

Accounting and capital market measures of risk: Evidence from Asian banks during 1998–2003

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Abstract

This study examines the relation between accounting and capital market risk measures for a sample of 46 listed Asian banks during the period 1998–2003. By applying a panel data analysis that includes a control for country-specific factors, the results show that the standard deviation of the return-on-assets and loan-loss-reserves-to-gross-loans are significantly related to total risk. Also gross-loans-to-total-assets and loan-loss-reserves-to-gross-loans are significantly related to non-systematic risk. These results indicate that in these Asian countries, firm-specific risk is more important than systematic risk and the results are robust even though significant differences exist across Asian countries in banking activities, capital adequacy requirements, and deposit insurance protection.

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1. Introduction

Banks are evaluated using both market risk measures and accounting information. The appropriate measure for assessment depends on its purpose and the conditions within which it is applied. For example, if a well-diversified investor is considering adding a bank stock to the portfolio, the bank's beta will be used as the appropriate measure of risk. On the other hand, if a bank regulator is assessing the financial health of a bank, a CAMEL rating, made up of accounting variables, is preferred. However, these measures may be differentially impacted by the economic environment and their relative importance may change over time. Jahankhani and Lynge (1980); Lee and Brewer (1985); Brewer and Lee (1986); and Mansur et al. (1993)

find significant relations between accounting ratios and capital market measures of risk in US banks. Elyasiani and Mansur (2005) examine the same issue, but use Japanese banks. While most prior studies are country-specific, the Asian crisis and its associated contagion effects highlights the need for a set of accounting and market risk measures that are applicable across countries.

Research on Asian banks is important because they are the predominant source of finance for businesses in the private sector¹. Because alternative sources of funds are not available, when corporations encounter financial difficulties, the impact on the banks' balance sheet may be greater than in countries with more developed financial markets. Hence, using accounting measures of risk may be problematic.

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¹ Chang (2004) indicates that East Asian banks are used to support the real sector in pursuing economic development.

Banks in this region experienced the banking crisis of 1997/1998, and bank restructuring programs continue in several of the Asian countries². Indonesia, Malaysia, South Korea and Thailand were seriously impacted by the banking crisis, while Hong Kong, Pakistan, Philippines, Singapore, Sri Lanka and Taiwan were less affected.

The banking structures, regulatory environments, capital adequacy requirements and market sophistication are not homogenous across these countries. Table 1 shows the regulations for engaging in non-traditional commercial banking activities such as trading in securities, and participation in insurance and real estate. Each country follows the Basel Accord, but Hong Kong, Singapore, Philippines and Sri Lanka require a higher minimum capital standard. Indonesia, Malaysia, Philippines, South Korea, Sri Lanka, Taiwan and Thailand have explicit deposit insurance but only Taiwan uses risk-based premiums³.

In addition, in developing countries managerial control is highly concentrated. Claessens et al. (2000) examine the separation of ownership and control within financial and non-financial publicly traded East-Asian corporations. More than two-thirds of the firms are controlled by a single shareholder, and separation of management from ownership control is rare.

Overall, these differences may affect bank risk management in the respective country, and in turn, may affect the link between accounting and capital market measures of risk. The present study pools 46 listed banks operating in ten Asian countries during the 1998–2003 period. Panel data methodology takes into account individual bank heterogeneity, and we find that several accounting and market risk measures are significantly related. In particular, after controlling for country-specific factors, the random-effects model is preferred. The standard deviation of the before-tax return-on-assets (SDROA) and the loan-loss-reserves-to-gross-loans ratio (LLRGL) are significantly related to total return risk. Moreover, the loan-loss-reserves-to-gross-loans ratio (LLRGL) and the gross-loans-to-total-assets ratio (GLTA) exhibit the expected significant relation with non-systematic risk. These selected accounting and capital market measures of risk can be useful in the analysis and supervision of different Asian banking systems.

2. Literature review

Pettway (1976) explores the relation between accounting and capital market measures of risk by considering the impact of the bank's capital position and other accounting variables on market beta and the price-earning ratio. Using a sample of 38 large US banks and holding companies over the period 1971–1974, Pettway finds that the amount of

bank equity is significant in the determination of a bank's market beta in 1974 and of a bank's price-earning ratio in 1972 and 1974. Pettway and Sinkey (1980) use both accounting and market information to develop an early-warning-system that may be useful in developing on-site bank examination priorities. A discriminant analysis model and the market model are used in implementing accounting data and market data, respectively. Then, a dual-screening technique is introduced. They find that both the accounting and market screens produce early warning signals that precede the start of the examinations, which led to the sample banks being classified as problem institutions.

Jahankhani and Lynge (1980) examine a sample of 95 commercial banks and bank holding companies in the US over the period 1972–1976. When market beta is used as the dependent variable, they find that the dividend payout ratio, the coefficient of variation of deposits, and the loan-to-deposits ratio are statistically significant, and the accounting variables explain 26% of the variability in systematic risk. When total return risk is used as the dependent variable, all variables except the loans-to-deposits ratio are found to be statistically significant, and 43% of the variability in the dependent variable is explained.

Rosenberg and Perry (1981) examine 124 large US banks, over the period March 1969–June 1977. Systematic and residual risks are used as dependent variables and a number of accounting variables is employed as independent variables. They find that the important simple predictors of beta are size, dividend yield, equity capitalization, and the asset-to-long-term-liability ratio. The most important simple predictors of residual risk are earnings variability, leverage in the capital structure, and a measure of accounting beta. In the multiple regression models, the signs of the descriptors are generally the same for the prediction of beta and residual risk, but the relative magnitudes are often significantly different.

Lee and Brewer (1985) use cross-section and time-series methodologies to examine 12 quarters of data for 44 US banks and bank holding companies over the period 1979–1982. Within each quarter, for each bank, the market risks are estimated using the market model based on daily return data for each bank and the S&P 500 index. They find that when the systematic risk is used as the risk measure, the volatile liability ratio, leverage, and dividend payout ratio have the expected signs and are significant. When total risk is used as the dependent variable, most estimated coefficients have the expected sign, and several are statistically significant.

Brewer and Lee (1986) examine a sample of 44 US bank holding companies over the period 1979–1983. They use a multi-index market model based on daily return data to derive market, banking industry, and interest rate risk measures. Risk sensitivities of bank stocks are also investigated by comparing banks in California, Chicago, New York, and "Other" geographic areas. They find a significant correlation between accounting-based measures of equity risk and market-based measures of equity risk. In particular,

² Williams and Nguyen (2005) and Klingebiel et al. (2001) provide a discussion on bank restructuring programs following the crisis.

³ Data sources include the Annual Reports/Official Websites of the Central Banks/Banking Authorities of each country, the 2003 World Bank Database on Bank Regulation and Supervision, and Bank Indonesia.

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