



RESERVE BANK OF AUSTRALIA

The Consequences of Low Interest Rates for the Australian Banking Sector

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Motivation

- Vast literature exploring the consequences of low rates for banks.
- Focuses on major banking systems; Australian banks operate differently.

Key research questions:

- What can the literature tell us about the consequences of low rates for Australian banks?
- How do the consequences for Australian banks differ from what the literature predicts? And why?

Summary

- Relative to the predictions of the international literature:
 - Australian banks' profits have likely been less adversely affected.
 - Pass-through of monetary policy to lending rates may have been more muted.
- Could pass-through turn negative as predicted by the literature (the 'reversal rate')?
 - Not the way the literature predicts. Due to Australian banks' balance sheet structure (net issuers of debt securities).
 - Theoretically possible that a reversal rate could arise through Australian banks' use of wholesale market funding. But it is highly unlikely.
 - Identification of this channel is a novel contribution to the theoretical literature.

Structure

- Many ways low rates could affect banks
- Discuss literature through the lens of Australian banks' balance sheets

Table 1: Stylised Balance Sheet

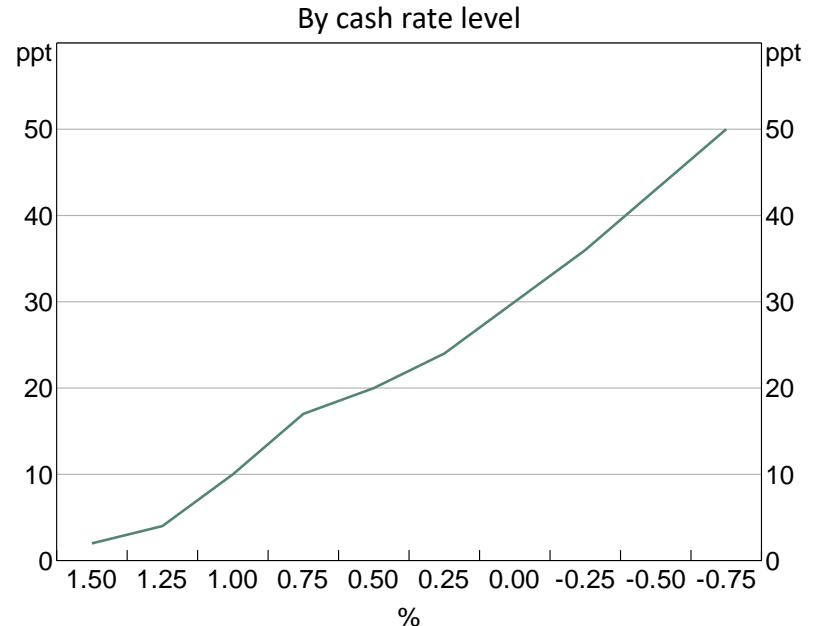
	Assets	Funding
Non-discretionary	Central bank deposits	Low-interest retail deposits
	Securities	Wholesale debt ^(b)
	Losses ^(a)	Wholesale deposits ^(c)
Discretionary	Loans	High-interest retail deposits
		Equity

- Notes:
- (a) Losses subtract from the value of assets. I define 'losses' as including any provisions for expected losses.
 - (b) Examples include bonds, certificates of deposit, bank bills, asset-backed securities, and hybrid securities.
 - (c) Deposits of corporations, pension funds, and governments

Low-interest retail deposits

- Retail deposit rates have a lower bound around zero (ZLB).
- As the cash rate falls, more deposit accounts get stuck at the ZLB.
- This lowers the pass-through of further cash rate reductions.
- Jurisdictions with negative policy rates exhibit behaviour consistent with ZLB:*
 - Denmark – only rates on large accounts went negative.
 - Euro area – only 5% of retail deposits faced negative rates.

Estimated Cumulative Increase in Share of Australian Deposits at the Lower Bound

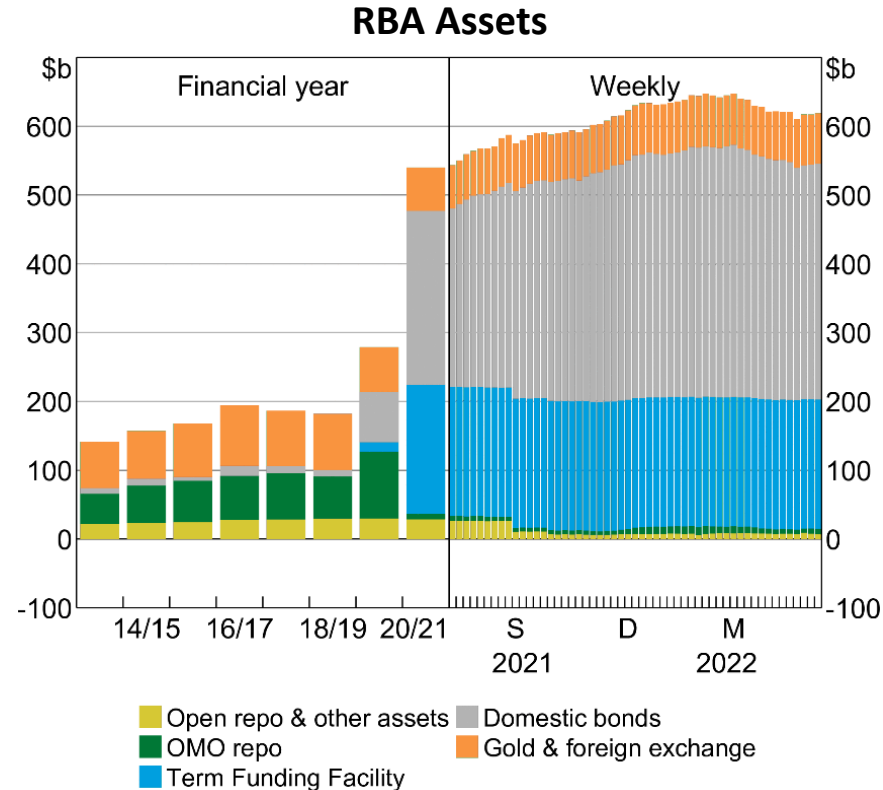


Source: Brassil, Major and Rickards (2022)

* Altavilla, Burlon, Giannetti and Holton (2021); Krogstrup, Kuchler and Spange (2020)

Central bank deposits (reserves)

- Unconventional policies increase reserves.
- Reserves are remunerated at a rate that moves with the cash rate target.
 - Pre-Covid – reserves funded by short-term repos/FX swaps from RBA.
 - Now – mainly funded by deposits (due to bond purchases) and the TFF.
- Lower pass-through to retail deposits reduces net income from reserves.
- Jurisdictions with negative rates offset reduced income through tiering.*



Source: RBA

* Fuhrer, Jüttner, Wrampelmeyer and Zwicker (2021); Hack and Nicholls (2021)

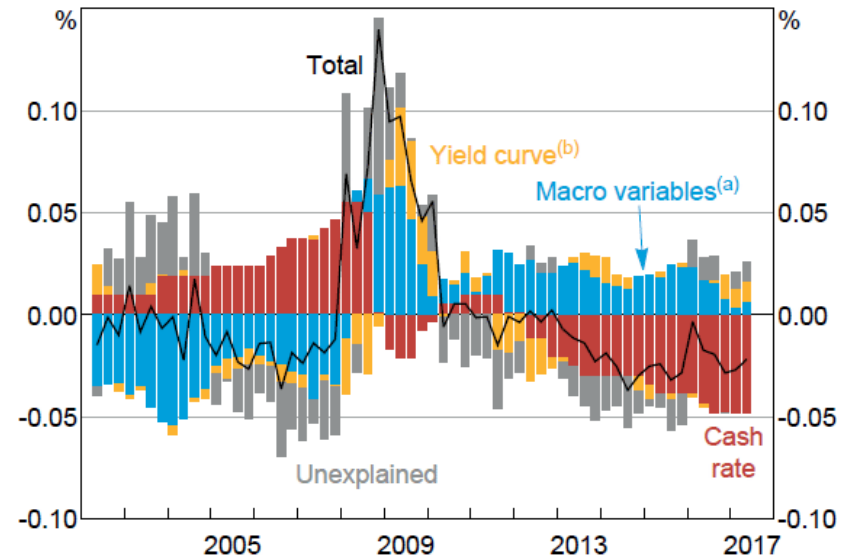
Loan losses – economic downturns

- Downturns may be more frequent in a low-rate world due to increased risk taking.
- Cash rate reductions reduce losses:
 - Higher business profits and housing prices, lower unemployment.
 - Lower interest burden (variable-rate loans in Australia).
- Quantitatively significant (100bps↓ policy):
 - 7bps or 3-17% losses moderation in Aus*
 - 3-13bps internationally**

* Brassil, Cheshire and Muscatello (2018) (source of figure); Brassil, Major and Rickards (2022)

** Bikker and Vervliet (2017); Altavilla, Boucinha and Peydró (2018); Brei, Borio and Gambacorta (2019)

Figure 3: Decomposition of Quarterly Provisioning Rates
Major banks, ratio to assets, demeaned



Notes: (a) First two principal components of macro variables (GDP growth, inflation, unemployment, RBA forecasts, credit growth, house price growth, business profits, household disposable income, terms of trade, ASX VIX)

(b) 3-year Australian Government securities minus 3-month OIS

Sources: ABS; APRA; Authors' calculations; RBA; Thomson Reuters

Effect of low rates – non-discretionary summary

	Theory	Supporting evidence
Low-interest retail deposits	Reduced pass-through of policy rate	Aus and international
Central bank deposits	Unconventional policies reduce net income (esp. in Aus)	Tiering in negative rate jurisdictions
Losses – downturns	More frequent; makes policy more effective	Aus and international
Wholesale debt and deposits	Full pass-through; additional benefit from unconventional policies	Aus and international
Securities	One-off capital gain; higher duration	International
Losses – steady state	Higher losses offset by higher lending spreads	Hard to identify; no Aus evidence

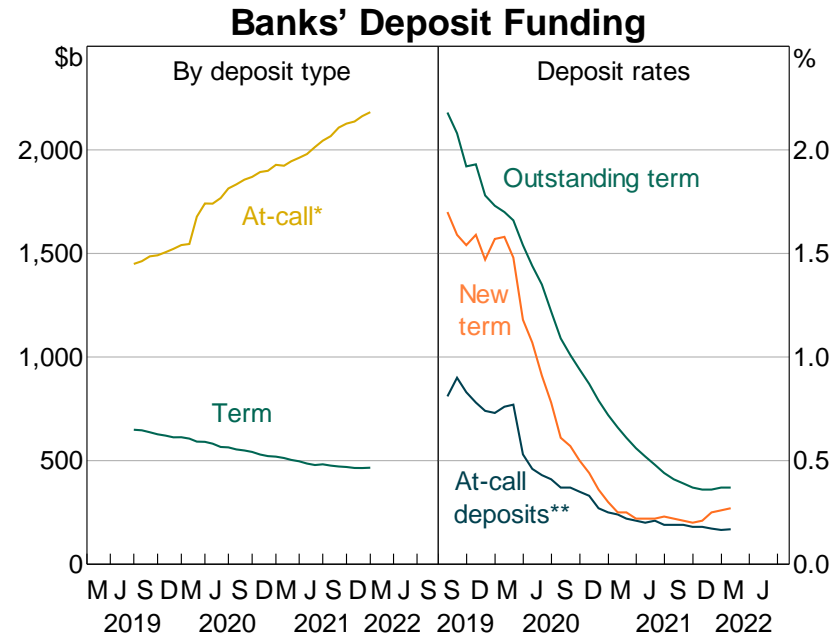
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Discretionary – high-interest retail deposits

- Low rates reduce banks' deposit pricing discretion.
 - Retail ZLB means term deposit rates converge to at-call rates.
 - Compensation for illiquidity falls, so depositors switch to at-call.



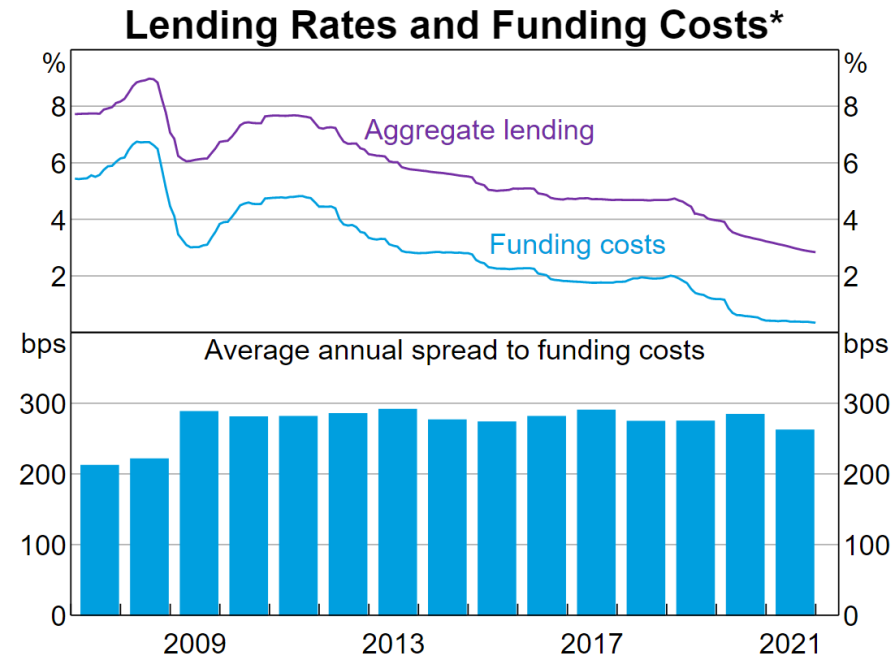
* Includes deposits in housing loan offset accounts and non-interest bearing deposits.

** Excludes deposits in housing loan offset accounts; includes non-interest bearing deposits.

Sources: APRA; RBA

Discretionary – loans/profits

- Remaining discretion is the spread banks set between lending rates and debt/deposit funding costs.
- This ‘lending spread’ remained broadly stable as the level of rates fell (2010–2020).
- This is in stark contrast to the predictions of the international literature.



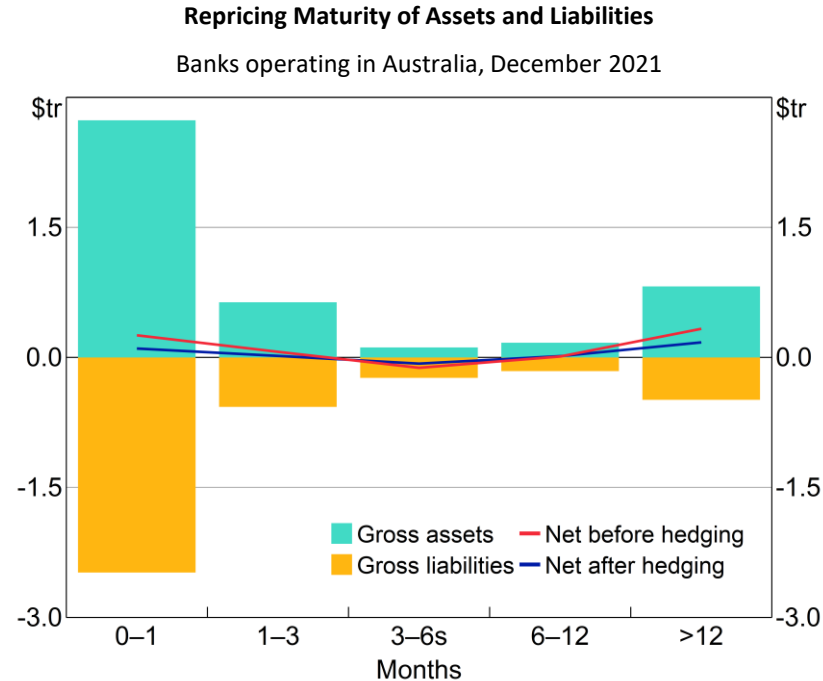
* Major banks; data from the EFS collection from July 2019.

Sources: ABS; AFMA; APRA; ASX; Bloomberg; CANSTAR; major bank liaison; major banks' websites; RBA; Refinitiv; Securitisation System; Tullett Prebon; US Federal Reserve; Yieldbroker

Discretionary – lending spreads

Literature predicts lower lending spreads:*

- **Competition** from lenders less reliant on deposit funding as banks' deposits hit ZLB.
- Yield curve flattening reduces profits from **maturity mismatch** (lending long and borrowing short).
 - This is common for US/euro banks. Australian banks are very well hedged.
- **Risk taking** by banks can partially offset.
 - International evidence for low capital / poorly supervised banks. No evidence in Australia.



Sources: APRA; RBA

* See paper for voluminous list of references.

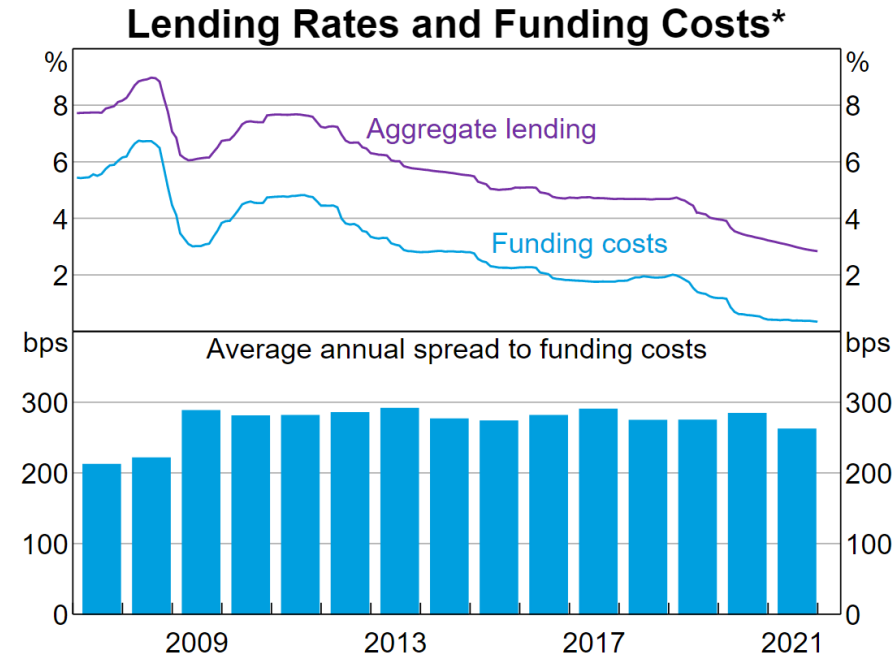
Net Interest Margins (NIM)

- With stable spreads, margins still fall with lower interest rates:

$$\text{NIM} = \frac{i_A A - i_L L}{A} = (i_A - i_L) + i_L \left(\frac{E}{A} \right)$$

$i \Rightarrow$ interest rates; $A \Rightarrow$ assets;
 $L \Rightarrow$ liabilities; $E \Rightarrow$ equity

- So low rates still reduce banks' profits, but by less than the international literature predicts.
- Lack of spread compression also means pass-through is lower.



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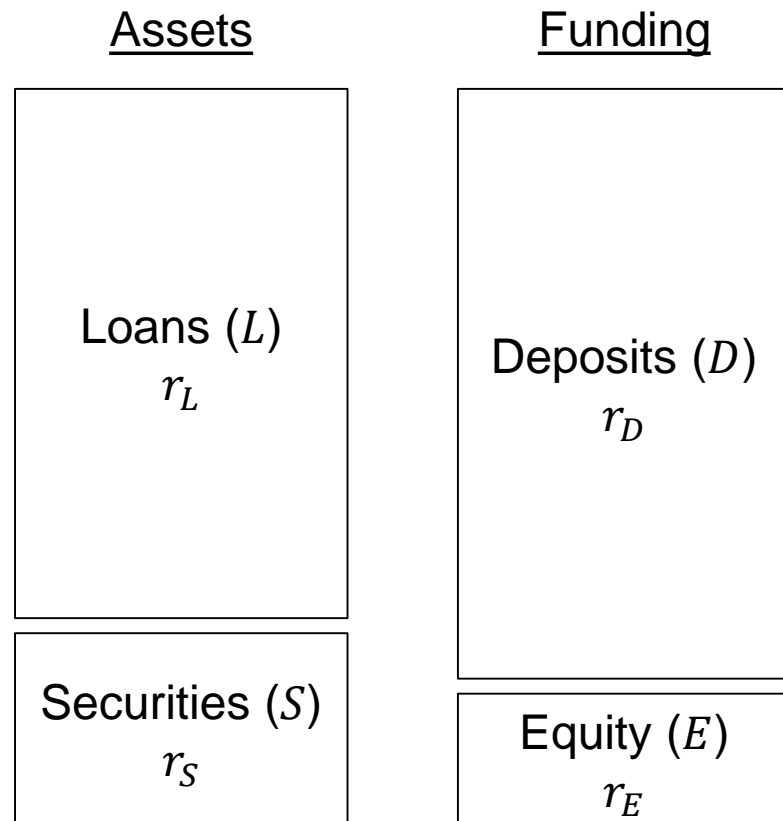
The 'Reversal Rate'

- Reversal rate = point at which any further reduction in the central bank's policy rate will cause banks to *increase* their lending rates.*
- Existence is highly dependent on the model setup.
 - Subsequent research shows the original result requires banks to be net investors in debt securities.**
 - This requirement does not hold in Australia.

* Brunnermeier and Koby (2018); ** Repullo (2020)

'Reversal Rate' mechanism

- Highly stylised balance sheet.



'Reversal Rate' mechanism

- Interest rates above deposit ZLB.
- Equity above minimum level.
- Changes in the cash rate completely pass-through to all assets and funding.

Assets

Loans (L)
 $r_L = r_C + \varepsilon_L$

Securities (S)
 $r_S = r_C$

Funding

Deposits (D)
 $r_D = r_C - \varepsilon_D$

Equity (E)
 $r_E = r_C + \dots$

'Reversal Rate' mechanism

- Deposits at ZLB.
- Equity at minimum level ($r_E \geq 0$).

Reversal Rate

- At some $r_C < 0$, $r_E = 0$ to satisfy equity requirement.
- At this point, the loan rate (r_L) must be set to offset any further reduction in r_S .

Assets

Loans (L)

$$r_L = \frac{-r_C S}{L}$$

Securities (S)

$$r_S = r_C$$

Funding

Deposits (D)

$$r_D = 0$$

Equity (E)

$$r_E = 0$$

'Reversal Rate' mechanism

- The standard reversal rate does not exist if banks are net borrowers in debt markets ($W > S$).
 - Typically the case in Australia.

Assets

Loans (L)

$$r_L = \frac{r_C(W - S)}{L} + \frac{\varepsilon_W W}{L}$$

Securities (S)

$$r_S = r_C$$

Funding

Deposits (D)

$$r_D = 0$$

Debt (W)

$$r_W = r_C + \varepsilon_W$$

Equity (E)

$$r_E = 0$$

'Reversal Rate' mechanism

- The standard reversal rate does not exist if banks are net borrowers in debt markets ($W > S$).
 - Typically the case in Australia.
- But a different mechanism exists if risk premia (ε_W) increase in response to cash rate reductions.

Assets

Loans (L)

$$r_L = \frac{r_C(W - S)}{L} + \frac{\varepsilon_W W}{L}$$

Securities (S)

$$r_S = r_C$$

Funding

Deposits (D)

$$r_D = 0$$

Debt (W)

$$r_W = r_C + \varepsilon_W$$

Equity (E)

$$r_E = 0$$

A 'credit risk' reversal rate is highly unlikely

- The credit risk channel is a kind of inverse to the standard channel.
 - The standard channel arises because banks are highly responsive to reductions in their profitability.
 - The credit risk channel arises if banks are *not* as responsive as their creditors would like (so credit risk is higher).
- Recent advance in macro-financial modelling* that includes all of these theoretical channels estimates no reversal rate in Australia.
 - Even if these estimates are wrong, a 'credit risk' reversal rate would require an extreme stress event with no regulatory/government response. So it is highly unlikely.

* BA-MARTIN model (Brassil, Major and Rickards 2022)

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 - Identification of this channel is a novel contribution to the theoretical literature.

Policy implications and future research

- What can be done to prevent a ‘reversal rate’ from emerging?
 - The BA-MARTIN model shows how a Countercyclical Capital Buffer can reduce banks’ responsiveness to low profits (standard channel) but that creditors may respond adversely (credit risk channel).
 - Future research could go further to assess how this, or alternative, policies should be optimally calibrated to manage these trade-offs.
- With lower pass-through, should central banks do more or less?
 - While there are costs to ‘doing more’*, research generally points to the benefits outweighing the costs**, especially when macroprudential policies are available.

* Schularick and Taylor (2012) – cost is increased risk of financial crises.

** Saunders and Tulip (2019) for a literature review and Australian-focussed analysis.

Policy implications and future research

- Maintaining lending spreads as rates fall improves financial stability.
 - But this has come at the cost of lower pass-through to lending rates, which is costly in a low-rate world where monetary policy is constrained.
- Even so, the high share of variable-rate loans in Australia means pass-through is quicker than in other jurisdictions.
 - But also means households bear more interest rate risk.
- Future research could look at whether we have the balance right, and if not, what policies could improve welfare.