

# Discussion

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## Introduction

D'Souza and Lai set out to determine whether Canadian banks should focus or diversify the industrial, regional, business-line, and financing composition of their asset-liability portfolios. The authors address this issue by examining the impact of diversification on the risk-return content of bank portfolios. Measuring the efficiency of portfolio allocation in terms of performance indicators based on risk-return trade-offs has economic significance and represents a substantial improvement over earlier approaches.

The literature that this paper extends fails to place the analysis within a portfolio framework. It looks at return on bank equity as a function of (i) degree of diversification (or focus); (ii) risk (as measured by the ratio of doubtful or non-performing assets relative to total assets); and (iii) control variables. Past studies fail to adequately consider the risk-return trade-offs facing banks, and hence, the impact of diversification on the welfare of banks, depositors, borrowers, and so on.

This paper uses a mean standard-deviation portfolio model and takes into account risk-return trade-offs by looking at the Sharpe measure of portfolio performance. Although the authors' approach represents an important improvement, a number of problems remain to be addressed.

## Issues

The paper's empirical work needs a stronger theoretical underpinning. This is especially relevant, since the empirical model is conditioned on the underlying  $\mu - \sigma$  portfolio framework. (This concerns the measure of portfolio inefficiency.)

Theoretical difficulties exist with the way in which the expected return-risk, or mean-standard deviation ( $\mu - \sigma$ ), benchmark of efficiency is derived. (This is aside from the issue of whether the  $\mu - \sigma$  model appropriately describes portfolio selection in banking, which is an important question that is not dealt with in the paper.)

In describing their efficiency benchmark (shown in Figure 1), the authors note, “In the absence of capital-adequacy requirements or market imperfections, banks optimally choose their exposures to banking activities so that they are on the efficient frontier” (p. 110). The authors do not fully pursue the implications of these assumptions for the nature of the efficient frontier. Such a “perfect-market” economy provides agents full scope for reaping the benefits of diversification. In such an economy, no differences would exist between the investment choices facing a bank or any other entity, be it an institution or individual. The locus  $R_f - q$  in Figure 1 would depict the feasible  $\mu - \sigma$  opportunities facing all agents (à la Capital Asset Pricing Model (CAPM)), where portfolio  $q$  would represent a benchmark against which one can evaluate the efficiency of actual portfolios, including those of banks, using the Sharpe or other measures of portfolio performance. Such a benchmark should be independent of the portfolio choice of any bank or intermediary. Yet, in the paper, the  $\mu - \sigma$  efficient locus,  $R_f - q$ , is generated by restricting the choice to the assets or asset classes held by banks. Thus, the benchmark against which a bank is being evaluated is not the economy’s  $\mu - \sigma$  efficient frontier. Instead, it is constructed on the basis of a much more restricted set of assets or asset classes.

Indeed, banks (and other intermediaries) do restrict their portfolio choices to particular asset classes or types. Such choices reflect their value added to the economy as intermediaries in a world of incomplete markets with transactions and information costs. By restricting the set of assets to those held by banks in generating the  $\mu - \sigma$  efficient benchmark, the paper implicitly incorporates transactions and information costs into the benchmark, which makes the portfolio performance measures less meaningful, theoretically and empirically. We know that with transactions and information costs, the portfolio-separation property breaks down so that there is no unique mixture of risky assets ( $q$ ). For that matter, there would be no reliable Sharpe portfolio performance measure.

The authors may want to use a well-diversified market index as a proxy for portfolio  $q$ . Also, the authors need to be more clear about how  $q$  and the efficient frontier were estimated from the underlying banking asset returns.

- Important non-pecuniary elements in the returns on many bank assets and liabilities may lead to a conceptual difficulty in implementing a standard portfolio model in banking. Price and market return data will not capture these elements (e.g., in the case of credit rationing and the use of collateral in bank loan contracts).
- Problems exist with the empirical procedures used to generate estimates of expected return and risk.

The authors are not very clear about the underlying expectations-formation mechanism. They assume that all banks draw from the same underlying distribution, and (I think) the authors use average realized monthly returns as a proxy for expected returns. This latter assumption is problematic, however. I suggest that they use an alternative expectations-formation model, e.g., formulate bank return forecasts on the basis of a multivariate linear-regression model.

It is difficult to distinguish between the endogenous and exogenous variables:

- (i) Portfolio-allocation decisions may be responding to realized return, or to risk, which creates endogeneity problems in equations (6) and (7), in that the left-hand-side variables (return or risk) may affect some of the right-hand-side variables pertaining to portfolio allocation, diversification, or focus. Similarly, the extent to which the inefficiency measure is estimated on the basis of realized returns may affect the right-hand-side portfolio-allocation variables in equation (8).
- (ii) Portfolio-allocation decisions by banks may affect returns on assets simply because the chartered banks form a large part of some of these asset markets. Moreover, the positive effect on returns of a greater concentration of assets in some sectors (more focus) may reflect market power rather than inefficient portfolio management.

The paper should provide an explanation of the sources of inefficient portfolio allocation in banking, as well as an interpretation of empirical results.

Inefficiency is measured as a deviation from the efficient frontier (the Sharpe index). Such deviations are presumed to represent non-maximizing behaviour. The authors mention, but do not elaborate on, agency problems, managerial risk aversion, inefficient internal capital markets, and power struggles. Can one confidently ascribe inefficiencies in portfolio allocation in Canadian banking (observed in the paper) in some systematic fashion to these causes? In other words, the authors should offer theoretical support for their results.

## Questions

- What are the public policy implications of the results?
- Are the empirical results consistent with the following hypothesis? *Banks are efficient in their portfolio-allocation decisions, but the  $\mu - \sigma$  approach does not properly model their portfolio-allocation mechanism.* What seems like non-maximizing behaviour, or inefficiency in their results, may simply reflect the fact that the  $\mu - \sigma$  model is an inappropriate characterization of bank-portfolio choice. Can they exclude this possibility?
- To the extent that there are joint-cost-allocation problems in the return calculations, is it possible that asset-return measures may not be independent?
- Portfolio allocation on the liability (financing) side of the bank balance sheet is not addressed in sufficient detail. How well considered are the links between the liability and asset sides of bank portfolios?
- How correlated are the Herfindahl diversification (or focus) variables, and how would the degree of correlation affect the authors' results?

