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Autorité fédérale de surveillance des marchés financiers FINMA
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Swiss Financial Market Supervisory Authority FINMA

Higher Bank Capital Requirements and Mortgage Pricing

Evidence from the Counter-Cyclical Capital Buffer (CCB)*

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** Any views expressed are those of the authors and do not necessarily reflect those of the BIS, ETH Zurich or the Swiss Financial Market Supervisory Authority FINMA.*

0 Outline

1. Research Questions and Preview of Key Results

2. The CCB, Switzerland, and our Data

3. Hypotheses, Approach, and Results

4. Conclusions

1. Research Questions & Preview of Key Results

1 The Countercyclical Capital Buffer

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Introduced with Basel III banking regulation

- Stated Objective 1 (automatic): Improve capitalization when losses become more likely.
- Stated Objective 2: Slow down lending during booms by raising the cost of borrowing.
- **Possible Objective 3: Improve *Quality* of Lending through Composition of Lenders and/or Borrowers…**

1 Research Question(s)

How does the Countercyclical Capital Buffer (CCB) of Basel III affect mortgage **pricing** in Switzerland?

We examine the interaction with :

- ... bank ***sensitivity*** measures (capital-constrained, mortgage-specialized)
- ... ***risk-weighting schemes*** tied to LTV ratios

1 Key Findings

1. CCB activation can impact the ***composition*** of mortgage supply:
   a. ***Capital constrained*** banks with low capital cushions and …
   b. ***Mortgage-specialized*** banks …

   … raise prices ***more***.

2. **No differential price increase for borrowers** with high LTV ratios — despite associated higher risk weights…

1 Our Contributions

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- *Disentangle*
  mortgage ***demand*** (borrower) and mortgage ***supply*** (lender)

- ***Composition*** of mortgage supply.
  - First empirical paper on how CCB affects loan ***pricing***
    (offers as opposed to contracted rates)
  - Link distinct offers to bank balance sheet characteristics
    as ***bank sensitivity measures***

- Assess effectiveness of ***risk-weighting schemes*** (LTV Thresholds)

2. The CCB, Switzerland and Data

2 The Counter Cyclical Capital Buffer

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Basel III (put into Swiss law in July 2012, effective since January 2013)

- 8% minimum capital requirements (MCR) based on RWAs;
  as in Basel II; By itself can be procyclical
- Capital Conservation Buffer: In Switzerland 2.5-6.4% of RWAs
- On top, authorities can temporarily activate CCB:
  - Extra equity for up to 2.5% of RWAs

- CCB: Interesting tool when monetary policy already committed…

2 Switzerland and the CCB

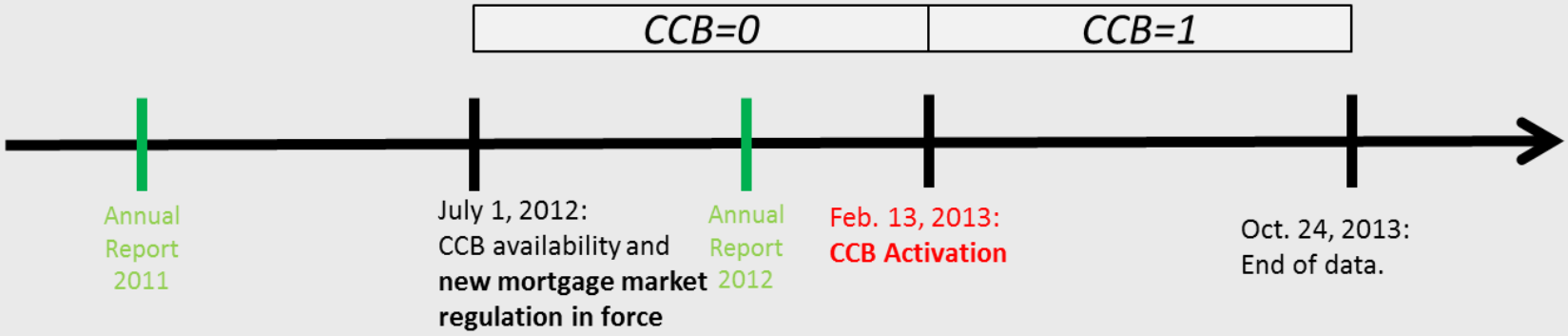
The Counter-Cyclical Capital Buffer (CCB) …

- became a policy **option** from July 1, 2012.

- first **activation** on February 13, 2013:
  - extra equity capital worth 1% of all Risk-Weighted Assets (RWA) secured by domestic residential property
  - transition period until September 2013

- raised to 2% in January 2014.
  (not investigated here for reasons of data availability)

2 Timing of Policy Changes



- Focus on CCB ***activation*** (Feb. 13, 2013)
- Why? More interesting: National policy-makers can decide on activation more often and with more discretion
- Not confounded by other policy changes:
  - New mortgage market regulation also introduced in July 2012
  - Basel III adoption also passed into law in July 2012

2 Data on Swiss Mortgage Market

Online mortgage platform **Comparis.ch** (model in operation – 2013)

Customer ...

- provides data on financial situation, requested mortgage, maturity…
- pays CHF 148

Lenders (banks and insurers) …

- get anonymized customer data,
- submit offers or rejections,
- if offer: interest rates on (tranches of) the mortgage

⇒ ***Multiple offers*** per individual request

⇒ Many ***distinct offers*** per bank over time

3. Hypotheses, Approach, Results

*3.1 Which banks exhibit the highest **sensitivity** to the CCB?*

3.1 Bank Sensitivity Measures

The CCB applies to …

- mortgages *on* balance sheets
- *new* mortgage issuance

In response to the CCB:

H1a: ***Constrained*** banks with low capital cushions …

H1b: ***Specialized*** banks with a mortgage-intensive business model per unit of capital …

… *raise* mortgage rates relatively *more*.

3.1 Bank Sensitivity Measures

$$Rate_{ij} = \alpha_1 + \beta_1 sens_{j,\,201x} + \beta_2 ccb_i sens_{j,\,201x} + FE_i + FE_j + \varepsilon_{ij}$$

With

- Customer *i* and lender *j*
- $sens_{j,\,201x}$ as balance sheet data from the past annual report.

- ccb_i= 1 if *i* > Feb 13, 2013 and 0 otherwise
- Using request FE_i implicitly controls for time, individual customer risk,
  property type, location and macroeconomic developments.
- Robust Standard Errors (clustering makes no difference)

3.1 Bank Sensitivity Measures

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Effects of the CCB

Banks that are
- capital constrained
- mortgage-specialized

… charge ***higher*** rates.

⇒ Cannot reject H1a &b
⇒ Change in the ***composition*** of supply

Placebo:
Liquid banks charge ***lower*** rates in general, but do ***not*** change their behavior after the CCB (Column 4).

With controls ;FE (request, lender, robust SE)

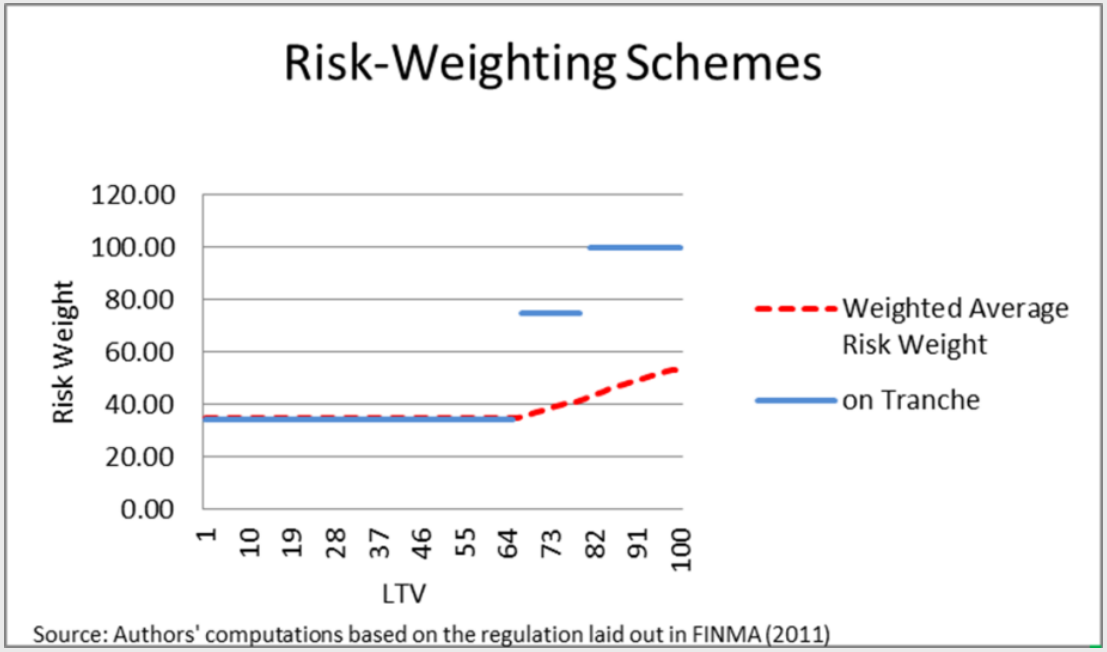
	(1)	(2)	(3)	(4)
Sensitivity Measures				
Constrained	9.19			2.74
	(6.01)			(6.29)
CCB*Constrained	4.26***			2.72**
	(0.90)			(1.20)
Specialized		3.93		4.03
		(2.49)		(2.52)
CCB*Specialized		6.11***		5.57***
		(0.92)		(1.26)
Liquid			-2.61	-4.21**
			(1.72)	(1.83)
CCB*Liquid			-2.08**	0.49
			(0.89)	(1.33)
Constant	190.32***	194.81***	201.26***	191.07***
	(6.17)	(2.84)	(1.42)	(6.85)
Observations	4,045	4,045	4,045	4,045
R-squared	0.83	0.83	0.83	0.83
Request Fixed Effects	yes	yes	yes	yes
Bank Fixed Effects	yes	yes	yes	yes

*3.2 Do **risk-weighting schemes** amplify the CCB effect?*

3.2 Risk-Weighting Schemes

CCB: extra capital worth 1% of RWAs, so risk-weight might matter:

- 35% RW on tranches with LTV≤ 66
- 75% RW on tranches with 66<LTV ≤ 80
- 100% RW on tranches with LTV > 80



H2: ***Risk-weighting schemes*** linked to LTV ratios ***amplify*** CCB effect, with larger rate increases for borrowers with:

- ***LTV*** ratios > ***66%***
- ***LTV*** ratios > ***80%***.

3.2 Risk-Weighting Schemes

$$Rate_{ij} = \alpha_1 + \beta_1 ltv_i + \beta_2 ltv67_i + \beta_3 ltv80_i + \beta_4 ccb_i ltv67_i + \beta_5 ccb_i ltv80_i + \gamma_1 refin_i + \gamma_2' CUSTOM_i + FE_i + \varepsilon_{ij}$$

With

- $ltv67_i$ =I($ltv_i \geq 67$) and $ltv80_i$ =I($ltv_i \geq 80$)
- $refin_i$ the Swiss 10y swap rate
- $CUSTOM_i$` =(income; wealth; debt; age)
- FE_i= (FE_j; FE_month_i; FE_type_i; FE_canton_i)

3.2 Risk-Weighting Schemes

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Find:

- LTV per se ***insignificant***
- Banks do charge extra for ***LTV ≥ 66 and LTV ≥ 80.***
- LTVs Thresholds do ***not*** amplify the CCB effect.

⇒ Reject H2.

⇒ Suggests thresholds flesh out risk, but risk weights do ***not*** amplify the CCB.

⇒ CCB not risk-sensitive

With controls ;FE (time, lender, type, canton);robust SE

	(1)	(2)	(3)	(4)	(5)
Mortgage Characteristics					
LTV	0.03	0.03	0.03	0.03	0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
LTV67 (0/1)	2.13***	2.58***	2.39***	2.38***	2.35***
	(0.70)	(0.69)	(0.70)	(0.70)	(0.70)
LTV80 (0/1)	1.81**	1.85**	1.57**	1.56**	1.54**
	(0.75)	(0.74)	(0.75)	(0.75)	(0.75)
CCB*LTV67 (0/1)	-1.50	-1.49	-1.49	-1.49	-1.52*
	(0.92)	(0.91)	(0.91)	(0.91)	(0.91)
CCB*LTV80 (0/1)	0.87	1.34	1.45	1.46	1.48
	(1.17)	(1.15)	(1.15)	(1.15)	(1.15)
Refinancing Control					
Swap Rate 10y	73.69***	75.11***	74.41***	74.37***	74.27***
	(4.69)	(4.66)	(4.66)	(4.67)	(4.67)
Request Controls					
Income		-3.91***	-3.14***	-3.15***	-3.20***
		(0.47)	(0.51)	(0.51)	(0.52)
Wealth			-0.84***	-0.84***	-0.81***
			(0.22)	(0.22)	(0.23)
Debt (0/1)				0.14	0.18
				(0.54)	(0.54)
Age					-0.02
					(0.02)
Constant	118.37***	165.37***	167.87***	168.05***	169.20***
	(4.66)	(7.29)	(7.30)	(7.35)	(7.58)
Observations	4,045	4,045	4,045	4,045	4,045
R-squared	0.76	0.76	0.76	0.76	0.76
Demand Fixed Effects	time	time	time	time	time
	property type	property type	property type	property type	property type
	canton	canton	canton	canton	canton
Bank Fixed Effects	yes	yes	yes	yes	yes

4. Conclusion

4 Conclusion

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Sensitivity Measures

Evidence that CCB can change ***composition*** of mortgage supply:

- ***Capital-constrained*** banks raise prices *more* after CCB activation.
- ***Mortgage Specialized*** banks raise prices *more* after CCB activation.

LTV Thresholds/Risk-Weighting Schemes

- Under current Swiss risk-weighting scheme, CCB effect not amplified for higher LTVs

4. Follow-up project with the same data

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"The Demand and Supply of **Mortgage Rate Fixation Periods.**"
With Benjamin Guin (University of St. Gallen) and Catherine Koch (BIS)

- *Investigate what shapes households' & banks' choice of fixation periods*
- *High-PTI households most vulnerable to interest rate surges are most likely to ask for short fixation periods, because these are cheaper*
- *Banks steer specifically these households toward longer fixation periods, even though banks with already high interest rate risk exposure do in general prefer longer fixation periods*