markowitz generating an efficient frontier quantifying the reward (i.e., expected return on the portfolio) attached to a strategy characterized by a certain amount of risk (as measured by the variance of the rate of return).

Using these computer models does not imply that the decision-making process of positioning the portfolio and trading it is merely a matter of computer simulation. These financial models provide a

logical vehicle to transform subjective probabilities on future yields into recommendations for positioning the portfolio based on some accepted axioms of choice which admittedly reflect the portfolio managers' intuition. In any case, whatever the sophistication of the models we use may be, they are not useful if we are not able to develop good forecasts on yield trends. What is most important is to build a team of portfolio managers with strong economic common sense and intellectual acumen, good judgement toward risk, and readiness to admit to error. That is why, when choosing new members for our Investment team, academic achievements and awareness of risk are given the highest weight. Market experience comes by itself.

9. Market Limitations

The market must have depth, be liquid and present a continuum of maturities within our authorized maturity range. Otherwise, it serves little purpose to predict interest rates. The US government bond and money markets are obvious candidates for an active portfolio management though we are also substantial holders and traders in the Eurobond and Yankee bond markets. The Bank also has substantial holdings in Yen, Deutsche Mark and Pound Sterling.

Our function, essentially, is to decide on a continuing basis whether, with respect to each currency, the Bank should be in longer or shorter term instruments. A liquid secondary market is crucial for such operations. So, too, is the freedom to sell and shift our maturity structure if our perception of interest rates changes. At any moment in time, the liquid portfolio represents what we wish to buy

if we had a new and immediate infusion of \$10 billion. Conversely, anything we hold at a given moment in time, we hold because we do not wish to sell it. Finally, the entire portfolio is available for sale at any moment in time if we believe that it should be shorter (or longer) in order to maximize future potential financial return.