

Discussion

1. Aarti Singh

I would like to thank the organisers for giving me this opportunity to discuss this paper by Anthony Brassil, Jon Cheshire and Joseph Muscatello on the transmission of monetary policy. In my discussion I will first briefly describe some of their results that I find really interesting. And then I will attempt to relate their findings about monetary policy transmission with the modelling assumptions of dynamic stochastic general equilibrium (DSGE) models with financial intermediation. Finally, given that they have this very detailed dataset about banks' balance sheets from the Australian Prudential Regulation Authority, my suggestion to the authors would be to extend the analysis in the paper to comment on the competitiveness of the banking sector in Australia.

Let me begin by first saying that the authors are working on a very interesting topic. Both academics and policymakers are always interested in understanding which factors affect the transmission of monetary policy. Monetary policy in Australia affects not only the cash rate (or the policy rate) but numerous other interest rates in the economy, and these interest rates in turn affect the aggregate economy. While some researchers directly examine the effect of monetary policy shocks on the aggregate economy, using either aggregate- or disaggregate-level data; the authors of this paper *carefully* examine, albeit indirectly, how changes in the cash rate affect two key interest rates set within the banking sector: banks' lending rates and deposit rates. The approach adopted by the authors is innovative and flexible. They first construct a detailed model of the banks' balance sheets, then they estimate the monetary policy pass-through on non-discretionary components of the banks' balance sheets and on equity, which is discretionary. Using the balance sheet identity they indirectly determine the pass-through to discretionary components of the banks' balance sheets, such as the lending and the deposit rates. On average, they find that, between 2003 and 2012, the aggregate pass-through to lending and deposit rates was broadly one-for-one, however, since mid 2012, it has been incomplete, only about 90 per cent.

To understand their methodology, consider the following equation where the expected net return from borrowing and lending is the return from equity. The balance sheet identity is therefore given by

$$\sum_i A_i \equiv \sum_j L_j + E \quad (1)$$

Using this identity, the authors derive a relationship between the bank's return on equity, r_E , and its lending rate r_L and deposit rate r_A

$$(1+r_E)E = \sum_i (1-p_i)(1+r_{A,i})A_i - \sum_j (1+r_{L,j})L_j + (f-c)\sum_i A_i \quad (2)$$

The authors then rewrite this equation by expressing each interest rate as a spread to the cash rate.

The first finding, which I find really interesting, is that, for a majority of the banks in Australia, interest rates on assets and liabilities are repriced within three months. What this means is that if the cash rate changes, the banks are able to change their interest rates such that the spreads are not affected and the banks can hedge the interest rate risk. This leads me to my first comment. Looking back, some of the earlier papers on financial intermediation, for example Bernanke, Gertler and Gilchrist (1999), focused on the demand side of credit. In these models when there was a negative shock to the net worth of a borrower, their ability to borrow was inhibited and capital fell subsequently, generating the well-known financial accelerator effect. In these models the financial intermediation sector was perfectly competitive. More recently, Gerali *et al* (2010) have incorporated the supply side of credit (competition and interest rate-setting strategies), and in these models the banking sector has imperfect competition. The banks in these models face a repricing friction where banks have short-term deposits but lend long term. Therefore, this maturity mismatch of the banking sector dampens the impact of the monetary policy shock. However, the results of this paper by Brassil, Cheshire and Muscatello suggest that, in Australia's case, banks are able to hedge interest rate risk. This is unlike other banking systems where repricing mismatch plays an important role in the transmission of monetary policy, which is also discussed by the authors in their paper. Does that mean that monetary policy shocks are not attenuated by the Australian banking sector? I would suggest that the authors discuss their findings and what their results imply for the DSGE models of the Australian economy with an imperfectly competitive banking sector.

I now briefly mention some of the other findings in the paper on the non-discretionary items on the balance sheet. In the case of provisions, the rate of provisions is typically increasing in the cash rate. This is because, for example, when interest rates fall, the chances of people defaulting on their loans also falls. The authors find evidence of incomplete pass-through and their estimates suggest that a 100 basis point cut in the cash rate is expected to reduce annual provisioning rates by 7 basis points. In wholesale debt markets, the banks are price takers and the cost of borrowing from these markets sees a full pass-through of cash rate changes. For the no-/low-interest rate deposits, by construction, spreads on these deposits have a one-for-one negative relationship with the cash rate. Overall, the authors find that, based on Equation (2), written in terms of spreads with respect to the cash rate, changes in the cash rate pass on to the non-discretionary components of the banks' balance sheets almost one-for-one.

Looking at the discretionary components, the authors find that the return to equity, the left-hand side of Equation (2), has not moved with the cash rate since 2007. So this would then suggest that there is incomplete pass-through to discretionary components of the balance sheet. Finally, the authors conclude that, if the lack of return on equity pass-through were spread evenly across both discretionary lending and deposit rates, the deviation from full pass-through would be around 11 basis points for every 100 basis point change in the

cash rate since 2007. And if, instead, the pass-through was offset by lending rates alone, then lending rates would be 16 basis points higher than full pass-through.

The analysis is extremely rigorous and I would encourage the authors to construct a simple example to illustrate the implications on savings. For example, what are the implications if the pass-through is 11 basis points versus 16 basis points to one of the lending rates faced by Australian households, such as the loan rate on mortgages.

More broadly, what do the results of this paper suggest about the competitiveness of the banking sector in Australia? Based on the estimates of pass-through, are banks in Australia very competitive? If not, and the banking sector is imperfectly competitive, banks in Australia are likely to charge interest rates on their loans (deposits) at a mark-up (mark-down) over their marginal cost. In a study of banks in the United Kingdom, Alessandri and Nelson (2015) calibrate the mark-down of deposit rates below the interbank rate as 0.6 and the mark-up on their lending rates as 1.47, such that the deposit and loan rates implied by the model are 1.8 per cent and 6.25 per cent. My suggestion to the authors would be to determine the mark-ups and mark-downs in the key deposit and loan markets and discuss whether their conclusion of incomplete monetary policy transmission is consistent with these simple calculations. In the end I want to briefly mention the findings on a paper by Claessens and Laeven (2004) on competition in the banking sector using a panel of 50 countries for the period 1994–2001. Their evidence (in Table 2 of their paper) suggests that the level of competition in the banking sector in Australia is comparable to other developed countries such as the United States and the United Kingdom. Understanding the dynamics of banking competition would be another interesting way to understand the transmission of monetary policy in Australia in future research.

Finally, I enjoyed reading the paper and it was very competently executed.

Thank you.

References

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2. General Discussion

Discussion initially focused on the structure of the residential mortgage market in Australia. Participants highlighted that variable-rate loans accounted for a significant share of Australia's residential mortgage market. This means that the cash flow channel of monetary policy is more potent in Australia than in other countries where fixed-rate mortgages are more prevalent. There was some discussion as to whether this feature of the Australian market was desirable. One participant noted that the widespread use of variable-rate lending in Australia had led to greater public focus on monetary policy decisions, and had allowed Australian banks to move mortgage rates in line with their funding costs during the global financial crisis. On the other hand, this meant that cash rate changes could induce larger balance sheet responses than in other markets through changes in the volume of lending.

The high share of variable-rate mortgages in Australia means that households are more exposed to interest rate risk than banks. Participants discussed whether this was optimal. Some participants thought it was preferable for some interest rate risk to remain with households. One reason given was that banks may have incentives to take 'directional bets' on interest rate movements if they bore a greater share of this risk. Other participants considered that it would be reasonable for Australian banks to take on a greater share of interest rate risk, given they had the ability to diversify over their entire portfolio (which is not an option available to households). Others observed that the Australian market had developed its own hedging products (e.g. fixed-rate mortgages and offset accounts) and institutional features (e.g. a focus on lending standards and financial literacy) in response to the dominant pricing conventions. However, these products are not available to all households.

Focusing on the analysis, one participant asked whether interest rate pass-through differed in magnitude, timing or symmetry with respect to the direction of cash rate movements. Anthony Brassil noted that pass-through to variable-rate mortgages tended to occur within a few weeks of cash rate movements because around 80 per cent of mortgages have variable rates. He acknowledged that it was difficult to assess asymmetries because the cash rate had mainly moved in one direction over the sample used in the paper. The authors noted that the analysis intentionally abstracted from volume effects and, instead, examined pass-through to banks' existing assets. Future analysis could examine changes in credit provision over time to gain broader insights into the bank lending channel.