Bank Capital (Requirements) and Credit Supply: evidence from Pillar 2 decisions
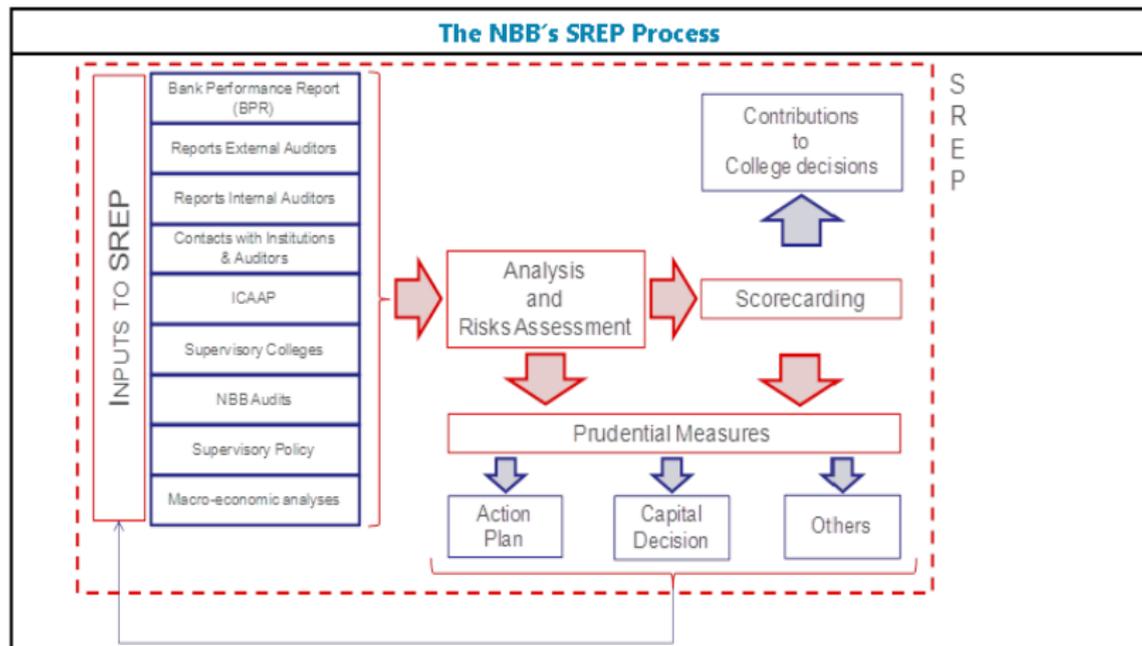
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SUERF, October 30, 2018

The Supervisory Review and Evaluation Procedure

Figure: **SREP 2011-2014 (Source: IMF country report 13/138. Belgium: technical note on financial conglomerate supervision)**

Required and actual capital ratio: summary statistics

Our data: computed over 124 bank-quarter observations

- **Required capital ratio**
  - average is 11.2% of risk-weighted assets
  - more importantly (for analysis), standard deviation is 2.0%
- **Actual capital ratio**
  - average is 14.9% of risk-weighted assets
  - and a standard deviation of 3.7%
- **On average, banks hold a sizable cushion/buffer**

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Compared with e.g. Aiyar, Calomiris and Wieladek (UK, 1998-2007, 88 regulated banks)

> *the variation in minimum capital requirements as a share of risk-weighted assets over the sample period was large. The mean capital requirement ratio was 10.8%, the standard deviation 2.26%*

Questions and main findings of this paper

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   - ▶ YES
   - ▶ On the intensive and extensive margin of credit supply
   - ▶ Microprudential capital requirements also affect lending (unintentionally), if:
      - ▶ raising external equity is costly
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2. Are all banks and firms equal?

   - Bank heterogeneity in line with capital structure theories

   - Firm heterogeneity in line with impact on risk-weighted assets

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2. Are all banks and firms equal?
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3. Does regulatory capital affect banks' balance sheet?
   - Yes, off-setting channels lead to aggregate balance sheet effects
   - Yes, reduction in domestic mortgages and foreign corporate lending

Literature on capital requirements and credit supply

Large literature on effect of introduction Basel I, II and III

- ▶ drawback 1: implementation is usually uniform across banks
- ▶ drawback 2: response to (lending) crisis
- ▶ drawback 3: coinciding events/confounding factors

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- ▶ *bank level data*

- ▶ *firm-bank level data*

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    - ▶ UK, 1998-2007, aggregate lending (Aiyar, Calomiris and Wieladek; 2014, 2016); euro-area, 2011-2012, EBA, aggregate lending: (Mesonnier and Monks, 2015); France, 2003-2011, lending standards (Labonne and Lamé, 2014); Belgium, 2003-2015, mortgage lending rates (Ferrari, Pirovano and Rovira Kaltwasser, 2016);...

- ▶ *firm-bank level data*

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- ▶ *firm-bank level data*
  - ▶ UK, mortgage lending (Uluc and Wieladek,2016); Spain, corporate lending, dynamic provisioning (Jimenez et al., 2016); France, corporate lending, Basel 2 IRB (Fraisse, Lè and Thesmar; 2016); EBA, corporate lending (Gropp et al.; 2016); Norway, Basel III (Getz Wold and Juelsrud, 2017);...

Data and empirical setup

(1) Corporate credit register

- ▶ firm-bank-quarter level
- ▶ intensive and extensive margin
- ▶ based on authorized amount
- ▶ breakdown according to maturity and type

(2) Bank capital: actual and required

(3) Bank and firm balance sheet data

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Empirical specification

$$\text{Credit Growth (Quarterly)}_{b,f,t} = \beta * \text{Required cap. ratio}_{b,t-1}$$
$$+ \gamma * \text{Bank Controls}_{b,t-1} + \nu_{f,t} + \nu_b + \epsilon_{b,f,t}$$

$\nu_{f,t}$ are firm-time fixed effects: demand control

ν_b are bank fixed effects: business model, corporate structure

Interaction with bank characteristics: theory

Modigliani and Miller's irrelevance theorem

- ▶ loan rates and lending volume should be independent of funding structure (leverage)
- ▶ if not, presence of frictions

Indirect test: exploit heterogeneity across banks in the perceived cost of capital

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- ▶ PECKING ORDER: scope for **earnings retention** and passive capital management (De Jonghe and Öztekin, 2015)

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- ▶ PECKING ORDER: scope for **earnings retention** and passive capital management (De Jonghe and Öztekin, 2015)
- ▶ MARKET TIMING: banks that recently built **financial slack** (recent equity expansion or asset shrinkage)

Interaction with bank characteristics: results

The (negative) impact of higher capital requirements on credit supply is smaller for: **larger** and **safer** banks, more **profitable** banks, and banks with more **financial slack**

VARIABLES	Credit growth	Credit growth	Credit growth	Credit growth	Credit growth
Actual capital ratio	-0.131**	-0.131**	-0.125**	-0.147**	-0.136**
	(0.0535)	(0.0477)	(0.0550)	(0.0583)	(0.0536)
Previous year actual capital ratio	-0.00497	-0.0337	0.00909	-0.00184	-0.000395
	(0.0470)	(0.0448)	(0.0444)	(0.0441)	(0.0460)
Required capital ratio	-0.107	-0.210**	-0.132*	-0.124*	-0.105
	(0.0672)	(0.0743)	(0.0738)	(0.0675)	(0.0695)
Previous year required capital ratio	-0.252***	-0.256***	-0.264***	-0.267***	-0.243***
	(0.0482)	(0.0411)	(0.0515)	(0.0531)	(0.0496)
Required capital ratio x Bank Characteristic	0.0480**	-0.0709***	0.118	0.0848***	-0.0466
	(0.0177)	(0.0154)	(0.0775)	(0.0269)	(0.0557)
Bank Characteristic	**(lagged) log Total Assets**	**(lagged) loan loss provisions to total loans**	**(lagged) Return on equity**	**(lagged) Quarterly growth in Common Equity**	**(lagged) Quarterly growth in Assets**
Observations	1,022,324	1,022,324	1,022,324	1,022,324	1,022,324
R-squared	0.467	0.467	0.467	0.467	0.467

Interaction with firm characteristics: channels

Should all firms be treated equally?

$$\frac{Equity}{\sum_{i=1}^{N} w_i * A_i}$$

▶ No, depending on their effect on risk-weighted assets

▶ No, depending on the returns they generate

How we test it: exploit heterogeneity across firms

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▶ effect of firm **age** is ambiguous; older firms are less risky (survivorship bias) but also larger on average

Interaction with firm characteristics: results

The (negative) impact of higher capital requirements on credit supply is smaller for: **smaller**, **younger** and **less risky** firms, as well as firm which pay **higher implicit interest rates**

VARIABLES	Credit growth	Credit growth	Credit growth	Credit growth
Actual capital ratio	-0.214**	-0.215**	-0.214**	-0.198**
	(0.0975)	(0.0990)	(0.0958)	(0.0870)
Previous year actual capital ratio	-0.0214	-0.0234	-0.0206	-0.0163
	(0.0618)	(0.0631)	(0.0603)	(0.0553)
Required capital ratio	-0.183	-0.180	-0.185*	-0.190*
	(0.105)	(0.108)	(0.101)	(0.0889)
Prev. year required capital ratio	-0.266***	-0.265***	-0.269***	-0.289***
	(0.0658)	(0.0679)	(0.0644)	(0.0683)
Required capital ratio x Firm Characteristic	**-0.0909***	**-0.142***	**0.0553***	**0.0590***
	(0.0201)	**(0.0321)**	**(0.0259)**	**(0.0132)**
IA	**lagged firm size**	**lagged firm age**	**lagged Altman Z**	**lagged cost of borrowing**
Observations	969,725	969,725	969,651	874,134
R-squared	0.467	0.467	0.467	0.464

Broad balance sheet categories: bank-level evidence

Using bank-level, aggregate balance sheet data, we find that:

▶ Asset side exhibits derisking and reorientation

▶ Bank funding reacts mixed

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Overall, mix of channels resulting in adjusted balance sheet

Conclusion: Summary of findings

1. Statistically significant, and economically relevant corporate credit supply effects

2. (bank heterogeneity) Negative effect is smaller for:

3. (firm heterogeneity) Negative effect is larger:

4. Offsetting effects (mortgages, foreign lending, equity subsidy)

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3. (firm heterogeneity) Negative effect is larger:
   - ▶ for larger and older firms
   - ▶ for riskier and more indebted firms
   - ▶ for low borrowing cost firms

4. Offsetting effects (mortgages, foreign lending, equity subsidy)

Conclusion: Implications and road ahead

Economically speaking, the effect on corporate credit is moderate
Why?

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What if requirements would be disclosed?