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Commercial bank net interest margins, default risk, interest-rate risk, and off-balance sheet banking

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Abstract

This paper tests the hypothesis that banks with more risky loans and higher interest-rate risk exposure would select loan and deposit rates to achieve higher net interest margins. Call Report data for different size classes of banks for 1989–1993 show that the net interest margins of commercial banks reflect both default and interest-rate risk premia. The net interest margins of money-center banks are affected by default risk, but not by interest rate risk, which is consistent with their greater concentration in short-term assets and off-balance sheet (OBS) hedging instruments. By contrast, (super-) regional banking firms are sensitive to interest-rate risk but not to default risk. The data show that OBS activities promote a more diversified, margins-generating asset base than deposit- or equity-financing, and that cross-sectional differences in interest-rate risk and liquidity risk are related to differences in OBS exposure.

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Keywords: Interest margins; Credit risk; Interest rate risk; Off-balance sheet risk

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1. Introduction

This paper is an empirical exposition of the relationship between bank net interest margins and interest rate risk, default risk, and off-balance sheet banking activities. The analysis draws on the theoretical model of the net interest margins as proposed by Ho and Saunders (1981), McShane and Sharpe (1985) and Allen (1988), among others. In these models, the net interest margins is a function of interest rate risk and institutional factors which systematically affect prices of bank products, including implicit interest payments and the opportunity costs of non-interest bearing assets. The framework explicitly takes into account the asymmetric arrival time of the demand for loans and the supply of deposits. This, in turn, allows the cross-elasticities that may exist between assets and liabilities to be reflected in the determination of net interest margins.

Recent studies of the nominal interest rate exposure of banking organizations use the two-factor model to show evidence of interest rate sensitivity and of a significant pricing relationship. [1] In these studies, bank stock returns are regressed against an interest-rate index and the market portfolio returns. The estimated coefficients are the measures of the bank's interest rate risk and systematic market risk, respectively. A direct motivation for this paper is that although the severe credit risk problems of recent times would suggest that default risk is a significant factor, applications of the two-factor model do not explicitly account for the credit risk exposure of financial institutions.

Bank net interest margins – that is, the ratio of net interest income to average earning assets – are a summary measure of banks' net interest rate of return. While it is well known that the net interest margins are an important component of bank profitability, the effects of market interest rate volatility and default risk on the margins are not well documented. The net interest margins reflect both the volume and mix of assets and liabilities, and are set by banks to cover the costs of intermediation. More precisely, adequate net interest margins should generate sufficient income to increase the capital base as risk exposure increases. The Ho and Saunders (1981) dealership model of interest margins provides a theoretical model for investigating the relationship between interest rate risk and bank net interest margins. To be sure, this study extends the Ho and Saunders model to include default risk and its interaction with interest rate risk, and investigates whether the risk effects (if significant) are heterogeneous across bank size classes.

The empirical analysis also explores the impact of credit market cycles on the net interest margins. Recent studies suggest that credit contraction in bank lending may influence the net interest margins because of loan rate stickiness caused by credit rationing (Berger and Udell, 1992), because of deposit rate rigidities caused

[1] See Flannery and James (1984), Aharony et al. (1988), Sweeney and Warga (1986), Yourougou (1990), among others.