THE DETERMINATION OF BANK INTEREST RATE MARGINS - IS THERE A ROLE FOR MACROPRUDENTIAL POLICY?

E Philip Davis, Dilruba Karim and Dennison Noel Brunel University and NIESR London The bank interest rate margin is a key aspect of the transmission

An intermediate position is found for liquidity policies which are found to have a positive short run effect on margins. These do affect the asset portfolio while also being largely to ensure resilience rather than acting counter cyclically.

Meanwhile, long run effects from all types of policy are typically zero or small, suggestive of countervailing action by banks.

There are significant interactions between macroprudential and monetary policy (nG2a/a 0/e(om)3(individu(tia6 in0(es)rumruds)ts,een)1e(omanailiner))7(e)

Our work brings together two fields of work, namely the effects of

Loan-supply targeted measures such as limits on growth of total or foreign loans would also be likely to trigger negative effects on the margin as portfolios would shift relatively to lower risk assets such as liquid assets which have lower returns. Loan-to-deposit limits might narrow the margin if banks are obliged to pay more for deposits than for non-deposit liabilities.

Capital-based measures requiring banks to hold more capital will affect the liability side of the balance sheet, requiring more capital relative to deposits and other liabilities. The cost of capital in dividends is not a part of the calculation of margins. Indirect effects may be seen, however. They may induce banks to raise balance sheet risk to regain previous levels of profitability and obtain sufficient reserves to build up resilience. Smilar effects may arise from advance provisioning requirements. On the other hand, higher risk-adjusted capital requirements might tend to shrink margins as banks shift into lower-weighted assets in response.

General supply-based measu540 reGB

Overall summary measures of macroprudential policy might accompany a fall in the margin if the overall aim of reducing high-margin lending growth is achieved, as the existing papers outlined above suggest. But if there For example, loan growth limits may reduce household lending if that is their focus, but may raise corporate lending and securities holdings (Acharya et al 2020). A further effect may be to shift financial activities outside regulatory parameters (Ozel et al 2016) such as to shadow banks, which banks may nonetheless finance, and increase high-margin cross-border lending activity by domestic or foreign banks (Aiyar et al 2014; Cerutti et al 2017).

Building on the above, we outline two hypotheses for testing:

- Hypothesis 1: Loan-targeted policies will have more impact on margins that general, liquidity or capital requirements.
- Hypothesis 2: Due to countervailing policy shifts by banks, macroprudential policies will have a lesser effect on margins in the long run than in the short run.

Our baseline model, following Alessandri and Nelson (2015) is as follows: $NIM_{it} = {}_{it} + \beta_1 NIM_{it-1} + \beta_2 OBR_{it} + \beta_3 DOBR_{it} + \beta_4 DOBR_{jt-1} + \beta_5 YC_{jt} + \beta_6 DYC_{jt} + \beta_7 DYC_{jt-1} + \beta_8 Internal_{it-1} + \beta_9 Industry_{jt-1} + \beta_{10} Macro_{jt} + {}_{it}$

Where NIM is the margin of net interest/average assets, CBR is the central bank rate and YC is the yield curve (10 year bond yield less CBR)

To this we add a set of internal bank, industry and macroeconomic variables for suitable control. Bank data are from Fitch-Connect and macro data from the IMF and OECD. Data cover advanced countries since they have 10 year bond yield data.

We then add macroprudential policy variables one by one in difference and level form to capture short and long run effects

it

$$\begin{aligned} \mathsf{NIM}_{it} &= {}_{it} + \mathsf{B}_1 \mathsf{NIM}_{it-1} + \mathsf{B}_2 \mathsf{CBR}_{it} + \mathsf{B}_3 \mathsf{DCBR}_{it} + \mathsf{B}_4 \mathsf{DCBR}_{jt-1} + \mathsf{B}_5 \mathsf{YC}_{it} + \mathsf{B}_6 \mathsf{DYC}_{it-1} + \mathsf{B}_7 \mathsf{DYC}_{it-1} + \mathsf{B}_8 \mathsf{Internal}_{it-1} + \mathsf{B}_9 \mathsf{Industry}_{jt-1} + \mathsf{B}_{10} \mathsf{Macro}_{jt} + \mathsf{B}_{10} \mathsf{Macro}_{jt} + \mathsf{B}_{12} \mathsf{DMPP}_{jt} + \mathsf{B}_{13} \mathsf{DMPP}_{jtG-0.0398 \mathsf{Tc}(jt)} \mathsf{T}_{\mathsf{E}} \mathsf{TQ} \mathsf{E} \mathsf{MCY5GBB3}/ \mathsf{F}_4 \mathsf{18.744 \mathsf{T}_1 001319.019} \end{aligned}$$

Testing in this framework of effects of macroprudential policies used

(IMAPP) Database, originally constructed by Alam et al (2019). This dataset of macroprudential instruments covers 135 countries monthly over 1990 to 2018 (IMF 2020). There are 6 summary instruments derived from 17 individual instruments, which show policy changes (DMPP). We have cumulated these effects also to show the macroprudential policy stance (MPP).

Finally we allow for interactions of monetary and macroprudential policies with leveraged terms

 $NIM_{it} = _{it} + \beta_1 NIM_{it-1} + \beta_2 CBR_{jt} + \beta_3 DCBR_{jt} + \beta_3 DCBR_$

All variables except BCRISIS and MPP are winsorized at 99%. Annual data are used in line with the frequency of the banking data. Bank level variables are lagged to reduce risk of endogeneity. The policy variables are entered as a current level as well as current and first lag

Abbreviation	Mean	Median	Max	Min	Std. Dev.	Obs
NIM (%)	2.570	2.030	26.458	-1.990	2.620	50516
LNSIZE (log)	21.804	21.818	27.117	16.054	2.252	55143
LEV	0.109	0.074	0.900	0.002	0.134	54888
CRISK	0.876	0.360	18.752	-3.150	2.040	45430
LRISK	0.636	0.702	0.992	0.001	0.290	49857
COSTINC (%)	63.678	62.510	241.794	0.706	29.273	55140
DIVSF	0.325	0.283	1.268	-0.542	0.288	53973
LINDEX	0.206	0.212	0.645	-0.962	0.187	46059
BCRISIS	0.113	0.000	1.000	0.000	0.316	108953
GDPG (%)	2.457	2.420	11.467			
INFL (%)	3.056	2.098	376.746	-0.923	13.344	108577

Note: the varia

Dependent variable	NIM
NIM (-1)	0.63*** (12.3)
LNSZE(-1)	-0.0743*** (3.2)
LRISK(

Coefficient on	MPP	DMPP	DMPP(-1)	MPP*CBR	DMPP*DCBR	DMPP(-
						1)*DCBR(-1)
MAPP-INDEX	-0.00557	-0.0055	-0.0071	0.00199	-0.00944**	-0.00364
	(1.0)	(0.6)	(0.5)	(0.8)	(2.0)	(0.3)
LOAN-TARGETED	-0.00369	-0.03* * *	-0.00638	0.00025	-0.00434	-0.018
	(0.3)	(2.9)	(0.3)	(0.3)	(0.4)	(1.1)
DEMAND	0.00949	-0.0461***	-0.0204	0.00271	-0.0192	-0.0852***
	(0.7)	(4.1)	(0.7)	(0.3)	(0.9)	(3.8)

Notes: MAPP-INDEX is the sum-total of the 17 instruments; LOAN-

1. interest margins. The main effect is a negative impact on the margin in the short run from demand-based policies, namely loan-to-value limits and debtservice-to-income limits, and also supply-loan based policies such as controls on credit growth, foreign currency lending and loan to deposit ratios.

2. No effects are found from capital-based policies and a positive one from general policies (driven by reserve requirements). We contend that these policies are primarily aimed at ensuring that banks can cope in the event of a systemic crisis by build-up of resilience, not at altering portfolio decisions on earning assets and hence should have more limited impact on interest margins. These are broadly in line with Hypothesis 1.

3. No long run effects are found for the summary measures of policy, apart from a weak negative effect from loan-supply targeted policies, although some are found for individual instruments. This is suggestive of countervailing action by banks against any short run impact on margins from macroprudential policies. This is in line with Hypothesis 2.

4. There are significant interactions with monetary policy, as shown when macroprudential policy is leveraged in combination with the difference and level of the interest rate.

5. Short-run interaction effects are detected for a number of macroprudential policies, so that we see negative interaction terms in differences for the MAPP index of all policies and demand measures, zero for capital-based and positive for supply-all and supply-general. Accordingly the first group should be chosen in the short run in order to accentuate effect on margins of a monetary tightening, the second is neutral while the third will help to alleviate its effects on bank margins.

6. While effects of summary measures do not vary across interest rate levels, the effect for several individual instruments varies across levels of interest rates. Negative short run effects are most common at low interest rates, while long run effects are both less frequent and on balance zero or positive, notably at higher interest rates.

7. Robustness checks underpin the validity of the baseline results.

We suggest that the most important contributions of this study are the differential effects on the margin of different types of macroprudential policies, the different short and long run effects of macroprudential policies, and the monetary/macroprudential policy interactions on the margin. These have not been tested in the literature to date.

Results have important implications for policymakers seeking to assess the overall policy stance, not least when monetary policies are tightened to reduce inflationary pressures

if both monetary and loan supply/demand focused macroprudential policies are tightened together, banks will have less net interest income from which to accumulate capital

these effects are mitigated if capital-based or general policies are tightened along with monetary policy.

in the long-term, stringent monetary policies will tend to expand the margin while there is no offsetting effect from macroprudential polices except in the case of loansupply based policies. Results also relevant for bank management,

short run challenge to profitability from a tightening of macroprudential

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