The Risk-Taking Channel of Monetary Policy in Macedonia: Evidence from Credit Registry Data

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Motivation

- Increasing interest on the link between monetary policy and banks' risk-taking in recent years
  - the "Great Recession" sawn by the low rates environment prior to its emergence
- The risk-taking channel: accommodative monetary policy impacts not only the quantity, but the quality of banks' credits as well, through its effect on banks' perceptions and risk pricing
- Research objectives:
  - to empirically test the presence of the risk-taking channel in Macedonia
  - to analyze the impact of banks' leverage on the risk-taking behavior
- Our contribution:
  - to the best of our knowledge, this is a first attempt to explore the risk-taking monetary police channel for Macedonia
  - also, first-time utilization of the confidential micro database from the Credit Registry of NBRM for research purposes

Econometric methodology

- Following the specification of Dell'Ariccia et al.:

(1) $$LRR_{kit} = \lambda_i + \beta r_t + \eta K_{it} + \mu L_{kit} + \Omega B_{it} + \varepsilon_{kit}$$

(2) $$LRR_{kit} = \lambda_i + \beta r_t + \eta K_{it} + \nu K_{it} r_t + \mu L_{kit} + \Omega B_{it} + \varepsilon_{kit}$$

where

LRR_{kit} is the risk rating of loan k, extended by bank i during the semester t
λ_i are bank-specific effects
r_t is the Central bank's effective interest rate
K_{it} is a measure of bank's capitalisation
L_{kit} is a set of loan specific variables
B_{it} is a measure of bank size
$K_{it}r_t$ is interaction term between interest rate and bank capital

- Estimation method: POLS with robust s.e. and bank dummy variables to control for the likely presence of unobserved heterogeneity (bank-level fixed effects related to banks' ownership, management, clients etc.)

Data description

- The Credit Registry of NBRM: electronic base of data and information on the credit exposures of deposit-taking financial institutions to their clients, the main purpose of which is to contribute to improvement of the credit risk management and the maintenance of the financial stability of Macedonia
- Biannual data on individual new loans extended to non-financial companies, for the period 2010:H1-2017:H1
- 7 largest banks, with market share of around 90%

Dependent variable	Loan specific variables	Bank specific variables	Time specific variables
Risk rating assigned by the bank to a given loan classified in one of the five risk categories (A=1, B=2, C=3, D=4 and E=5)	loan size (in log)	total assets (in log)	NBRM's effective interest rate
	loan original maturity (in years)	Tier 1 capital ratio	real GDP growth
	dummy variable for collateral (1 for secured loans, and 0 otherwise)	equity-total assets ratio (alt.)	
Source: Credit Registry of NBRM		Source: Banks' balance sheets	Source: NBRM, SSO

Main results

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CB bills rate	-0.015***	-0.012***	-0.012***	-0.012***	-0.012***	-0.013***	-0.011**
	[0.002]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
Tier 1 capital ratio		0.266**	0.264**	0.264**	0.253**	0.246**	0.316**
		[0.123]	[0.123]	[0.123]	[0.123]	[0.123]	[0.127]
Bank size		0.014	0.014	0.014	0.013	0.011	0.023
		[0.023]	[0.023]	[0.023]	[0.023]	[0.023]	[0.023]
Loan size			0.003			-0.002	-0.002
			[0.003]			[0.003]	[0.003]
Dummy for loans with collateral				-0.004		-0.012**	-0.011*
				[0.006]		[0.006]	[0.006]
Loan maturity					0.010***	0.010***	0.010***
					[0.001]	[0.001]	[0.001]
GDP growth							0.007***
							[0.001]
Constant	1.185***	0.874**	0.865**	0.894**	0.888**	0.957**	0.693
	[0.010]	[0.438]	[0.438]	[0.437]	[0.439]	[0.437]	[0.448]
Observations	29,074	29,074	29,074	29,074	29,074	29,074	29,074
Number of banks	7	7	7	7	7	7	7
Bank dummy variables	YES	YES	YES	YES	YES	YES	YES
R-squared	0.137	0.137	0.137	0.137	0.140	0.140	0.140

Robust standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

Main results

VARIABLES	(1)	(2)	(3)
CB bills rate	-0.013***	-0.027***	-0.035***
	[0.004]	[0.007]	[0.008]
Tier 1 capital ratio	0.246**	-0.177	
	[0.123]	[0.240]	
Tier 1 capital ratio x CB bills rate		0.116***	
		[0.044]	
Equity-assets ratio			-0.220
			[0.384]
Equity-assets ratio x CB bills rate			0.277***
			[0.073]
Bank size	0.011	0.019	0.049**
	[0.023]	[0.022]	[0.021]
Loan size	-0.002	-0.002	-0.002
	[0.003]	[0.003]	[0.003]
Dummy for loans with collateral	-0.012**	-0.012**	-0.012*
	[0.006]	[0.006]	[0.006]
Loan maturity	0.010***	0.010***	0.010***
	[0.001]	[0.001]	[0.001]
Constant	0.957**	0.867**	0.283
	[0.437]	[0.431]	[0.407]
Observations	29,074	29,074	29,074
Number of banks	7	7	7
Bank dummy variables	YES	YES	YES
R-squared	0.140	0.140	0.141

Robust standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

Alternative specifications

- Subsampling by bank capital
- Subsampling by loan characteristics
- Regressions including time dummy variables
- Regressions with the interaction between Central bank bills interest rate and real GDP growth
- Regressions with the lag of CB bills rate

➢ The results broadly in line with the ones from the baseline specification

Conclusion

- Our study reveals inverse relationship between the policy rate and the ex-ante risk rating assigned by banks, supporting the existence of the risk-taking channel in Macedonia.
- The results prove to be robust after controlling for several bank, loan and time specific variables, but the economic significance is rather small.
- Regarding the impact of leverage on risk-taking, we find a lower risk-taking for better capitalized banks, although the degree of difference between banks with higher and lower capitalization is marginal.
- The findings of the paper are policy-relevant, as they are indicative for the presence of the risk-taking monetary policy channel in Macedonia and point to the need to take financial stability and banks' risk pricing into consideration when deciding on the policy rate.
- This is just a beginning - future research focused on assessment of the risk-taking channel in view of some alternative risk indicators, as well as on conducting a similar analysis for the household lending segment.