

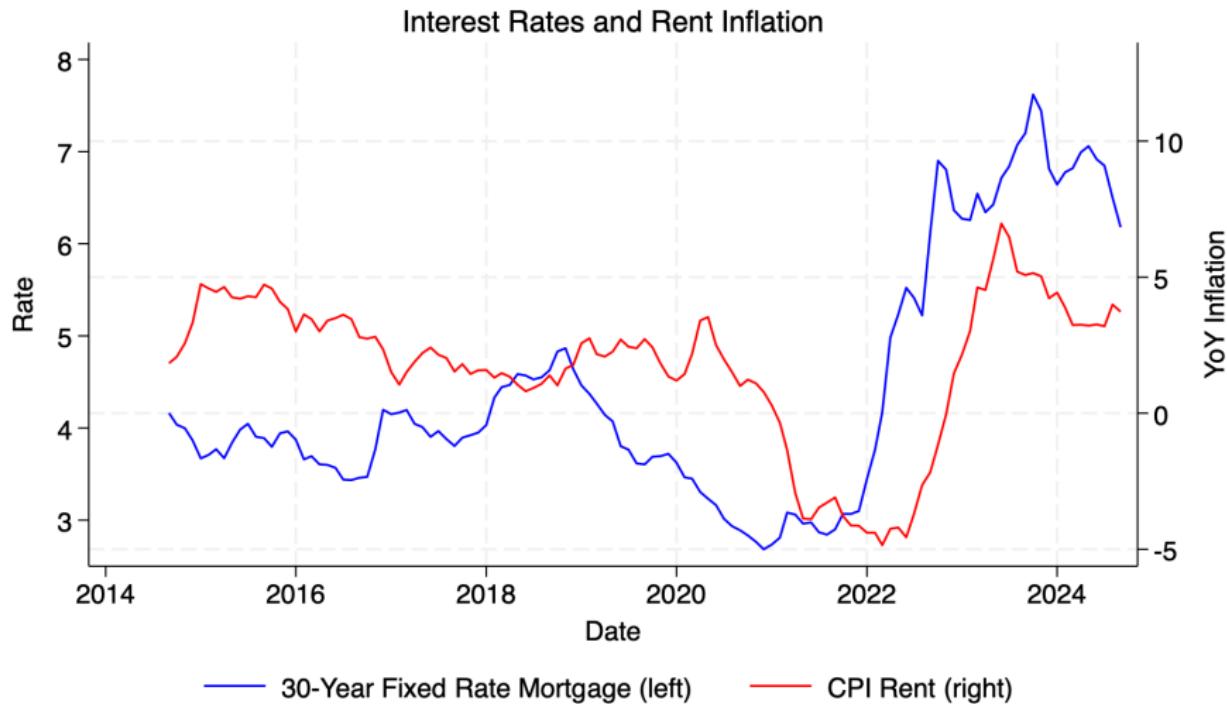
# **Monetary Policy and Rents**

**Boaz Abramson<sup>1</sup>**  
**Pablo De Llanos<sup>1</sup>**  
**Lu Han<sup>2</sup>**

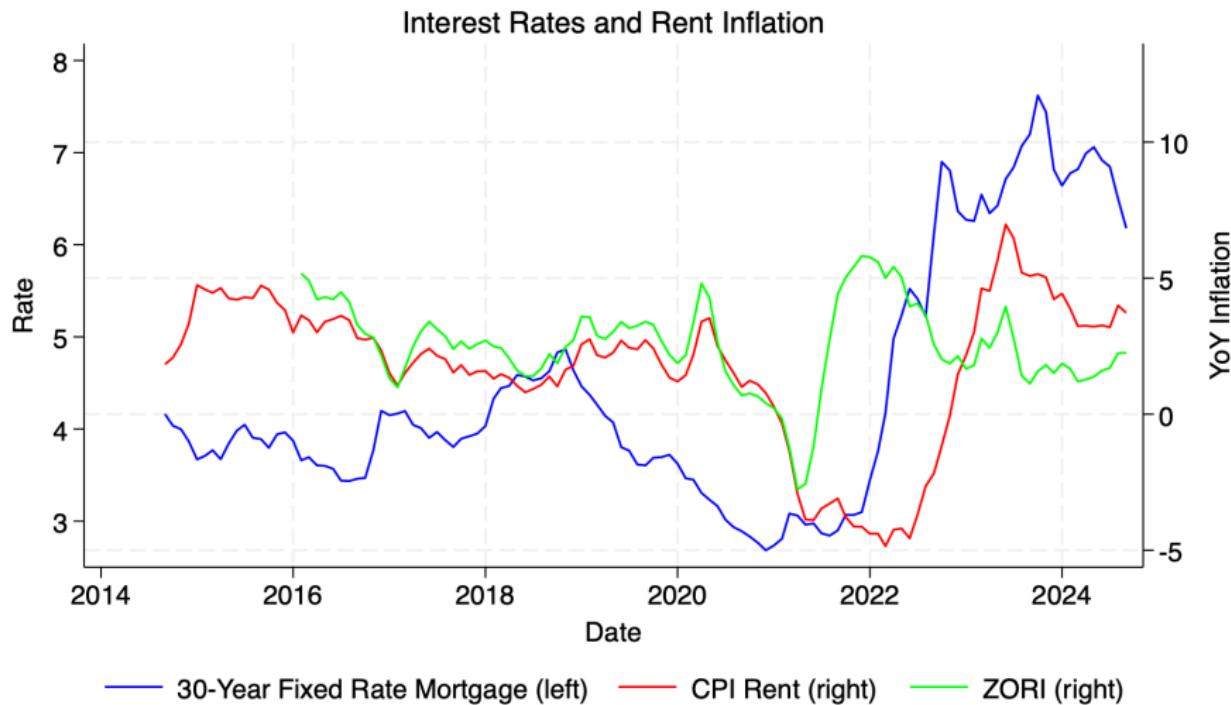
<sup>1</sup>Columbia University  
<sup>2</sup>University of Wisconsin

November 15, 2024

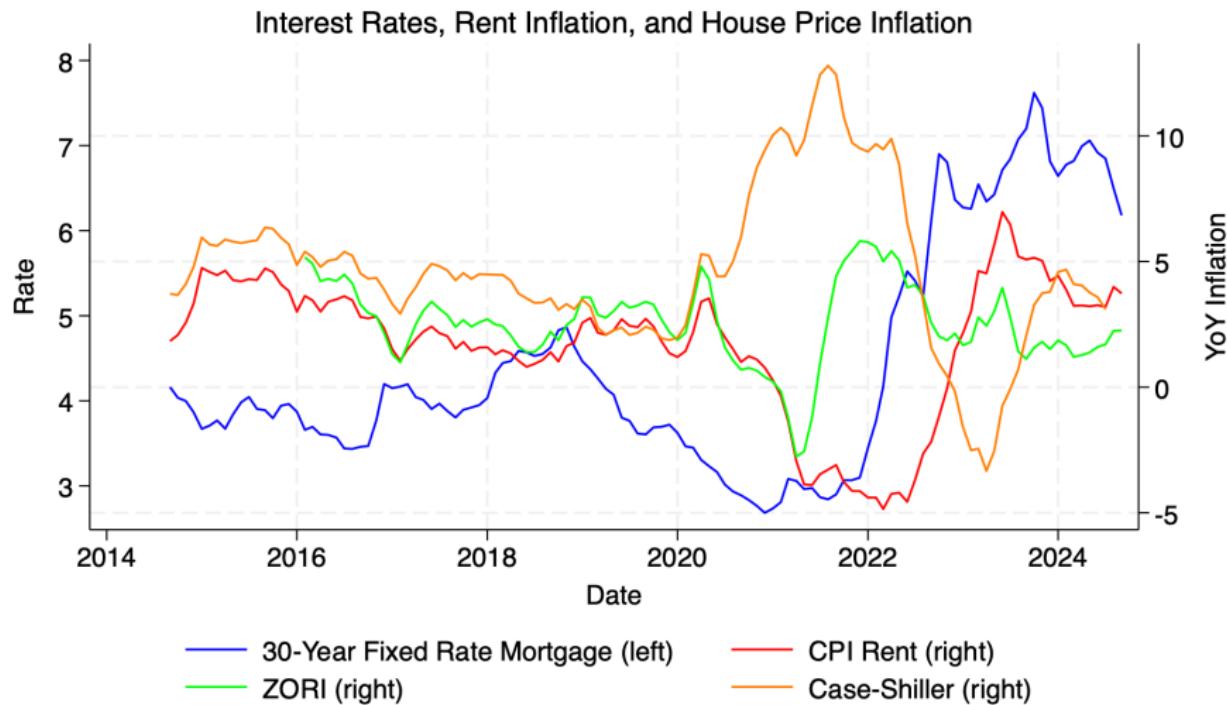
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  - ▶ Higher interest rate can lower rents by reducing demand ( $\frac{\partial \text{rent}}{\partial i} < 0$ )  
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- ▶ Higher rate can increase rents by crowding in homebuyers ( $\frac{\partial \text{rent}}{\partial i} > 0$ )  
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- Why is the effect of monetary policy on rents important?
  - ① Distributional effects of MP - most vulnerable households are renters
  - ② Ability of MP to control inflation depends on how MP affects rents  
Rents account for 36% of CPI

# What We Do

- Construct a new repeat-rent index (ADH-RRI)
  - ▶ Using national database of rental listing
  - ▶ Advantages of ADH-RRI relative to other rent indices:
    - ① A more granular geographical coverage
    - ② A wider temporal coverage
  - ▶ Provide new measures of rent inflation  
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For wide host of previously unobserved zip-codes and time-periods
- Estimate impulse responses of rents to monetary policy shocks
  - ▶ By employing local projection methods (Jordà, 2005)
  - ▶ Exogenous MP shocks from Bauer-Swanson (2023) MP surprises
  - ▶ Replicate analysis for a host of alternative MP shocks

## What We Find

- Contractionary monetary policy shock increases rent
  - 25bps increase in mortgage rate → 1.7% increase in **real** rent
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- Effect driven by single-family rents

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- Effect driven by single-family rents
- Mechanisms (ongoing work):
  - ▶ Heterogeneous effects by mortgage lock-in
  - ▶ Effect of MP on rent-own transitions
  - ▶ Heterogeneous effects by supply elasticities

# Literature

- **Rent indices:** Bailey et al. (1963); Case and Shiller (1989); Ambrose, Coulson, Yoshida (2015, 2023); Clark (2022); Adams et al. (2024)
- **Monetary policy and housing:** Case and Shiller (1989); Kuttner (2014); Williams (2015); Gete and Reher (2018); Dias and Duarte (2019); Koeniger, Lennartz, Ramelet (2022); Gorea, Kryvtsov, Kudlyak (2022); Ringo (2024); Lazarowicz and Richard (2024)
- **Mortgage lock-in:** Quigley (1987); Ferreira, Gyourko, Tracy (2010); Liu and Fonseca (2023); Batzer et al. (2024); Liu, Fonseca, Mabille (2024), De la Roca, Giacoletti, Liu (2024), Liebersohn and Rothstein (2024); Gerardi, Qian, Zhang (2024)
- **Distributional effects of monetary policy:** Coibion, Gorodnichenko, Kueng (2017); Auclert (2019); Luetticke (2021); Amberg et al. (2022)

# Outline of the talk

- ① Data
- ② Repeat-Rent Index
- ③ Effects of Monetary Policy

# Data

## Rental Listings

- Rental listing data compiled by Altos Research (2011-2022)
- National database, compiled from online listing platforms and MLS
- Data provides weekly snapshot of observed rental listings
  - ▶ Listed monthly rent, week listing observed, address, number of beds and baths, floor size, property type, year built, amenities

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  - ▶ Listed monthly rent, week listing observed, address, number of beds and baths, floor size, property type, year built, amenities
- Sample selection:
  - ▶ Multi-family + single-family units (drop short-term, mobile, commercial)
  - ▶ Drop listings with incomplete information or extreme rents

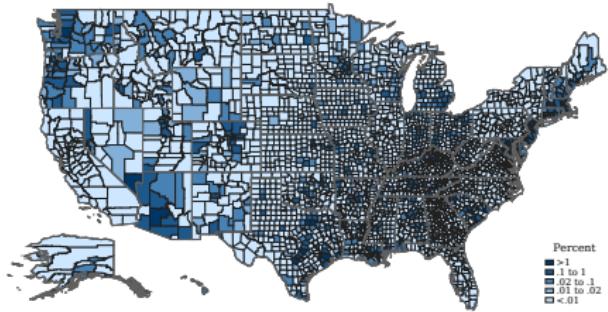
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- Identifying listings of the same unit across time (required for RRI)
  - ▶ Identify units by address, number of beds, number of baths
  - ▶ In the data, buildings have multiple units with same beds and baths
  - ▶ Not an issue for RRI as long as these units are of the same quality
  - ▶ For conservativeness, drop tuples of (address, beds, baths) for which multiple listings with different prices observed within same week

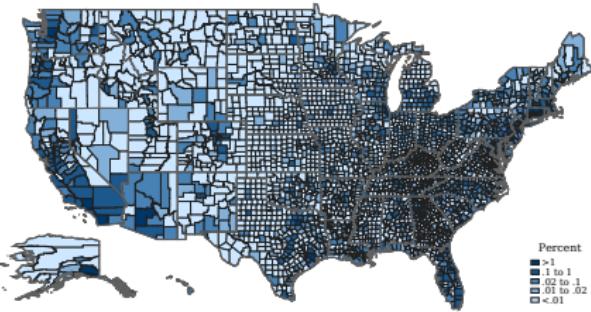
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- Monthly panel of listings at the unit level (43M obs, 10.8M units)

# Geographical Coverage



(a) Altos



(b) ACS

For each county, compute share of rental units in US that are in that county

## Summary Statistics

sample	Rent (2015 USD)	Built	Sqft	Beds	Baths	% in SF
ACS	1090	1977	.	1.9	.	30
AHS	1233	1974	1160	2.1	1.5	35
Altos	1420	1973	1543	2.7	1.9	39
ZORI	1386	.	.	.	.	.

# Repeat-Rent Index

## ADH-RRI

- RRIs provide a quality-constant measure of rent growth

Bailey et al. (1963); Case and Shiller (1988), Ambrose et al. (2015)

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- RRI is constructed by estimating:

$$\log P_{i,t} - \log P_{i,s} = \gamma_1 D_{i,1} + \gamma_2 D_{i,2} + \dots + \gamma_N D_{i,N} + \varepsilon_{i,t,s}$$

$P_{i,t}$  = rent on the  $i$ th rental unit at month  $t$

$P_{i,s}$  = rent on the  $i$ th rental unit at month  $s$ ,  $t > s$

$D_{i,k} = 1$  if second observation in pair took place in month  $k$

$D_{i,k} = -1$  if first observation in pair took place in month  $k$

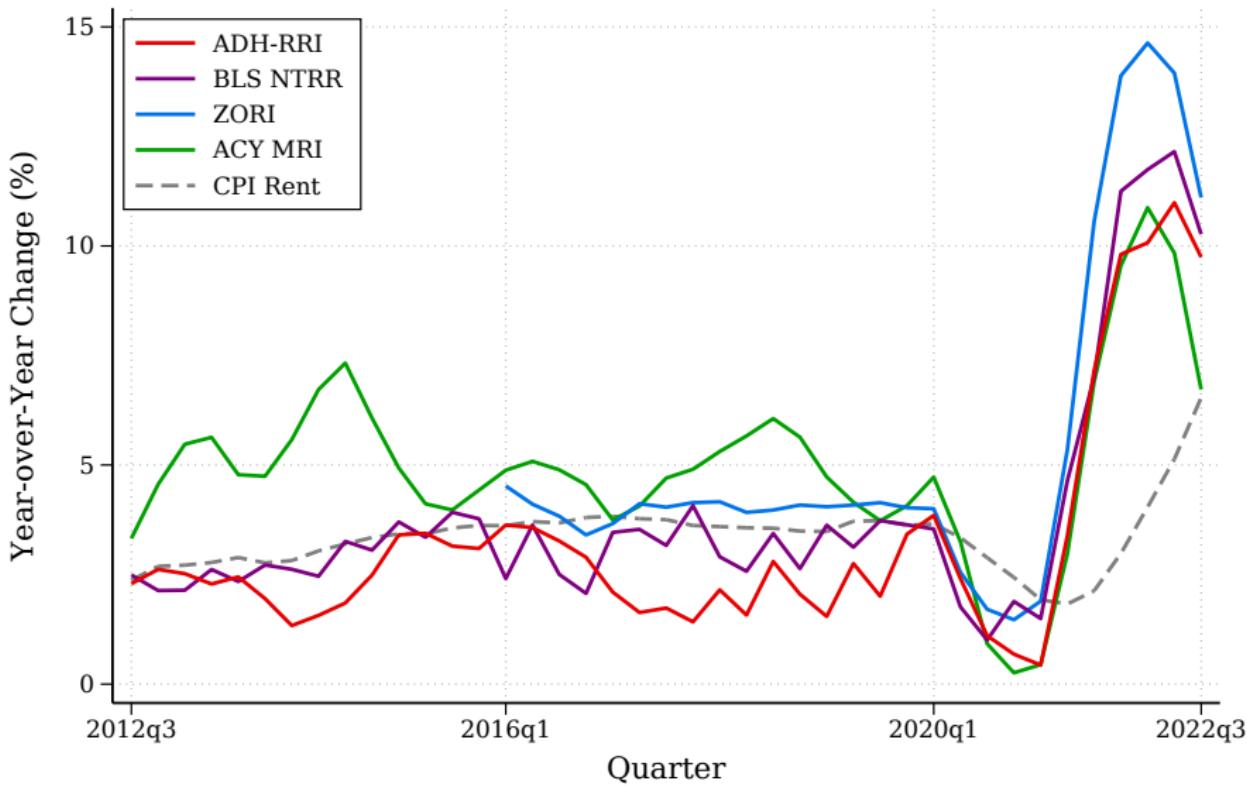
- $\{\gamma_1, \dots, \gamma_N\}$  represent percentage change in rents wrt to base month

$$ADHRRIt = 100 \exp(\gamma_t)$$

- RRIs provide a quality-constant measure of rent growth  
Bailey et al. (1963); Case and Shiller (1988), Ambrose et al. (2015)
- Different specifications of RRI
  - ▶ Nominal vs. real
  - ▶ New listings vs. all listings
  - ▶ Zipcode level vs. national level
  - ▶ Single-family vs. multifamily vs. all
  - ▶ Monthly vs. quarterly

# Comparison to Alternative Rent Indices

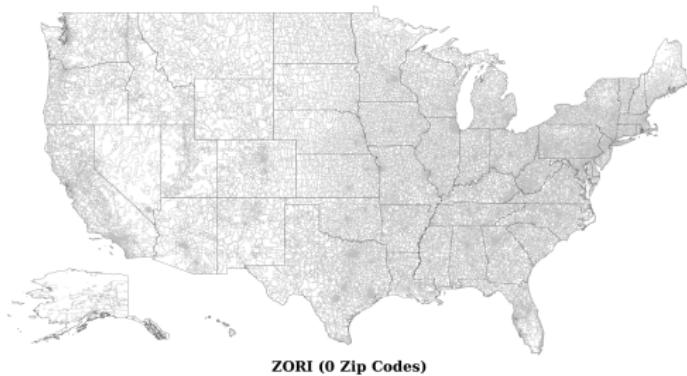
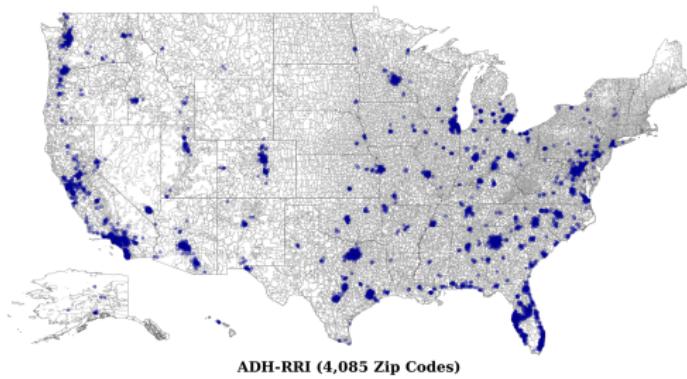
ZORI



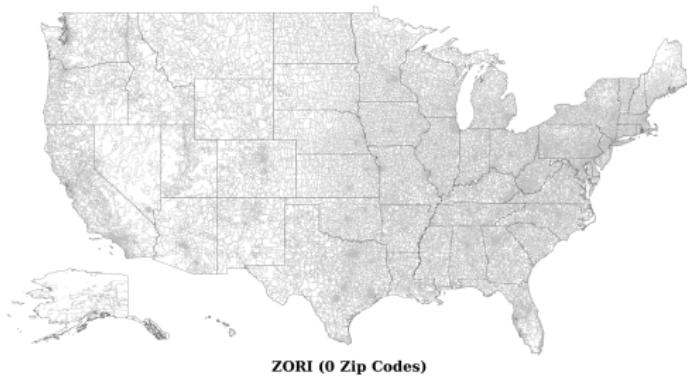
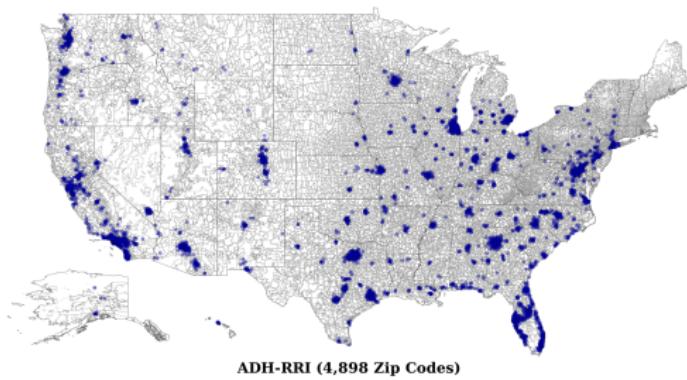
## Advantage of ADH-RRI

- Broader, more granular, geographical coverage relative to alternatives
  - ▶ ADH-RRI computed at zipcode level
  - ▶ CPI computed only at CBSA level
  - ▶ ACY-MRI, NTRR, ATRR computed only at national level
  - ▶ ZORI computed at zipcode level but covers less zipcodes and less periods

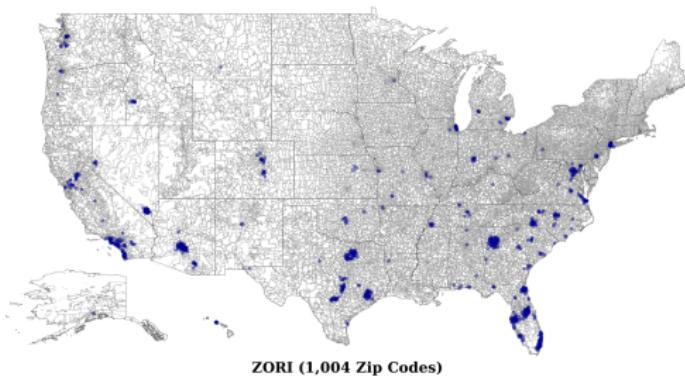
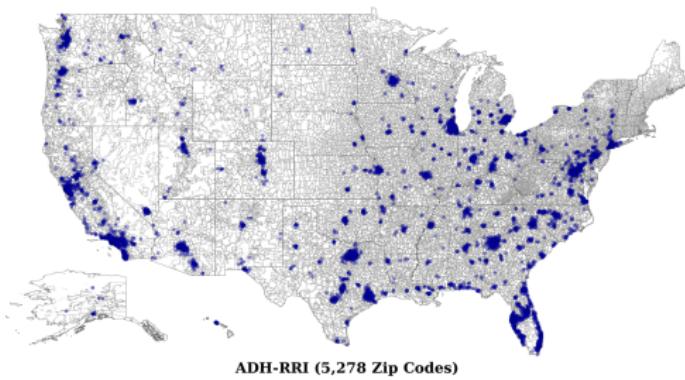
# ADH-RRI vs. ZORI (2011)



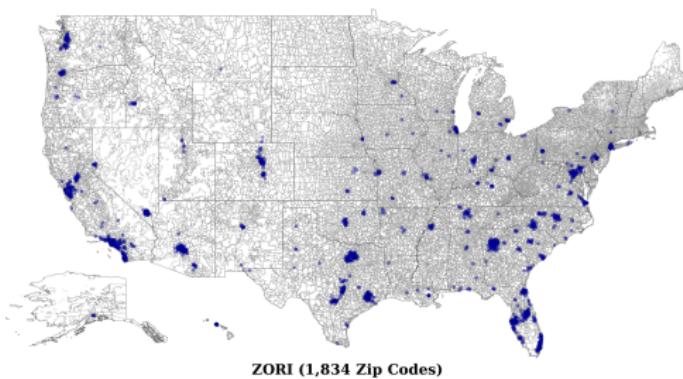
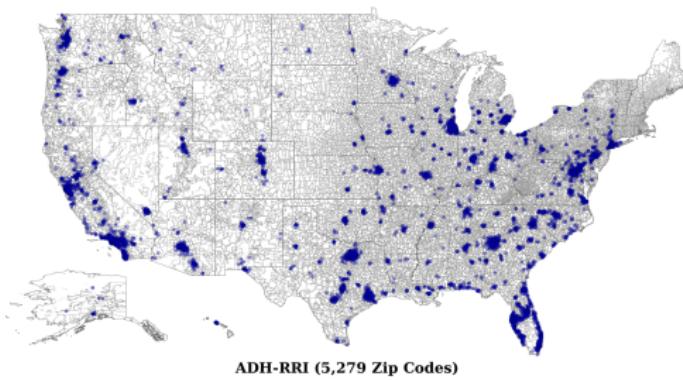
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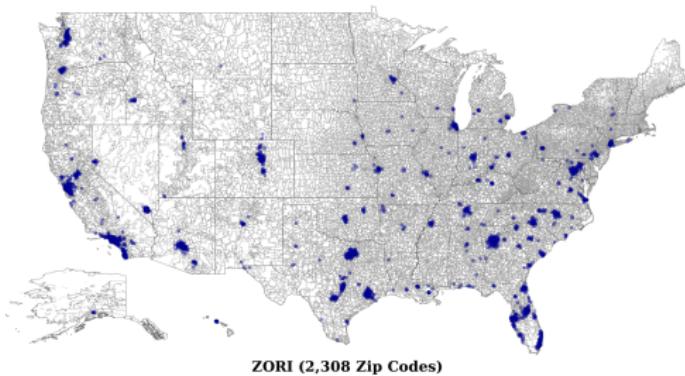
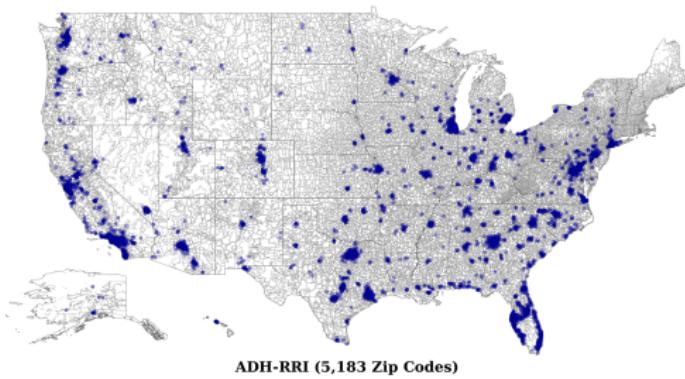
# ADH-RRI vs. ZORI (2015)



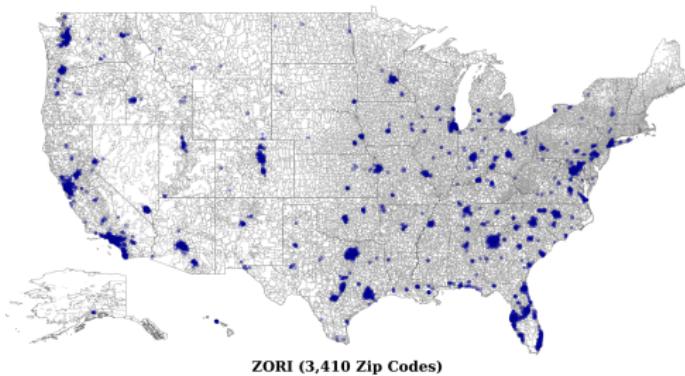
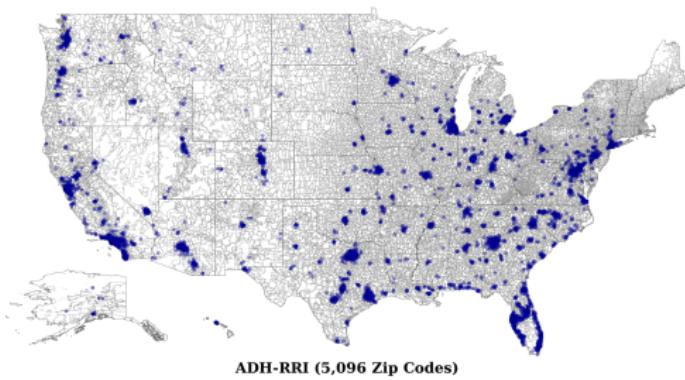
# ADH-RRI vs. ZORI (2017)



# ADH-RRI vs. ZORI (2019)



# ADH-RRI vs. ZORI (2021)



# Effect of Monetary Policy

## Local-Projection Instrumental-Variable (LP-IV)

- Standard framework for estimating dynamic effects of MP shocks  
Jordà (2005); Jordà et al. (2015); Ramey (2016); Stock and Watson (2018)

$$\log ADHRR{I}_{z,t+h} - \log ADHRR{I}_{z,t-1} = \alpha_z^{(h)} + \beta^{(h)} i_t + \Gamma^{(h)} X_{z,t-1} + \varepsilon_{z,t+h} \quad (1)$$

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LHS = growth rate of rent in zipcode  $z$  between  $t-1$  and  $t+h$  ( $h = \{0, 1, \dots, 24\}$ )

$\alpha_z^{(h)}$  = zip fixed effect

$i_t$  = interest rate (30-year FRM)

$X_{z,t-1}$  = zipcode controls (including lagged  $ADHRI$ ) and macro controls

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  - ① Measure changes in rates around FOMC meetings + Fed chair speeches
  - ② Orthogonalize MP surprises by regressing them on pre variables

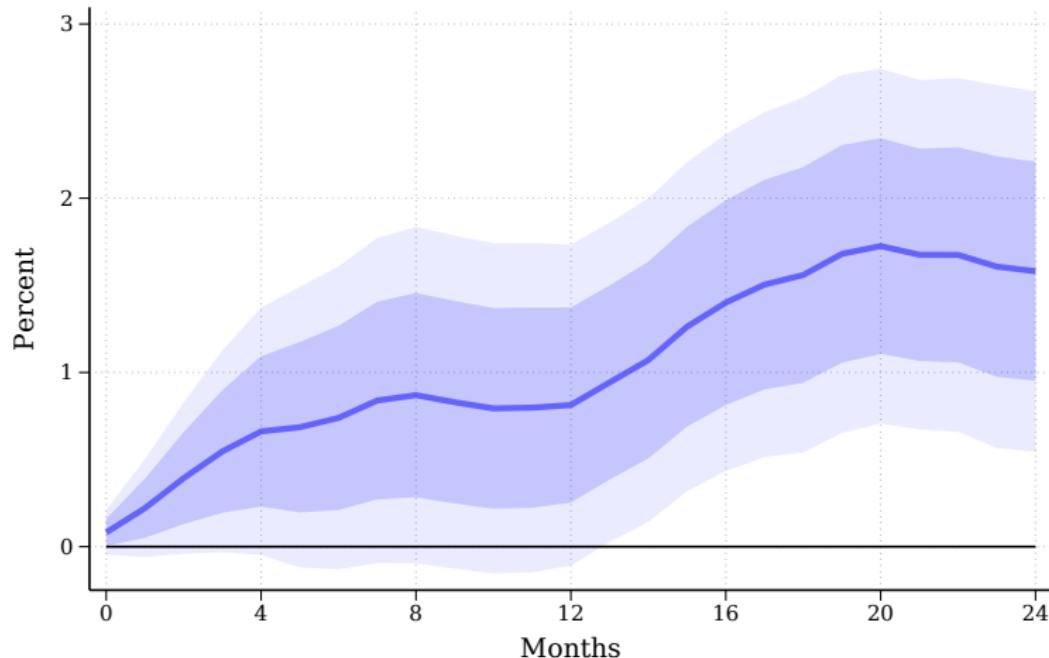
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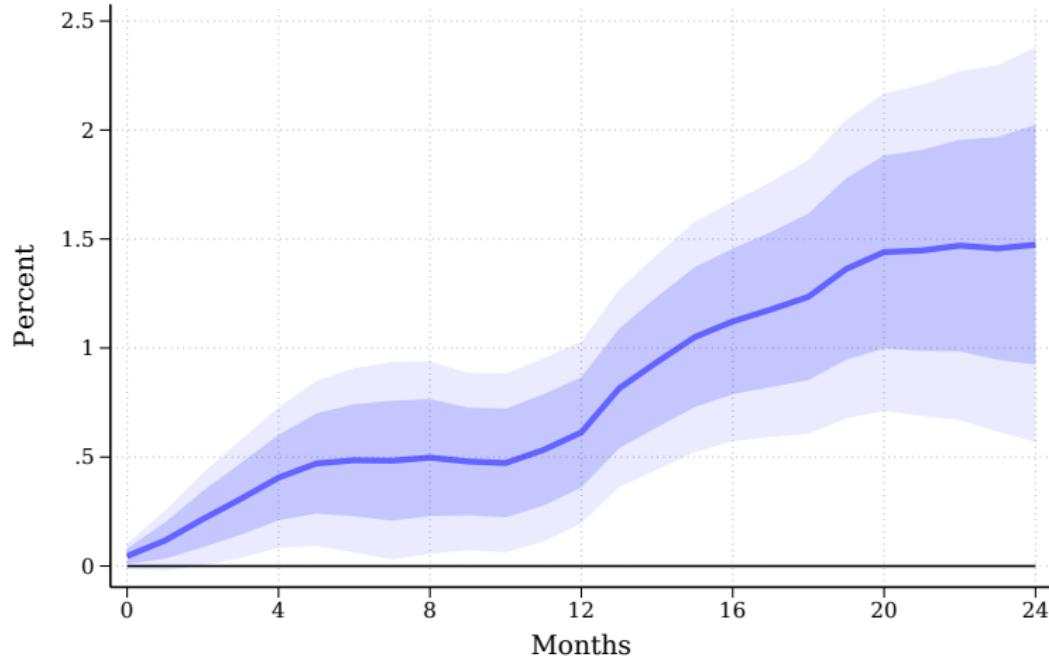
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- Replicate analysis for a host of alternative MP shocks  
Gürkaynak et al. (2005); Gertler Karadi (2015); Nakamura Steinsson (2018)

# Results



25bps increase in the 30-year fixed mortgage rate  $\Rightarrow$  1% (1.7%) increase in **real** rent

## Results - Nominal Rents



If contractionary MP raises rents ( $\approx 35\%$  of CPI), this limits its ability to lower inflation

# Robustness

- Alternative MP shocks [▶ detail](#)

Gürkaynak et al. (2005); Nakamura Steinsson (2018); Swanson (2021)

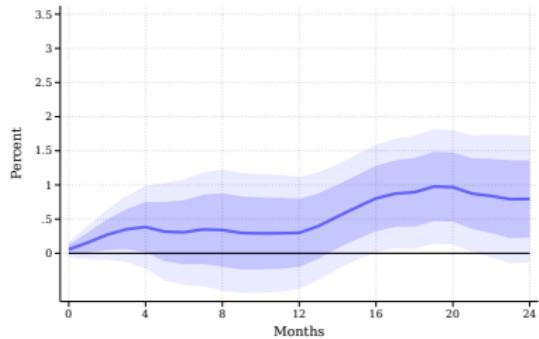
- ZORI [▶ detail](#)

- CPI [▶ detail](#)

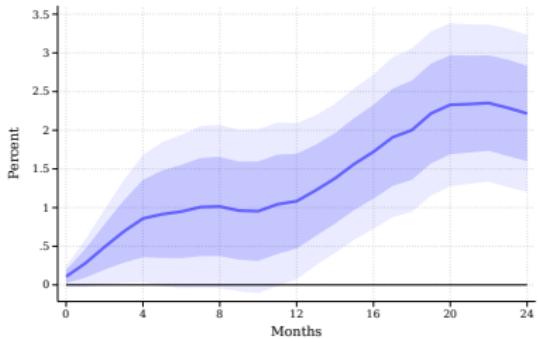
- ACY-MRI [▶ detail](#)

- Falsification [▶ detail](#)

# Multi-Family vs. Single-Family



(a) Multi-Family



(b) Single-Family

# Concluding Remarks

## Conclusion and Next Steps

- Estimate the effect of MP on rents

- Construct a new RRI using rental listing data

Broader and more granular geographical coverage relative to alternatives

- Main finding: rent increases following a contractionary MP shock

A 25bps exogenous increase in mortgage rate lead to 1.7% increase in rent

- Policy implications:

- ▶ Distributional effects of MP
- ▶ Effective conduct of MP

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- Policy implications:
  - ▶ Distributional effects of MP
  - ▶ Effective conduct of MP
- Next steps:
  - ▶ Heterogeneous effects by supply elasticities
  - ▶ Heterogeneous effects by mortgage lock-in
  - ▶ Effect of MP on rent-own transitions

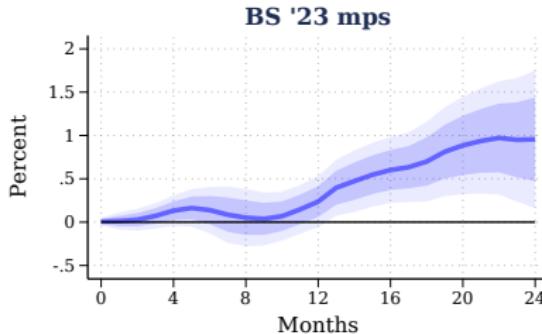
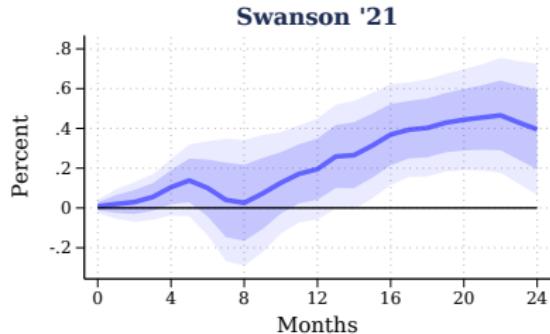
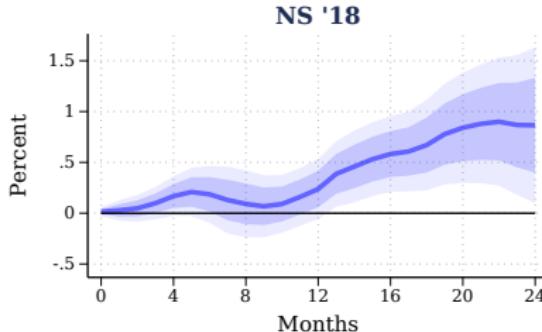
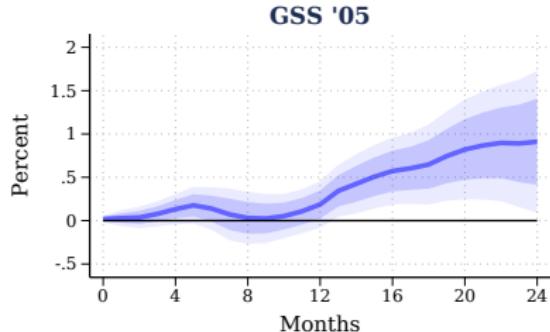
# Thank You!

# Appendix

	OLS			
	Log ADH-RRI	$\Delta_{YoY}$ Log ADH-RRI	(3)	(4)
(1)	(2)			
Log ZORI	0.827*** (0.005)	0.846*** (0.003)	.	.
$\Delta_{YoY}$ Log ZORI	.	.	0.649*** (0.005)	0.615*** (0.006)
Zip Code FEs	No	Yes	No	Yes
R-squared	0.889	0.957	0.604	0.655
Observations	183,374	183,341	139,752	139,707

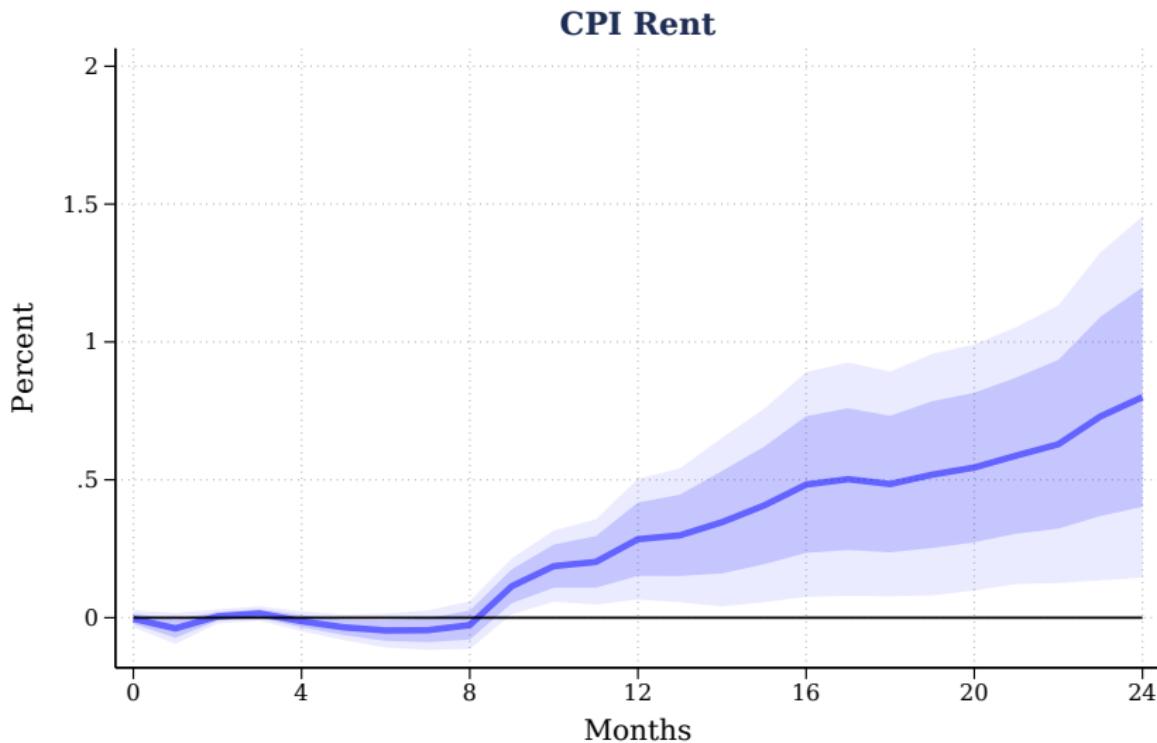
# Alternative Monetary Policy Shocks

▶ Back



# Effect of Monetary Policy on CPI Rent Inflation

▶ Back

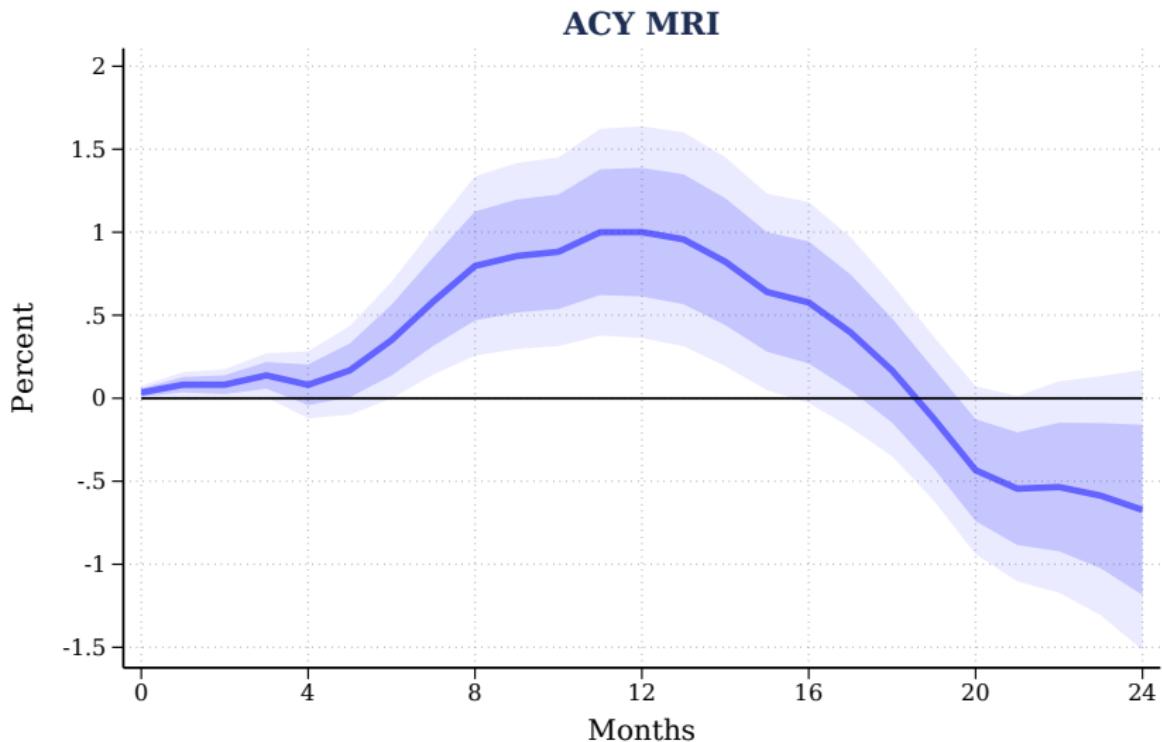


# Effect of Monetary Policy on ZORI Rent Inflation

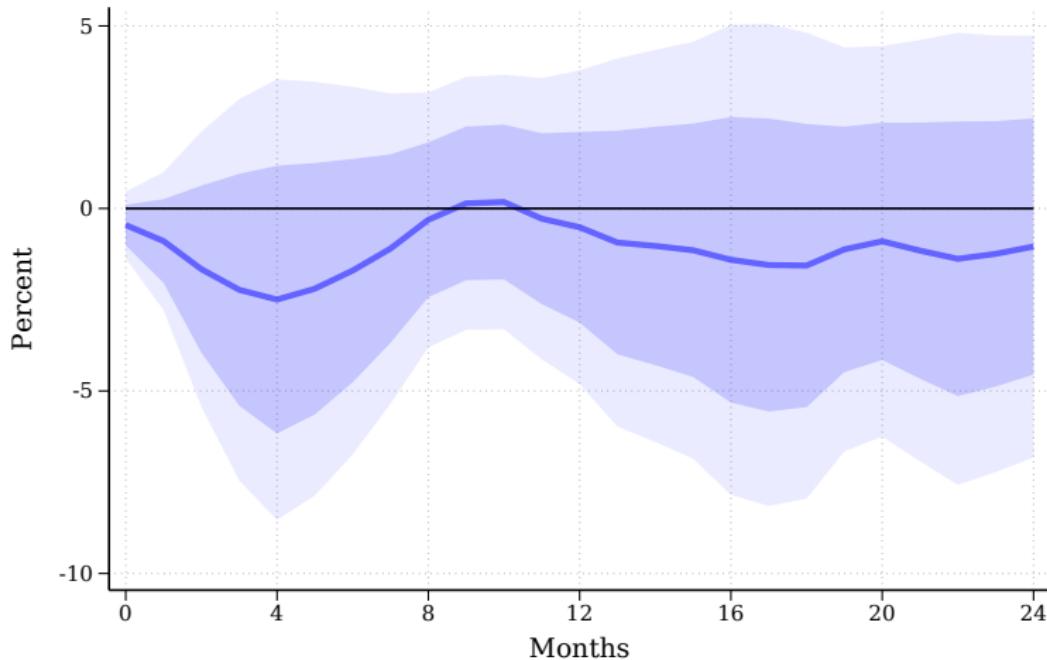
▶ Back

# Effect of Monetary Policy on ACY-MRI Rent Inflation

Back



# Falsification



Impulse response of real rents to randomly drawn MP shock ▶ Back