

significantly change Junge's analysis. To sum up, for ordinary loans, mean-variance analysis might not be the right analysis if seeking to determine the risk/return characteristics of a loan portfolio as the market price of the loans is and stays the face value except for interest rate changes in the case of fixed interest rate loans. For those, duration might be the much better tool. Where a secondary market develops, there is a special and usually unique work-out situation. An analysis developed for quite efficient stock markets might be over simplistic as a lot of specialities of the market should be taken into account. It has further to be kept in mind, that when there are heavy price discounts for a whole asset class in a secondary market such as the LDC secondary market, there must be some common cause(s) for such discount (that is for the default on the underlying debt). In more technical words, there is a high correlation between the performance of the debtors with regard to such causes. Once these causes fade away, correlation becomes less, and quite soon the secondary market will disappear, at

least for those of the loans which are fully performing.

Footnotes

- [1] WALTER (1981) and GOODMAN (1981).
- [2] INTERNATIONAL FINANCING REVIEW (1989).
- [3] For details of reschedulings of bank debt see INSTITUTE OF INTERNATIONAL FINANCE(permanent updates).

References

- GOODMAN, L.S. (1981): "Bank Lending to Non-OPEC LDC's: Are Risks Diversifiable?", Federal Reserve Bank of New York Quarterly, Summer.
- INTERNATIONAL FINANCING REVIEW, September 16, 1989.
- INSTITUTE OF INTERNATIONAL FINANCE, Inc.: survey of Debt Restructuring By Commercial Banks, Washington (permanent updates).
- WALTER, I. (1981): "Country Risk, Portfolio Decisions and Regulations in International Bank Lending", Journal of Banking and Finance 5, pp. 77-92.

GEORG JUNGE

The Case of Modern Portfolio Theory for Loans Reconsidered: A Reply

I welcome the comments of Markus J. Kroll concerning my article "Portfolio Approach and the Secondary Market for Developing Country Debt" in *Finanzmarkt und Portfolio Management* Nr. 4/1992. He correctly points out a number of practical and theoretical issues that arise when it comes to the application of modern portfolio theory to the management of loans. I agree with him that for ordinary loans the measurement of risk as price volatility is a problem. As I pointed out in my paper, price

volatility does not necessarily reflect creditworthiness, and M.J. Kroll is right to emphasize that "loan values usually remain stable over time" and are subject to an asymmetric distribution. One could even go a step further and add that the definition of returns may already cause difficulties. - The contractual return of a loan is a rather complex structure. It varies with the maturity and may combine different sources of profits such as interest, fees, or gains from cross selling. Moreover, contractual

returns may diverge from the expected actual returns. Correct as these objections are, they bypass the special case of a secondary market for loans and the general intention of my paper. A closer look shows, moreover, that technical problems are not insurmountable.

Technical objections

In the special case of a secondary market, loans are typically marked-to-market and as a rule all input factors for portfolio analysis are in place: returns of individual loans, volatility measured as standard deviation and correlation. One may disagree about the definition of returns as the price change only, but I doubt whether the inclusion of interest payments would change the results significantly. In principle the expected stream of interest payments is already reflected in secondary market prices, and in a market where default risk is an integral part, price variations should reflect default probabilities. To answer another worry of M.J. Kroll, the returns in the period 1986 to 1991 were based on standardized benchmark loans, which remained the same over time and thus do not refer to different instruments.

It is also correct that, in its infancy, the secondary market for developing country debt was rather thin and dominated by banks. However, in the years on which my analysis focused (1989 and 1990) this had already changed. In those years the developing-country debt market was already fairly liquid with standardized loans traded at a volume ranging from US\$ 50 to 100 bn. Moreover by that time the market had attracted institutional customers and other new players [1].

I disagree with the notion that diversification in the loan market cannot really reduce default risks as claimed by M.J. Kroll (3rd paragraph). Thoughtful diversification can indeed reduce portfolio risks in a loan portfolio in the same way as in a stock portfolio. The two magic keys to diversification are the number of assets and correlation. As a rule, the riskiness of a portfolio can be reduced as the num-

ber of assets in the portfolio increases. But this works only to the extent that the risks are independent, which is typically measured by correlation. It is another - empirical - question whether estimated correlations in fact capture the degree of risk dependency across assets. In the case of the 1982 debt crisis contagion effects (real or informational) and the herd-like behaviour of banks probably played a significant role which led to a bunching of risks. But the same can happen in stock markets, as the 1987 crash demonstrated. The conclusion cannot be that diversification does not work. In this context, a reference to the work of GOODMAN (1986) is appropriate. In a more elaborate paper than the one quoted by M.J. Kroll, she concludes that among the 1982 debtor countries there was a relatively high systematic risk, namely vulnerability to world recession and interest rates.

Principal objections

In all likelihood, M.J. Kroll and I could agree on most issues discussed above. The major disagreement seems to arise from a misunderstanding concerning the intention of my paper and its relevance for ordinary loans. The purpose of the paper was to demonstrate with a practical case that modern portfolio theory can be applied to the loan market. Instead of writing a resigned note about the practical and theoretical difficulties associated with the application of modern portfolio theory to bank lending, I took advantage of the existence of a secondary market for developing country loans, applied the mean-variance framework and looked at what came out. Surprise, surprise the results confirmed the suspicion that the LDC loan portfolios of international banks were structured suboptimally. This suggests banks could in principle do better, in particular with regard to lowering the risk at the portfolio level.

As far as the relevance of modern portfolio theory for loan management is concerned, I believe many of the current data difficulties will be overcome in the future. Banks are already in the process of

reorganizing their data and have started to record profitability and loss information by borrower classes, business lines and product lines. Risk rating systems are finely tuned and default statistics are collected. Of course some variables have to be redefined. For example, instead of using return data one may use loss data. The average expected loss could replace the expected return, and risk could be measured as loss volatility around the average. In that case the diversification potential would be measured in terms of loss correlations, but the principles of modern portfolio theory in a top-down optimal allocation model would still hold.

Footnote

[1] RISK (o.V.) (1992).

References

GOODMAN, L.S. (1986): "Diversifiable Risks in LDC Lending. A 20/20 Hindsight View", *Studies in Banking and Finance* 3, p. 258.
RISK (o.V.) (1992): "LDC Debt - Double Cream", *Risk* 5, March, pp. 48-53.