



**The Impact of Changes of Capital Regulations on Bank
Capital and Portfolio Risk Decision: A Case Study of
Indonesian Banks**

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THESIS DECLARATION

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution to Ratna Derina and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

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Ratna Derina
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THESIS SUMMARY

Research Objectives

This thesis studied bank risk taking behaviour with regards to capital and asset portfolio adjustments. It also evaluated the impact of economic uncertainty and capital regulations on banks' risk taking behaviour. There were two objectives of this thesis. The first objective was to investigate the impact of adverse shocks in the economy on a bank's decisions regarding capital and asset portfolio management. The second objective was to examine the interrelationship between decisions on capital and asset portfolios. Further, the impact of economic uncertainty and changes in capital regulations on this relationship was also examined.

This thesis was motivated by several issues. First, even though supervisory authorities and banks are aware of the importance of capital in the prevention of bank failures, empirical studies are inconclusive on the effectiveness of capital regulations in controlling bank risk taking behaviour. Second, the contradictory conclusions in current literature regarding the effectiveness of capital regulations in controlling bank risk taking attitudes do not incorporate economic shocks. Therefore, the existing studies do not examine the impact of economic uncertainty on capital and portfolio risk decisions, or the impact of such

uncertainty on the effectiveness of capital regulations in controlling bank risk taking behaviour.

The impact of the Asian financial crisis in 1997 and the Global Financial Crisis on Indonesian banks provided an opportunity to study bank risk taking attitudes in a dynamic economic and regulatory environment. Indonesia experienced severe banking and financial crisis as a result of the Asian financial crisis, and Indonesian banks had also been exposed to different capital regulations as part of recapitalisation and restructuring of the banking sector due to the Asian financial crisis.

Methodology

As previously mentioned, the first objective was to investigate the impact of adverse shocks in the economy on banks' decisions on asset portfolio and capital management. In this regard, this study first examined the impact of the economic crisis on the capital regulations and the market structure that affected trends and components of asset portfolios and liabilities including capital. This study next sought to identify and confirm whether the impact of the economic crisis was permanent or transitory. Further, breaks in the series of the components of assets and liabilities were also identified. These breaks might have been caused due to the economic crisis, or changes in capital, banking, or other major financial regulations. The model used in this study extended Jacques' (2003) model by not

only incorporating liabilities in the model, but also the interrelated decisions regarding assets and liabilities adjustments.

The second objective was to investigate the interrelationship between capital and asset portfolio decisions and the impact of economic uncertainty on this relationship. Further, the impact of the changes in capital regulations on this relationship both during and after the financial crises was also investigated. To achieve this objective, explanatory variables that affect capital and asset portfolio risk decisions were first explored individually. These factors were identified in related literature. Second, the interrelationship between decisions of capital and portfolio risk was studied, and further, the way in which this relationship changed due to the economic crisis and changes in capital regulations. Simultaneous equations with partial adjustment processes were used to estimate the relationship between capital and asset portfolio risk, the way in which this relationship changed due to the economic crisis as well as any changes in capital regulations. Finally, the contribution of the explanatory variables on changes in capital and asset portfolio risk was also estimated.

Empirical Results

The empirical results revealed several important findings:

1. The Asian financial crisis of 1997 had a permanent impact on these banks' asset portfolios and capital. The results also supported multiple breaks

and shifts in asset portfolio composition as a result of both the financial crisis and of changes in financial and banking regulations during the capital-constrained period.

2. Explanatory variables such as type of bank ownership, size, profitability, market power, economic uncertainty and regulatory and peer pressure significantly impacted on banks' capital and portfolio risk decisions.
 - The privately owned banks (private domestic, joint venture and foreign banks) changed their capital and restructured the credit risk of an asset portfolio differently compared to government owned banks (state owned and regional banks). The relationships between capital decisions and the credit risk of privately owned banks changed due to the Asian financial crisis. On the other hand, government owned banks did not show any change in their capital and risk taking attitude as a result of the Asian financial crisis in 1997. Government owned banks exhibited negative relationships between portfolio credit risk and changes in capital, confirming the moral hazard effect of the "too big or too important to fail" theory of insurance provided by government ownership of the banks that was occasioned explicitly or implicitly by government.
 - Significant differences were evident in risk taking behaviour of large banks, compared to medium and small sized banks. Small and large

banks also displayed significant changes in risk taking behaviour as a result of the financial crisis. After the financial crisis, large banks were found to display higher levels of risk aversion than smaller banks and the risk taking attitude revealed to be negatively correlated with profitability.

- Profitable banks increased their capital through retained earnings and generated returns by investing in lower risk assets.
 - Proportion of equity in financing investments were positively related to the banks' market power, while risk of investment portfolios were found to be negatively related to the market power. Banks with greater market power protected their valuable banking charter by financing with more equity and choose to invest in safer portfolios even though this implied foregoing profitable investment opportunities.
 - Banks were more risk averse during higher levels of economic uncertainty.
3. The empirical results on the interrelationship between capital and portfolio risk decisions lent support to the hypothesis that changes in capital and portfolio risk were interrelated and that this relationship changed after the Asian financial crisis.

The results suggested that prior to the Asian financial crisis banks tended to offset regulatory-induced capital increases with increasing the proportion of risky assets. After the crisis, banks' capital ratios were shown to be negatively related to the asset risk, and revealed a greater degree of risk aversion.

This study shows that the experience from the crisis combined with regulatory and peer pressure, effectively forced banks to maintain a higher capital ratio than required. This thesis concluded that capital regulations were only partially effective in coercing banks to hold adequate levels of capital. However, changes in the banks' attitude toward insolvency and portfolio risks after the crisis were not found to be due to the new capital regulations. Banks self regulated themselves by maintaining a higher capital ratio than required and by adjusting their risk taking activities. These actions were taken not only to send a signal of solvency, but they also reflected the banks' belief that holding capital at the regulatory required level will not necessarily protect them from insolvency. Therefore, banks had an incentive to hold more capital than required as an assurance to avoid severe market discipline they had experienced during the economic crisis.