

CHAPTER 5:

CONCLUSION AND RECOMMENDATIONS

5.0 Summary and Conclusion

After discussion of the results of the study, it is imperative to draw a conclusion of the overall research and discuss the implications of the study towards today's banking industry. This chapter therefore concludes the study of the relationship between Commercial Banks' Credit Risk (NPL) and macroeconomics as well as the stress level that the Commercial Banks may sustain in future. Furthermore, the discussion also covers the limitations of the study and the room of improvement and suggestion for future research purpose.

This research first examined the stress test approaches that interpret the macroeconomics shocks. Two approaches noted from the study which are bottom-up approach and top-down approach. Subsequently, the study analyzes the types of stress testing that have been used by researcher before. The analysis covered sensitivity analysis, scenario analysis, extreme value theory, maximum loan approach or worst case scenario and contagion analysis.

In order to enable the understanding of credit risk, risk factors have been scrutinized. From here, we understand that credit risk refer to default risk that the borrowers are not able to fulfil their payment obligation. And, from the BNM report, NPL is one of the good indicators of the banks' total portfolio.

On the other hand, relevancy of macroeconomics and households' credit default have been study and examined. The time series of the data are good indicators for the movement of credit default.

Besides, univariate and multivariate regression models have been analyzed. In this paper, I have modelled and estimated a macroeconomic credit risk model with multivariate regression model for the Commercial Banks in Malaysia. The purpose of using multifactor model to determine the banking industry default rate is because it is believed that the NPL rate is not determined by single factor. To be more realistic, there is always a combination factors to cause the repayment failed.

After all the theoretical studies, the research proceeds with the determination of the methodology that may carry out. The data covered from quarter 1, 1998 to quarter 4, 2009. The empirical results is trying to reach the objective of determining the best model from the macroeconomics variable that we easily obtain in the market against the NPL rate, verifying the correlation between the macroeconomics indicators and the NPL rate as well as testing the stress scenarios. Based on the empirical analysis, the findings are discussed as below. Consequently, the research questions will be answered based on the findings obtained.

5.0.1 Model building

The empirical results suggest a significant and fairly robust relationship between industry-specific default rates (NPL) and 3 out of 5 key macroeconomic factors (GDP, CPI, KLCI, UE and HPI) which including the GDP, KLCI and HPI. The model specified the rational correlation between the NPL and the key economic factors. The selected model supported the hypotheses, which all these three indicators i.e. GDP, KLCI and HPI are showing the negative relationship with NPL. In details, GDP and HPI will shows its impact in one quarter later whilst KLCI will shows the immediate

impact at the same quarter. However, the prediction will not be as close as actual result since R^2 in this model is at 55.87%.

5.0.2 Scenario Testing

The result aims to help assess how the risk profile of the financial system is changing over time, and can indicate possible sources for concern. 3 stress scenarios have been determined upfront basing on economy downturn period which basically at year 1998, 2001 and 2009. All the combination of the independent variables has been taken into accounts for testing. The differences of severe stress scenarios and moderate stress scenarios are 11 basis points while moderate stress scenarios and mild stress results came out to be 26 basis points different. The overall results of the testing are significant and intuitive with the hypothesis. Hence, the regression model is reliable.

5.1 Limitations of the study

There are some limitations on this study. At first, the sample was drawn from Commercial Banking industry. As the findings from this study enable us to determine the macroeconomics factors which to affect the stress level that Malaysian Commercial Banking industry may face, therefore the application of the findings is limited to this industry though this stress testing model could be apply to other industry. The nature of banking operation and management practice could be different from other industries.

Secondly, the limitation relates to the sample of the study. As the dependent variable (NPL) of the data shown from 1998 onwards due to the changes of the policy by Central Bank of Malaysia, the data did not show the full business cycle which early of

1997 Asian crisis data has been excluded from the analysis. Hence, the scenario testing may not be significant while come to the determination of the stress level i.e. severe stress scenario, moderate stress scenario and mild stress scenario.

5.2 Suggestion for future research

A conceptual framework of impact of macroeconomics and banks industry credit portfolio has been developed and illustrated in this study. However, it is noticed that similar research is still limited in Malaysia and therefore future researches are very much welcomed.

It is further suggested and will be interesting if future research could modify, verify or elaborate the current framework to gauge different interesting findings or to suit different type of industries. Furthermore, it could be an attractive research in future even it being applied in the same industries but different sectors. For instance, the parameter used may not be clearly identified the relationship since there are numerous of different banks i.e. foreign banks and management practices operating under the defined category. Hence, it is a key future research to differentiate the Banking industry with different sectors like local and foreign banks in Malaysia in order to have a complete view of the degree of vulnerability of banking system in system.

In addition, future study could be built on different dependent variables besides NPL. 90 days past due data, for instance, it will be a good indicator in order to alarm the industries where the customers loan is tipping to non-performing. Besides, future study might also consider additional independent factors or more specific variables

such as rate of money growth, Bank's base lending rate, inflation rate or exchange rate against the default rate of the banks.

5.3 Management Implications

The study provides some insights for managers in the banking industry. The variables for both independent variables and dependent variables offer a guide to manager on the way to monitor their lending book prudently with the fluctuation of the macroeconomics indicators which may easily obtain from publications.

Generally, senior management involvement is the foundation of successful risk management especially in stress and scenario testing in particular. Senior managers should encourage a culture where consideration of risk is second nature and personnel are able to identify key sources of risk. They should ensure consistency and control around the testing methodology, because scenarios must be comparable to be useful in decision making. Those firms that constantly seek to identify the sources of risk, complex interconnections among risks and the vulnerabilities, as well as those with the internal processes and culture to embed these factors into their models are more likely to have robust stress tests.

Hence, based on the results from the regression model, portfolio triggers, which as an early indicator of a potential deteriorating portfolio performance, may form in order to prompt the appropriate actions to be taken in a specific portfolio for Banks. Besides, the events which set have to be considered as severe but plausible.

With the portfolio triggers, the risk management team may plan to adjust their portfolio before the crisis hit by taking actions like redesign the lending system as a whole, shift their business models or tightening the lending criteria. Besides, some of the banks will revamp their corporation schemes in order to discourage excessive risk taking or even diminished the investment in high risk business.

In additions, based on stress testing results, there should be a discussion of whether the board and management believe changes should be made to current lending activities (such as loan pricing, risk tolerance levels, loan underwriting practices and standards, borrower hold positions, etc.) and financial management practices (such as capitalization strategies and objectives, patronage, growth objectives, earnings, operating structure and efficiencies, etc.). Besides, the stress test result may help in contingency plans especially at the Collection Unit where more human interference might be increased for efficiency and maximize the recovery efforts during the crisis.

In fact, the Central Bank of Malaysia has conducted an industry-wide assessment of the adequacy, robustness and effectiveness of the banking sector's risk management infrastructure, standards and practices with respect to its exposure. The assessment covered governance, market conduct, product development, loan origination and underwriting processes, collateral valuation and management, portfolio management, loan maintenance and recovery and information management and reporting systems.

5.4 Summary

This study explores the financial strength to see how (or if) it can stay afloat in difficult times in the banking industry in Malaysia. Through the literature in this area, the conceptual framework is developed and tested through empirical analysis. The findings from this study reveal significant impact of macroeconomics towards the level of stress scenarios. It is proven that the selected macroeconomics has negative correlation with the banks' non-performing loan.

From the management's point of view, this study identifies the method in order to monitor their lending book prudently. In addition, it provides the possible variables which may enable them to put up a portfolio triggers as a control for the portfolio. Nevertheless, future research is needed to test the stability of the above instruments and it may from other angles. In this way, an objective measurement of vulnerability for Commercial Banks' credit book will finally be produced, a fact that will be of assistance not only to academicians but also to professionals.