

**Melbourne Centre for Financial Studies
Academic Research Grant**

The Interest Rate Setting Behaviour of Australian Banks

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1. Background and aims of project

This project examines the transmission mechanism whereby a change in the official cash rate generates changes in borrowing and lending rates. This is pertinent given current bank behaviour in response to tighter credit conditions. To perform the analysis, a new procedure will be implemented to evaluate time-varying bank interest rate adjustments to movements in the cash rate. The project aims to take advantage of the body of data available at the current date for assessing the behaviour of Australian banks to credit constraints and examining such behaviour in a historical context.

In response to the recent turmoil in global credit markets, Australian banks have amended their interest rates independently of the official target rate. As a result, the behaviour of Australian banks has been subject to intense political and media scrutiny. Furthermore, it is possible that the independent interest rate behaviour of Australian banks has obviated the need for additional hikes in the official target rate; thereby indirectly affecting official monetary policy.

These events highlight the relevance of examining the transmission mechanisms whereby a change in the official cash rate generates changes in the spectrum of interest rates from the money to the capital markets, including investment rates such as mortgage and business loan rates. For effective monetary policy, it is necessary that policy changes be transmitted quickly to other rates, and that the new levels and spreads be of magnitudes that effect changes in real expenditure. Consequently, knowledge about the size (i.e., how much of the policy change in the official cash rate is passed on), as well as the speed, of transmission (i.e., how quickly the policy change is passed on) is important for implementing informed monetary policy. Two particular concerns are: 1) what are the fundamental relationships between bank rates and money-market rates and, 2) what are the speeds of adjustments between these rates.

Another compelling motivation for this project is that information about the impact of exogenous risk-averseness in credit markets on bank interest rate adjustments for a small open economy is noticeably absent from existing theory. To a large degree, this lack of attention stems from little previous experience of interest rate behaviour during a period of significant and persistent exogenous risk averseness in credit markets. As a consequence, little attention has been paid regarding the stability of bank interest rate adjustments to monetary policy in the presence of significant and persistent credit constraints.

The aims of this project are, therefore, twofold: 1) to implement a procedure for evaluating time-varying bank interest rate adjustments, and 2) to take advantage of the body of data available at the current date for assessing the behaviour of Australian banks to credit constraints and examining such behaviour in a historical context.

2. Significance and innovation

The significant and novel features of the research proposal are fourfold. First, this study treats the determination of deposit and loan rates simultaneously in an integrated system that covers both sides of the banks' portfolio decision. Previous studies of bank interest rate behaviour, notably Scholnick (1996) and Heffernan (1997) have examined the deposit side separately from the loan side. However, this is not desirable as, *a priori*, the borrowing and lending decisions of banks are interdependent. Consequently, failure to consider adjustment on the liability side (the deposit rate decision), when examining the asset side (the loan rate decision), and vice versa, will lead to a misunderstanding of the adjustment process.

Second, the study asked specifically whether the speeds and sizes of the adjustments are asymmetric in response to a tightening and loosening of policy and, if so, are these asymmetric effects temporary or permanent? The possibility of asymmetric bank interest rate adjustments has been explored by Hannan and Berger (1991) and Neumark and Sharpe (1992). They suggest that a bank's incentive to change rates up or down depends on its costs of adjustment and they offer two reasons for asymmetric adjustments: customer relationships and collusive arrangements. First, banks generally recognise that their customers react unfavourably to unstable (especially adverse) rates; hence one may expect greater rigidity in deposit rate decreases (and, conversely, as noted by Scholnick (1996) greater rigidity in loan rate increases). Second, banks in concentrated markets, recognise that it is costly to break collusive arrangements and, consequently, one may expect greater rigidity in deposit rate increases and loan rate decreases. In aggregate, such asymmetric bank behaviour translates into transmission processes that are asymmetric in both speed and magnitude.

Third, this study implements an estimation method allowing for both time-varying bank behaviour in response to monetary policy adjustments, and time-varying relationships between lending and borrowing rates and monetary policy. In this respect, this paper expands on Lim (2001) by relaxing the restriction that bank adjustments to borrowing and lending rate disequilibria are determined by reference to a single deterministic indicator variable. The relaxation of this restriction and the capacity for stochastic time-variation are important; indeed preliminary modelling indicates significant time-variation in bank interest rate adjustments to monetary policy.

Fourth, the earlier study by Lim (2001) covers the period 1990:01 to 2000:04 and showed that banks adjust their loan and deposit rates faster during periods of monetary easings than during periods of monetary tightenings. This study will be conducted over a sample period which includes a long growth cycle, the maturing of the inflation targeting form of monetary policy, as well as the propagation of a global credit crisis. The proposed methodology endogenizes these changes and hence the time-varying results would shed light on the evolutionary process of change.

3. Description of approach

A two-step Kalman filter approach will be used to obtain time-varying parameters for deducing the extent of disequilibrium in Australian interest rates and estimating the level of time-varying sensitivity of Australian interest rates to the level of disequilibrium. The system of equations is given by:

$$\begin{aligned}\Delta r_{1,t} &= a_{1,1,t} \%_{1,t-1} + a_{1,2,t} \%_{2,t-1} + q_{1,t} \Delta r_{1,t-1} + e_{1,t} \\ \Delta r_{2,t} &= a_{2,1,t} \%_{1,t-1} + a_{2,2,t} \%_{2,t-1} + q_{2,t} \Delta r_{2,t-1} + e_{2,t} \\ \Delta r_{3,t} &= a_{3,1,t} \%_{1,t-1} + a_{3,2,t} \%_{2,t-1} + q_{3,t} \Delta r_{3,t-1} + e_{3,t} \\ \%_{1,t-1} &= r_{1,t-1} - f \left(r_{1,t-1} \mid g_t, b_t, r_{3,t-1}, x_{t-1} \right) \\ \%_{2,t-1} &= r_{2,t-1} - f \left(r_{2,t-1} \mid g_t, b_t, r_{3,t-1}, x_{t-1} \right)\end{aligned}$$

where

$r_{1,t}$, $r_{2,t}$, are the borrowing and lending rates respectively and
 $r_{3,t}$ represents the target cash rate.

The variables $\%_{1,t-1}$, $\%_{2,t-1}$ captures time-varying disequilibrium in the borrowing and lending rates respectively.

The theory behind the econometric model is in Freixas and Rochet (1997).

Pursuant to the two-step Kalman filter approach, banks may inter-temporally adjust their response to interest rate disequilibria. The disequilibria themselves may also exhibit time-varying sensitivity to the target rate and other relevant sources of information. Accordingly, the parameters a_t , provide information that may be used to compare the response of Australian banks to monetary policy during the current credit crisis with past responses. In turn, b_t, g_t provide for a comparison of the sensitivity of borrowing and lending rates to monetary policy.