



# Measuring systemic risk: A risk management approach <sup>☆</sup>

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## Abstract

This paper proposes a new method to measure and monitor the risk in a banking system. Standard tools that regulators require banks to use for their internal risk management are applied at the level of the banking system to measure the risk of a regulator's portfolio. Using a sample of international banks from 1988 until 2002, I estimate the dynamics and correlations between bank asset portfolios. To obtain measures for the risk of a regulator's portfolio, I model the individual liabilities that the regulator has to each bank as contingent claims on the bank's assets. The portfolio aspect of the regulator's liability is explicitly considered and the methodology allows a comparison of sub-samples from different countries. Correlations, bank asset volatility, and bank capitalization increase for North American and somewhat for European banks, while Japanese banks face deteriorating capital levels. In the sample period, the North American banking system gains stability while the Japanese banking sector becomes more fragile. The expected future liability of the regulator varies substantially over time and is especially high during the Asian crisis starting in 1997. Further analysis shows that the Japanese banks contribute most to the volatility of the regulator's liability at that time.

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