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Measuring provisions for collateralised retail lending

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Abstract

This paper develops a simple model based on an options approach to measure provisions covering expected losses of collateralised retail lending due to default. The measurement of provisions against expected losses of retail lending secured by collateral is important for improving the capital adequacy framework for banks. The numerical results based on the model show that the loan-to-value ratio, correlation between the collateral value and the probability of default of borrowers in the pool, volatility of the collateral value, mean-reverting process of the probability of default and time horizon are the important factors for measuring provisions.

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1. Introduction

While banks have faced difficulties over the years for a multitude of reasons, the major cause of serious banking problems continues to be directly related to lax credit standards for borrowers, poor portfolio risk management, or a lack of attention to changes in economic or other circumstances that can lead to a deterioration in the credit standing of a bank's counterparties. In view of this experience, the Basel Committee on Banking Supervision (2000) sets out the sound practices which specifically address establishing an appropriate credit risk environment and maintaining an

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appropriate credit administration, measurement and monitoring process. These practices should also be applied in conjunction with a system in place for determining the adequacy of provisions.

In some countries, bank supervisors require banks' provisioning systems to be forward looking such that future changes in economic conditions that could have unfavourable effects on the banks' credit exposures should be taken into account.[1] The level of provisions will be based on the banks' forecasts of collateral value and other macroeconomic conditions, regardless of the current losses, defaults and restructurings in their loans. On the other hand, in other countries, banks are required to determine provisions with reference to the losses, defaults and restructurings that have already occurred in their loans, according to detailed regulations on loan classification with minimum provisioning requirements.[2] The rationale behind issuing detailed regulatory parameters could be to level the playing field or make bank regulations more easily enforceable. Under this approach, collateral is taken into account when classifying a loan, for example, to a more favourable category than that reflecting its own risk and determining the level of provisions accordingly.

While a central feature of provisioning systems is typically to refer to losses that have already been incurred or are anticipated with a high degree of confidence, provisioning requirements may differ significantly for several reasons. One is whether provisioning requirements aim at addressing only losses that follow from visible and identifiable events, or at establishing provisions for expected losses. Another issue is how banks are expected to factor in the value of collateral. In many countries, the value of collateral is then subtracted from the required provisions to determine the level of the actual provisions to be established.

Specific provisioning requirements are often designed for certain portfolio segments, such as retail loans including residential mortgage loans and credit card lending. Several countries (for example, Australia, France, Korea, The Netherlands, Saudi Arabia and Singapore) do not require retail loans to be classified and provisioned on an individual basis but allow them to be assessed on a pooled basis. In Australia, for example, management is allowed to deal with small consumer loans on a portfolio basis.

The Basel Committee is responsible for proposing regulatory requirements, including capital and provisioning requirements, for internationally active banks. Typically, bank supervisors around the world adopt the guidelines put forth by the Basel Committee. The Basel Committee first proposed the Basel New Capital Framework, also known as Basel II, in June 1999, with revisions in January 2001 and June 2004 (Basel, 2004). By year-end 2006, Basel II is expected to replace the current Basel Accord. Both the current and new capital adequacy frameworks are based on the concept of a capital ratio where the numerator represents the amount of capital of the bank available and the denominator is a measure of the risks faced by the bank and is referred to as risk-weighted assets. The resulting capital ratio must be no less than 8%.

According to the proposals in Basel II, banks will be allowed to calculate regulatory capital charges for their credit exposures, including those in their retail portfolios, using the standardised approach or the internal ratings-based (IRB) approach. The standardised approach allows less sophisticated banks to use external credit ratings to classify their corporate, bank and sovereign assets into risk classes and to apply different defined risk weights to other assets including retail exposures. Over time, banks are expected to evolve to the IRB approach, which rely on the bank's own experience in determining the risk components of various asset classes.

[1] The European Union provides principle-based rules, with only general guidance on how to determine adequate provisioning.

[2] Most emerging markets adopt this approach (see World Bank, 2002).