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Asymmetric behavior of Australia's Big-4 banks in the mortgage market ☆

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ABSTRACT

This paper presents an alternative framework for modeling the behavior of banks in setting lending and/or saving rates. In a short-run dynamic model, we correct for deviations from the long-run path using three feedback coefficients capturing different disequilibria. This enables us to test for both amount and adjustment asymmetries by considering the size and direction of any deviations. We use this model to examine the relationship between the official cash rate (set by the Reserve Bank of Australia as a monetary policy tool) and the standard variable mortgage rates of Australian Big-4 banks using weekly data from 2001 to 2012. The evidence indicates both types of asymmetries along with synchronized rate-setting behavior. Overall, the banks immediately pass on 120% of any rate rise, but only 85% of any rate cut. Further, when mortgage rates are substantially above the equilibrium path, we find no significant attempt to lower rates, but faster adjustment when rates are below equilibrium values. This finding has important implications for the RBA's monetary policy transmission mechanism and the effectiveness of the expansionary versus contractionary policy.

1. Introduction

In the US, 15 and 30-year-fixed-rate mortgages dominate the residential home loan market, accounting for more than 93% of mortgages originated since 2009 and 82% of the total stock of outstanding loans (Fuster and Vickery, 2013). Outside the US, however, including in the UK and the rest of the European Union, Canada, and Australia, variable (or adjustable) rate mortgages universally prevail, with fixed rate instruments seldom available for terms of more than 3–5 years. The Australian residential mortgage market is one of the country's most important retail financial markets, not least from the perspective of households and lenders, but also from that of Australia's central bank, the Reserve Bank of Australia (RBA).

From the household point of view, as of March 2012, some 67% of Australian households possessed residential property (either owned outright or mortgaged), with 36% of households bearing a home loan, with a median value of $200 thousand for debt-holding households and gearing (the ratio of home loan debt to assets) of 44% (Reserve Bank of Australia, 2012a). Consequently, Australian households are now among the most indebted in the world by some accounts, with globally and historically high levels of debt gearing and service (interest payments on debt to income) and increasingly unaffordable housing markets (Worthington, 2012). From the lender perspective, more than one hundred lenders offering literally thousands of products have ever-increasingly competed for a share of the $1.2 trillion mortgage market with net interest margins (the difference between lending rates and funding costs) becoming progressively narrower and financially savvy households increasing attuned to the different attributes of the many competing products offered. Such market competition has been constantly on the rise since the 1990s following the deregulation of the financial system and globalization of financial markets (Esho et al., 2005). Finally, as residential mortgages are an important part of the monetary policy transmission mechanism in Australia, moves by the RBA in setting short-term interest rates continue to exert a powerful impact on household disposable income.

Smales (2012) examined the Australian interest rate futures market reaction to changes in the cash rate and found compelling evidence of asymmetric volatility responses to bad rather than good news. In general, changes in the cash rate can affect the spectrum of interest rates from the money to the capital markets, particularly with a stronger reaction evident in short term interest rates. There is, of course, a link here in that while many factors affect mortgage rates—including the cost of funding, credit and liquidity risk, and marketing strategies—efforts made by the RBA in the pursuit of monetary policy are a primary determinant of the level of funding costs and hence the level of lending rates (Deans and Stewart, 2012). Since 1990, the RBA has targeted the desired interest rate on overnight loans in the money market. This policy instrument, referred to as the cash rate, is the equivalent of the federal funds

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rate in the US. While other influences on funding costs, including market risk premia and competitive pressures, are unaffected by the cash rate, analyzing the asymmetric behavior of banks in response to changes in the cash rate is still considered one of the more topical issues with tangible implications for borrowers. In particular, the extent of the asymmetric pass-through of funding cost into mortgage interest rates is important because it influences competition in the banking sector with significant consequences for social welfare (Kobayashi, 2008). For example, relative mortgage rates affect decisions by consumers on switching loans from one lender to another, while the speed and accuracy with which rate cuts and increases are passed on to borrowers, especially among highly indebted households, impacts significantly upon their financial wellbeing.

In response, a growing number of studies have investigated differences in the pass-through of monetary policy interest rate changes into mortgage rates in a range of market contexts. We can generally classify these previous studies into two main groups. The first of these identify asymmetry in short-run changes in mortgage rates that favor lenders. See, for instance, Hannan and Berger (1991), Lowe and Rohling (1992), Lowe (1995), Mojon (2000), Hofmann and Mizen (2004), Payne (2007a, 2007b), Toolsema and Jacobs (2007), Payne and Waters (2008), Kim and Nguyen (2008), de Haan and Sterken (2011), Valadkhani and Anwar (2012), and Valadkhani and Bollen (2013). For example, Hofmann and Mizen (2004) examined the interplay between 90-day deposit and mortgage rates for seven banks and found evidence of downward rigidity in the UK, US, and Dutch mortgage markets. Likewise, Payne and Waters (2008) analyzed the long-term interest rate pass-through of the federal funds rate to the prime rate over the period February 1987–October 2005, and also concluded that the response of the prime rate to changes in the federal funds rate was asymmetric.

The second group of these studies argues that this asymmetric behavior largely favors borrowers. See, among others, Frost and Bowden (1999) and Liu et al. (2008) for the analysis of mortgage interest rates in New Zealand, Chong et al. (2006) in Singapore, and Lim (2001) in Australia. For example, Liu et al. (2008) found that in contrast to the evidence concerning short-run pass-through, the long-run pass-through for most retail rates in New Zealand was complete. Similarly, using aggregate data over the period 1990–2000, Lim (2001) modeled the asymmetric adjustments between three Australian bank interest rates, employing a multivariate asymmetric error-correction model to examine the long- and short-run interplays between the levels of rates and the short-run relationships between rate changes. Lim's (2001, p. 146) findings suggest "…banks value their borrowing customers and tend to pass on decreases in the loan rates faster than they pass on increases".

Elsewhere with Australian data, Lowe and Rohling (1992) examined the asymmetric effects of changes in the funding cost on the mortgage rate. However, their study only tested for the amount asymmetry but not the adjustment asymmetry and the sample is now clearly outdated. Lowe and Rohling (1992) provided two explanations for the stickiness of various types of Australian loan rates, including the mortgage rate: switching costs (such as loan establishment fees, stamp duty, and early repayment fees), and risk sharing. Lowe and Rohling (1992, p. 11) also stated that "…if borrowers are more risk averse than the shareholders of the bank, there exists an implicit risk insurance argument for the stickiness of interest rates". They further assert that changes in the cash rate can have little influence on mortgage rates when competition is weak and customers' decisions are interest rate inelastic.

More recently, Lim et al. (2013) developed an innovative framework to examine the time-varying interactions between bank and official interest rates for banking systems in the US and Australia. Their small-scale model determines three interest rates (i.e. deposit, loan, and money market rates) simultaneously for both countries over a period characterized by a number of structural changes in market and credit conditions and different monetary policy stances. In that analysis, the pass-through parameters and the intermediation markups change in response to the emergence of the global financial crisis. In other words, their proposed approach generated time-varying bank interest rate adjustments. The key findings were that unlike the US, pass-through was relatively higher on Australian loan rates. Further, prior to the most-recent financial crisis, the RBA set the cash rate quite independently of banking behavior, but in the post-GFC era the relationship between bank and official interest rates became somewhat interactive.

In this paper, using weekly mortgage rate data from 22 January 2001 to 5 March 2012, we examine the short- and long-run relationships between the official cash rate set by the RBA and the standard variable mortgage rates of Australia's Big-4 banks. These banks—comprising the ANZ Bank (ANZ), Commonwealth Bank of Australia (CBA), National Australia Bank (NAB), and Westpac Banking Corporation (WBC)—collectively account for nearly 85% of the residential mortgage market.

Compared with the extant literature, the main contributions of this paper are as follows. First, we propose an alternative approach in modeling any asymmetry in adjustment, whereby we take into account both the magnitude and the sign of the disequilibria. Second, a dynamic least squares method is employed to accommodate the possibility of endogeneity between monetary policy decisions by the Australian central bank and the responses by the Big-4 banks. Finally, we move beyond the prevailing use of aggregate data to the lender level. This allows us to gain greater insight into the extent and speed with which major banks repress potential rate cuts and pass on rate increases, and therefore resulting in an in-depth understanding of competition in this important retail financial market.

The remainder of the paper is organized as follows. Section 2 concisely presents the theoretical framework used for testing both the amount and adjustment asymmetries. Section 3 discusses the sources and description of the data employed. After examining the time series properties of the data, Section 4 presents the estimated long- and short-run dynamic models for each of the Big-4 banks followed by the test results for the amount and adjustment asymmetries as well as causality. Section 5 highlights the policy implications of the study and discusses briefly some directions for future research. Finally, Section 6 concludes the paper.

2. Theoretical framework

Following Rousseas (1985), Scholnick (1996), Toolsema and Jacobs (2007) and de Haan and Sterken (2011), we assume that in the long run the Big-4 banks set their standard variable mortgage rates as a markup on the cash rate. However, there is the possibility of endogeneity between the cash rate and individual bank mortgage rates. In evidence, Lim et al. (2013, p. 1) argue that any empirical analysis of adjustments in bank interest rates should allow for feedbacks from bank rates to policy interest rates given the emergence of several episodes of credit crises. Due to the possibility of endogeneity between the two interest rate series, we use the dynamic least squares (DLS) method (Stock and Watson, 1993) to estimate the long-run relationship between the RBA's cash rate and the standard variable mortgage rates. In order to eliminate the serial correlation and asymptotic endogeneity between R_{it} and C_t in Eq. (1), in this method up to k lags and leads of changes in the cash rate, i.e. $\sum_{j=-k}^{i=+k} b_{ij}\Delta C_{t-j}$ are included in Eq. (1). That is:

$$R_{it} = \theta_{0i} + \theta_{1i}T_t + \theta_{2i}C_t + \sum_{j=-k}^{i=+k} b_{ij}\Delta C_{t-j} + \varepsilon_{it} \quad (1)$$

where R_{it} is the standard variable mortgage rate of the ith bank at period t where $i = 1$ for ANZ, 2 for CBA, 3 for NAB, and 4 for WBC, C_t is the cash rate at time t, θ_{1i} is the estimated coefficient for a trend variable (T_t), θ_{0i} and θ_{2i} are, respectively, the average long-run markup and pass-through coefficients for the ith bank, and ε_{it} is the residual term.

All other things being equal, as banks are all assumed to be profit maximizers, when the RBA increases the cash rate as part of its