Spatially Targeted LTV Policies and Collateral Values

Discussion

Sjoerd van Bekkum, Erasmus School of Economics, Erasmus University

9th IWH-FIN-FIRE Workshop 2023

Big picture

- Too much household debt $\Rightarrow$ recessions and financial crises (Jorda et al., 2015; ...)

- Macroprudential policy - LTV on mortgages - key tool to curb debt growth

- Evidence suggests LTV-like regulation quite effective at reducing household debt nationwide (De Fusco et al., 2020; Benetton, 2021; Acharya et al., 2022; Peydro et al., 2023, ...; Van Bekkum et al., 2022)

- This paper examines consequences of LTV-regulation in Taiwan, at district level
    - District $\sim$ U.S. 5-digit zip code in dense metropolitan areas, on average 63,219 people / 98 km^2
    - LTV regulation for 2nd homes
    - Treated districts selected by government based on prior house price growth

My two cents

A lot to like:

- Unique setting of 4 shocks to *local* LTV limits
- Great data
- Thorough, careful analysis
- Well-written
- Convincing messages

Also, a lot to digest:

- Diff-in-diff and diff-in-disc.
- Which shocks to choose? (focus on 2014 and often 2010).
- Estimation on samples based on frequent 2nd home buyers, 2nd home buyers, apartments, all transactions
- Effect on housing, delinquency, and mortgages, as well as appraisals

My two cents

A lot to like:

- Unique setting of 4 shocks to *local* LTV limits
- Great data
- Thorough, careful analysis
- Well-written
- Convincing messages

Also, a lot to digest:

- Diff-in-diff and diff-in-disc.
- Which shocks to choose? (focus on 2014 and often 2010).
- Estimation on samples based on frequent 2nd home buyers, 2nd home buyers, apartments, all transactions
- Effect on housing, delinquency, and mortgages, as well as appraisals

# Main result #1: Regulation lowers LTV for 2nd homes

FIGURE 2. First Stage Effects: Modal LTV Ratios for Treatment vs. Control Loan Contracts
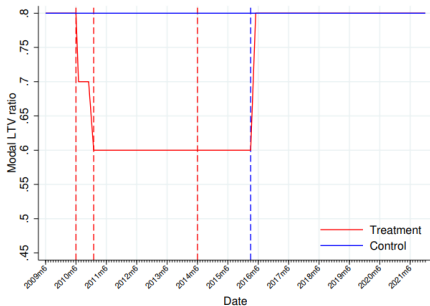
- The policy clearly matters! And it's the high end of wealth distribution being rationed (cf. Van Bekkum et al. 2019).
- Q: Do all affected buyers have LTV at 0.6? What are the exceptions (eg grandfathered refinancings)?
- Do other measures reveal a 2014 change in LTV, L, V (P in fig 3), %conforming?
- Opposite effect when regulation is relaxed? Discuss why (not)

Main result #1: Regulation lowers LTV for 2nd homes

FIGURE 2. First Stage Effects: Modal LTV Ratios for Treatment vs. Control Loan Contracts
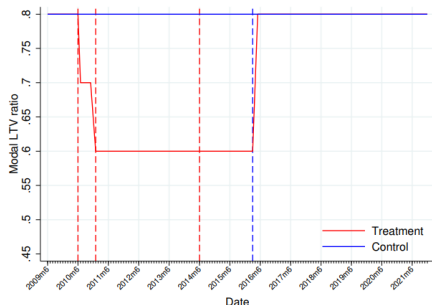
- The policy clearly matters! And it's the high end of wealth distribution being rationed (cf. Van Bekkum et al. 2019).
- Q: Do all affected buyers have LTV at 0.6? What are the exceptions (eg grandfathered refinancings)?
- Do other measures reveal a 2014 change in LTV, L, V (P in fig 3), %conforming?
- Opposite effect when regulation is relaxed? Discuss why (not)

What makes this shock special (1/2)?

- LTV regulation is typically national, and elicits spatial optimization response:
  - Banks start lending in different areas (Acharya et al. 2022)
  - Borrowers start moving to different areas (Tzur-Ilan 2023)

→ "Leakage" driven by the extent to which LTV caps bind

- This could be solved by variation in LTV limits. But would this itself not lead to spillovers, as house prices increase in areas with "easier" credit?

- This paper: they do, but effect is limited for larger geographical areas

What makes this shock special (1/2)?

- LTV regulation is typically national, and elicits spatial optimization response:
  - Banks start lending in different areas (Acharya et al. 2022)
  - Borrowers start moving to different areas (Tzur-Ilan 2023)

$\rightarrow$ "Leakage" driven by the extent to which LTV caps bind

- This could be solved by variation in LTV limits. But would this itself not lead to spillovers, as house prices increase in areas with "easier" credit?

  - This paper: they do, but effect is limited for larger geographical areas

What makes this shock special (1/2)?

- LTV regulation is typically national, and elicits spatial optimization response:
  - ▸ Banks start lending in different areas (Acharya et al. 2022)
  - ▸ Borrowers start moving to different areas (Tzur-Ilan 2023)
- → "Leakage" driven by the extent to which LTV caps bind
  - This could be solved by variation in LTV limits. But would this itself not lead to spillovers, as house prices increase in areas with "easier" credit?

  - This paper: they do, but effect is limited for larger geographical areas

What makes this shock special (2/2)?

In most LTV studies (incl. ours), identification is challenging. This is because with nationwide regulation, a treated group

$$[E(y|After, LTV > 0.60) - E(y|Before, LTV > 0.60)]$$

compares against a control group

$$[E(y|After, LTV < 0.60) - E(y|Before, LTV < 0.60)],$$

But, in this setup, $E(y|After, LTV > 0.60)$ is an empty set, because of regulation.

- The local LTV caps allow for DiDisc estimates (Result #3), and DiDiff (Result #2)

Result #2: LTV cap affects loans, not delinquency

A. ATT Estimates for December 2010 LTV Tightening

	log(loan amount)		log(unit price)		Interest rate (%)		Maturity	
ATT	-0.130^{***}	-0.128^{***}	-0.092^{*}	-0.104^{**}	-0.029	-0.033	-4.329^{*}	-5.111^{*}
	(0.044)	(0.048)	(0.049)	(0.045)	(0.031)	(0.033)	(2.526)	(2.784)

This result is a DiDiff result, which assumes

$$E(y|After, LTV > 0.60) \rightarrow E(y|After, 0.55 \leq LTV \leq 0.59),$$

by matching before/after based on observables with a frequent-buyer fixed effect.

- $y =$ loan characteristics, delinquency

Please clarify in the paper:

- Why is $E(y|Before, LTV > 0.60)]$ capped at 61-65% LTV.
- Why not $E(y|After)$ up to *and including* (or exclusively) 0.60 (see result #1)?

Result #2: LTV cap affects loans, not delinquency

A. ATT Estimates for December 2010 LTV Tightening

	log(loan amount)		log(unit price)		Interest rate (%)		Maturity	
ATT	−0.130***	−0.128***	−0.092*	−0.104**	−0.029	−0.033	−4.329*	−5.111*
	(0.044)	(0.048)	(0.049)	(0.045)	(0.031)	(0.033)	(2.526)	(2.784)

This result is a DiDiff result, which assumes

$$E(y|After, LTV > 0.60) \rightarrow E(y|After, 0.55 \leq LTV \leq 0.59),$$

by matching before/after based on observables with a frequent-buyer fixed effect.

- $y =$ loan characteristics, delinquency

Please clarify in the paper:

- Why is $E(y|Before, LTV > 0.60)]$ capped at 61-65% LTV.
- Why not $E(y|After)$ up to *and including* (or exclusively) 0.60 (see result #1)?

Result #2: LTV cap affects loans, not delinquency

Suggestions:

- The set $E(y|After, LTV > 0.60)$ remains incomplete due to selection into buying
- What happens to restricted home owners after, relative to unrestricted after?
  - $E(y|After, LTV = 0.60) - E(y|After, LTV < 0.60)$
  - More likely to move closer?
  - Buy more stocks?
- Check: do unrestricted borrowers behave similarly after the rule change?
  - $E(y|After, LTV < 0.60) - E(y|Before, LTV < 0.60)$
  - further rules out potential unobservables
- Frequent buyers $\sim$ investors, different animal.
  - Several papers estimate
    $E(y|After, LTV > 0.60) \rightarrow E(y|After, L\hat{T}V > 0.60)$
  - Similar results for the set of single-2nd-home buyers.?

Main result #3: LTV decreases house prices

- Diff-in-disc: RDD with distance to border as 'running variable'

$Y_{idt} = \gamma(LTVCap_{id} \times Post_{dt}) + f(lat_i, lon_i) + g(DTrain_i) + \beta \cdot X_{idt} + \xi_d + \delta_t + \sum \phi_i + \varepsilon_{idt}$

- Many policy papers on price effect of LTV
  - Cerutti et al (2017, 2018) find insignificant dynamic panel estimates of LTV cap on prices across 119 countries

- This paper finds a price effect, albeit for small country, with great data while taking identification very seriously

- Please clarify in the paper:
  - Why diff-in-disc vs. diff-in-diff.

Main result #3: LTV decreases house prices

- Diff-in-disc: RDD with distance to border as 'running variable'

$Y_{idt} = \gamma(LTVCap_{id} \times Post_{dt}) + f(lat_i, lon_i) + g(DTrain_i) + \beta \cdot X_{idt} + \xi_d + \delta_t + \sum \phi_i + \varepsilon_{idt}$

  - Many policy papers on price effect of LTV
    - ▸ Cerutti et al (2017, 2018) find insignificant dynamic panel estimates of LTV cap on prices across 119 countries
  - This paper finds a price effect, albeit for small country, with great data while taking identification very seriously
  - Please clarify in the paper:
    - ▸ Why diff-in-disc vs. diff-in-diff.

Main result #3: LTV decreases house prices

- Very careful analysis
- Result is not entirely novel (cf. many cited policy papers), but much more convincing than before
  - Non-result in eg Cerutti et al (2017, 2018) possibly driven by offsetting effects of price growth across districts
- Selection into buying less problematic for prices.
- Selection into treatment: This is addressed head-on (Table 2)
  - Governments choose LTV policy (and areas) based on past house prices.
  - Paper defense: diff-in-disc estimate does not change for narrow distance around border
  - Valid argument, iff house prices pre-shock are indeed smooth.

Main result #3: LTV decreases house prices

- An additional term is added to capture spillovers:
  - $\eta \left(1\{i \in H(r) \times Post_{dt}\right), H \equiv \{i | 0 \le x(i) \le r\}$
- Indeed, some spillovers of up to 2pp of the 6% dif-in-disc exist, very close to the border
- The "leakage" of regulation, typically identified through lenders, exists but is fairly limited to very close to the border
  - "Commuting costs rise exponentially"
  - Makes sense, especially for 2nd homes (bought to reduce commuting time in first place)?

Main result #4: LTV leads to more regulatory arbitrage

Macroprudential policy leads to inflated appraisal values

- Very novel result
- This idea has been floating around for a while but noone seemed to have been able to address it
- You have a great change in policy
  - The 2010 reform defines LTV denominator as appraised collateral value
  - The 2014 reform defines LTV denominator as min{price, collateral value}
- Exciting! Personally I would consider making this the headline result

Wrap-up

- Great paper, impressive data, pleasure to read
- Also long, work in progress, and many things going on.
- What does the DiDiff add?
  - Selection into buying
  - Pretrends exist in 2010. Diff-in-disc assumptions may hold
  - Applies only to N-time buyers of second-homes
- At least save more tentative parts for end of paper
- Or replace the 2010 shock for a relaxing shock, and have symmetry
- The appraisals result is a great and novel result, and to me deserves more prominence

Looking forward to the next version!