

discussion

Bank capital (requirements) and credit supply:
evidence from Pillar 2 decisions

Olivier De Jonghe, Hans Dewachter and Steven Ongena

Discussant: Margherita Bottero
(Bank of Italy)

13 October 2016

The views expressed here are those of the author and do not necessarily reflect those of the Bank of Italy

This paper....

Research question

- how do capital requirements affect banks' balance sheets?

Data

- panel data 2011-2014 , 17 Belgian banks
- **bank-specific time-varying capital requirements**
- matched with balance sheet data + Credit Register data

Empirical Methodology

- identification with bank & firm*time fixed-effects
- separate estimation of the impact of actual & required capital
- interactions to study heterogeneity across banks & firms

Results

- balance sheet shrinks, mixed results on composition
- negative effect on lending, intensive and extensive margin (...however assessment is unclear: at p.2 is "*strong*", at p. 23 becomes "*fairly small*")
- smaller, riskier, less profitable banks reduce credit more, in particular to riskier and larger borrowers

Research question

Interesting & important question: **key** to have access to bank-specific capital req.

Main contribution: data on bank-specific capital req. matched with credit register data

Lots of potential & enjoyable to read

Key reference: Francis & Osborne seminal work (2009)

Panel A: Impact of a 1-point rise in risk-based capital requirement in 2002

	Difference of stock from baseline after:			
	1 year	2 years	3 years	4 years
<i>Assuming 65% pass-through to target capital ratio</i>				
Growth in:				
Assets	-0.95%	-1.19%	-1.33%	-1.41%
Loans	-0.78%	-0.98%	-1.10%	-1.16%
Risk-weighted assets	-1.59%	-2.01%	-2.24%	-2.37%
Regulatory capital	1.78%	2.25%	2.52%	2.68%
Tier 1 capital	1.28%	1.62%	1.81%	1.93%

Data

The data is great - we'd like to know more (confidentiality permitting)

- *“NBB sets capital requirements [...] at the group level as well as at the level of the individual banks [...] we obtain information at the individual bank level”*
 - potential problem: the requirements at the group level may matter on top of those at the individual bank (Cetorelli and Goldstein, JIE 2012)
- Variation in the data:
 - how often is the requirement higher/lower/equal to that of the previous year?
 - are the requirement communicate at the same time to all banks?
- What happens if a bank is not compliant with the requirement?
- Are the regulatory requests are really unanticipated by the bank?
 - if no, the effect could be actually higher

Empirical methodology

$$\begin{aligned} \text{Growth (Quarterly) of } X_{b,t} &= \beta_1 * \text{Actual Capital Ratio}_{b,t-1} \\ &+ \beta_2 * \text{Previous year Actual Capital Ratio}_{b,t-4} \\ &+ \beta_3 * \text{Required capital ratio}_{b,t-1} \\ &+ \beta_4 * \text{Previous year Required Capital Ratio}_{b,t-4} \\ &+ \gamma * \text{Bank Controls}_{b,t-1} + \nu_b + \nu_t + \epsilon_{b,t} \end{aligned}$$

Idea: using separately actual capital and required capital allows to test if banks respond to

- i. changes in individual coefficients
- ii. changes “*in regulatory capital requirements, when banks hold their buffer constant*” $H_0: \beta_1 + \beta_3 = 0$
- iii. [the joint impact of previous and current capital]
- iv. [the joint impact of previous and current required capital]

Empirical methodology: comment #1

Two comments:

1. Not sure that the null $\beta_1 + \beta_3 = 0$ tests a «constant buffer effect». Rewrite $\beta_3 = -\beta_1$ and substitute

$$\begin{aligned} \text{growth}X_{b,t} &= \beta_1 * \text{Actual Capital Ratio}_{b,t-1} - \beta_1 * \text{Required Capital Ratio}_{b,t-1} \\ &+ \text{controls} + \text{FEs} + \text{error}_{b,t} \end{aligned}$$

$$\text{growth}X_{b,t} = \beta_1(\text{Buffer}_{b,t-1}) + \text{controls} + \text{FEs} + \text{error}_{b,t}$$

Then, you actually test whether «only the buffer matters»:

- if $\beta_3 = -\beta_1$ (you cannot reject H_0) \rightarrow X only responds to buffer (Actual-Required)
- if $\beta_3 \neq -\beta_1$ (you reject H_0) \rightarrow X responds independently to Actual and Required

This is not the same as testing for the impact of the change in regulatory requirements when banks hold the buffer constant.

Empirical methodology: comment #2

2. Do we know if banks actually care about holding the buffer constant?
... you can test this!

Step 1: test if banks aim to keep their buffer constant: $H_0: \beta_1 = 1$ in

$$Actual\ Capital\ Ratio_{b,t} = \beta_1 * Required\ Capital\ Ratio_{b,t-1} + controls + FEs + error_{b,t}$$

Step 2: if so, banks should raise new equity and/or shrink asset when required k rises

$$growthX_{b,t} = \beta_1 * Required\ Capital\ Ratio_{b,t-1} + controls + FEs + error_{b,t}$$

Step 3: if not, capital levels should matter too – possibly in a nonlinear way:

$$growthX_{b,t} = \beta_1 * Buffer_{b,t-1} + \beta_2 * Actual\ Capital\ Ratio_{b,t-1} + \\ + \beta_3 * (Buffer_{b,t-1} * Actual\ Capital\ Ratio_{b,t-1}) \\ + controls + FEs + error_{b,t}$$

Effects on balance sheet composition (assets)

Panel A: all						
VARIABLES	Quarterly Growth IB assets	Quarterly Growth Mortgages	Quarterly Growth Term Loans	Quarterly Growth All Credit	Quarterly Growth Securities	Quarterly Growth Assets
Actual capital ratio	1.393 (0.883)	-0.846** (0.339)	-0.498* (0.268)	-0.235 (0.327)	-0.606* (0.325)	-0.532 (0.322)
Previous year actual capital ratio	-0.307 (1.031)	-0.446** (0.157)	-0.284 (0.265)	-0.0723 (0.344)	-0.188 (0.240)	-0.176 (0.237)
Required capital ratio	0.304 (3.035)	-0.440 (0.481)	-1.113 (0.785)	-0.710 (0.628)	-1.242** (0.496)	-0.892 (0.622)
Previous year required capital ratio	6.215*** (1.210)	-0.791 (0.455)	0.0131 (0.559)	-0.0697 (0.630)	-0.462 (0.582)	0.646 (0.666)
Observations	132	132	132	132	132	132
R-squared	0.472	0.301	0.293	0.309	0.287	0.435
p-value of test (constant buffer effect)	0.63	0.11	0.09	0.28	0.00	0.07
p-value of test (sum actual)	0.43	0.01	0.10	0.62	0.06	0.12
p-value of test (sum required)	0.07	0.12	0.35	0.44	0.09	0.82

- time FE are quarterly (I believe): this may not be enough for identification. Maybe add a control for financial markets conditions
- mortgage and term loans diminish but “all credit” does not: why?
- securities: shrink overall (actually driven by foreign assets -1,231** vs domestic -0.192), but what happens to sovereign securities (0 capital charges)?
- what happens to securitization activity (ABSPP was launched in 2014/10)?

Effects on balance sheet composition (liabilities)

VARIABLES	(1) Quarterly Growth IB liabilities	(2) Quarterly Growth deposits	(3) Quarterly Growth Other Debt	(4) Quarterly Growth Equity	(5) Quarterly Growth Total Assets
Actual capital ratio	0.192 (2.002)	-0.899* (0.473)	-0.641 (0.897)	-0.537*** (0.162)	-0.532 (0.322)
Previous year actual capital ratio	0.332 (2.405)	-1.396 (1.177)	0.149 (0.307)	-0.223 (0.253)	-0.176 (0.237)
Required capital ratio	3.940 (6.555)	-1.074 (0.785)	-4.085* (1.951)	0.346 (0.434)	-0.892 (0.622)
Previous year required capital ratio	4.949* (2.591)	-3.072 (2.144)	0.580 (2.089)	-0.179 (0.384)	0.646 (0.666)

- *“the result suggest some targeting of the actual capital ratio by means of equity adjustments. [...] an increase in actual capital ratio tends to be followed by a [...] slow down in growth in equity”*

If CET (equity / RWA) increases in t-1 and equity decreases in t, then CET in t will increase further because the numerator has shrunk ..

Or do you mean that after an increase in equity which is reflected in the higher CET in t-1, banks slow down equity growth in t (sort of mean reversion/overshooting)?

Effects on lending

- the effect of capital requirements may be staggered over time
 - maybe banks first react by cutting credit, but then they raise equity and increase credit supply
 - Easy fix: study the effect on lending (but also balance sheet items) over different windows of time

Effects on lending - heterogeneity

*“.. especially smaller, riskier or less profitable **banks** reduce credit most”*

- Looks like you may be picking up some endogeneity
 - partial fix: regress required capital on banks' characteristics to see how much it is predicted by them
- Stock of NPL may matter too

*“the resultant credit contraction mostly affects large, risky and low borrowing cost **firms**”*

- Effect on “large, low borrowing cost firm”
 - maybe they compensate by drawing more on credit lines (see also table 4)
- Other dimension of heterogeneity: how does the effect vary for
 - relationship lending
 - index of external finance (Rajan and Zingales, AER 1998)
 - foreign firms

Miscellaneous

- Real effects: why not move to a firm-level dataset where to each firm is associated the average (actual/required) capital across its banks
 - this way you could assess the impact of capital on real activity
 - demand could be controlled for with the inclusion of the estimated FEs in the regressions
- Foreign banks: subsidiaries are subject to the Belgian supervision, but branches no: would it be possible to think of propensity score matching exercise?