Sticky Continuing-Tenant Rents

Josh Gallin, Lara Loewenstein, Hugh Montag, and Randal Verbrugge

Federal Reserve Bank of Cleveland

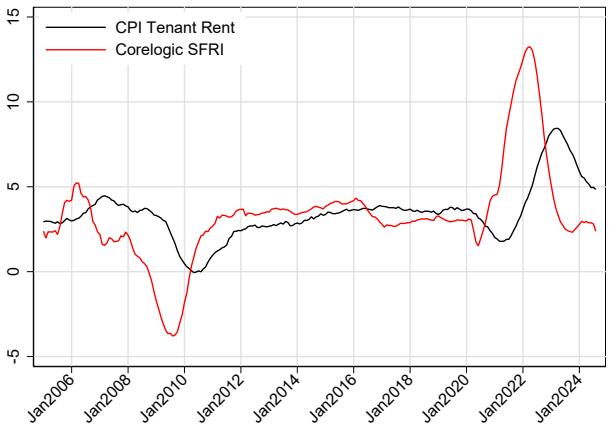
Inflation Dynamics and Drivers
October 25

Disclaimer

This presentation provides a summary of research results. The information is being released for statistical purposes, to inform interested parties, and to encourage discussion of work in progress. The presentation does not represent an existing, or a forthcoming new, official BLS statistical data product or production series.

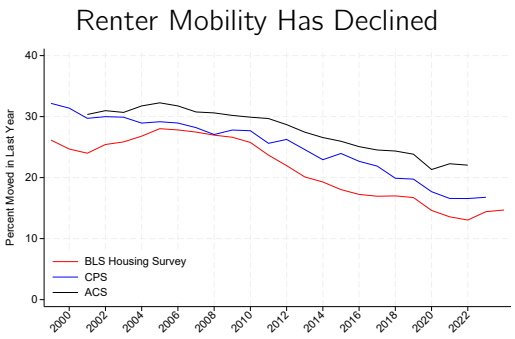
Understanding Rent Inflation

New-Tenant Vs CPI Rent Inflation



- Rent growth determines over 30 percent of CPI.
- Some people move (new-tenants), but others remain in their unit (continuing-tenant).
- New-tenant rent inflation has declined, but CPI tenant rent remains high.
- What is happening with continuing-tenant rent inflation?

Lower Mobility and Continuing-Tenant Rents



- Declining mobility implies that a higher share of units have continuing-renters.
- Continuing-renters could comprise a larger share of overall rent inflation, but depends on:
  1. Whose mobility has declined.
  2. The stickiness of continuing-tenant rents.
  3. The size of rent increases for new tenants.

This Paper

- Use the BLS Housing Survey to understand continuing rent inflation.
- This is the only dataset that we are aware of that allows for this type of analysis.
- We make three contributions:
  1. Quantify the importance of continuing tenant rents to shelter inflation.
  2. Provide basic facts about continuing tenant rents.
     - They are sticky!
     - Stickiness does not vary across business cycle.
     - Stickiness does vary by property type.
  3. Calculate and analyze the "rent gap": the difference between the rent paid by continuing tenants and what would be paid by a new-tenant.
     - The aggregate average rent gap varies over time.
     - The rent gap is correlated with continuing-tenant rent changes.
     - Renters with a higher rent gap are less likely to move out.

BLS Housing Survey

- ≈40,000 rental units surveyed every 6 months
- Data from 1999–present, with some changes in the survey design.
- Units are divided into 6-month panels (January-July, February-August, ...)
- Rental units selected from a selection of metro areas
- Mostly continuing leases, 18% are new leases
- Non-market rents are excluded.
- Data include:
  1. Tenant move-in date
  2. Structure type
  3. Indicator for whether unit is rent controlled.
  4. Weights used in CPI
  5. Contract rents and "economic rents"
  6. Indicator for whether rent is imputed.
- We use non-imputed contract rents adjusted for in-kind payments.
- Additional data sources: CoreLogic SFRI, QCEW, CoStar, PSU-level CPI indices.

Estimating the Contribution of Continuing Tenant Rents to CPI Tenant Rent Inflation

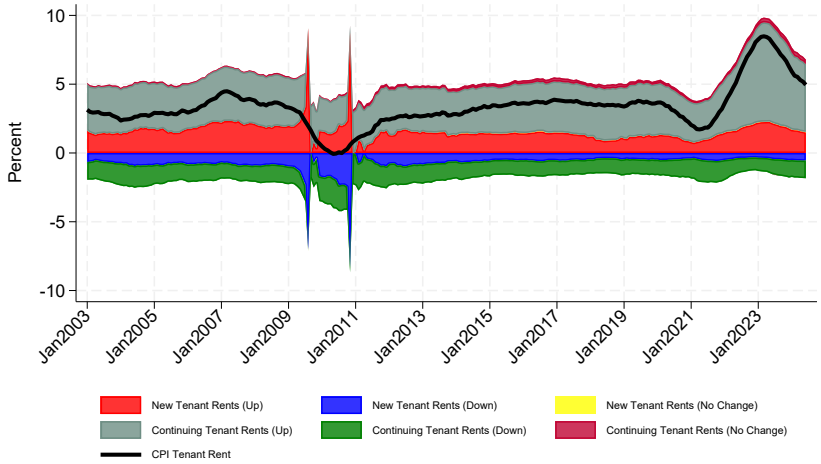
Two approaches:

1. Continuing-tenant share of sampling weights.
2. Share of year-on-year CPI tenant rent attributable to continuing tenants.
   - Use **contract** rents to flag rent increases and decreases
   - Use **economic** rents to calculate inflation rates
   - Calculate $\pi_{C,t}$ and $\pi_{N,t}$ using CPI methodology.
   - Back out $W_{C,t}$

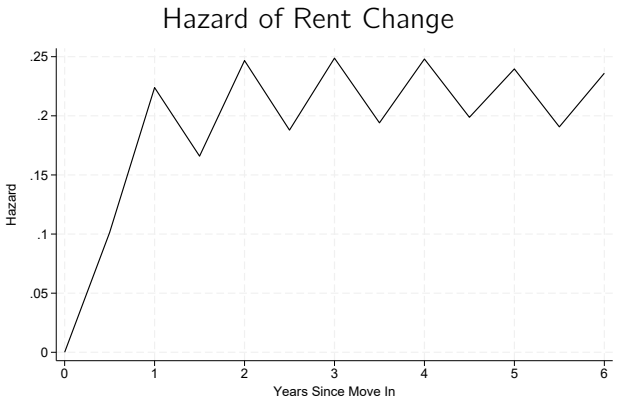
$$\pi_t = W_{C,t}\pi_{C,t} + (1 - W_{C,t})\pi_{N,t}$$

- Also decompose CPI tenant rent inflation into contribution from rent increases and decreases from continuous- and new-tenants.
  1. $\pi_{C,t} = W_{\Delta!=0,C,t}\pi_{\Delta!=0,C,t} + (1 - W_{\Delta!=0,C,t})\pi_{\Delta=0,C,t}$
  2. $\pi_{\Delta,C,t} = W_{\Delta>0,C,t}\pi_{\Delta>0,C,t} + (1 - W_{\Delta>0,C,t})\pi_{\Delta<0,C,t}$

Decomposition of Year-on-Year CPI Tenant Rent Inflation

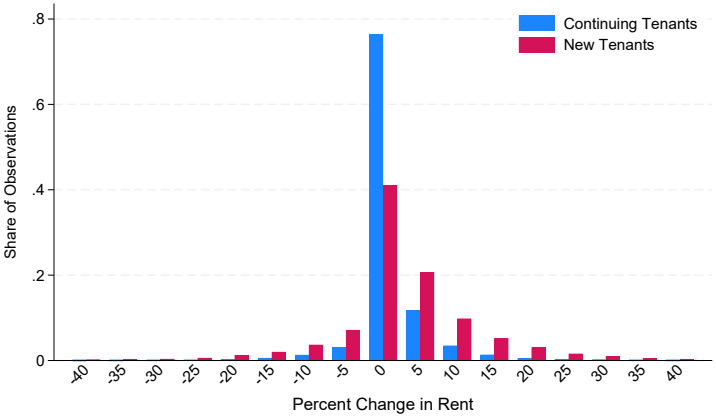


Probability of Any Rent Change Over Tenancy



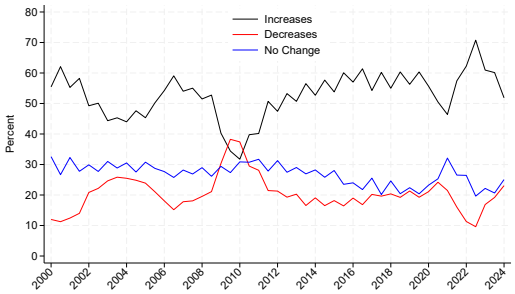
- Rent changes are more common at annual intervals from move-in date.
- However, changes are not uncommon at 6 month intervals.
- We will consider rent changes over 6 month periods.

Distribution of Rent Size Changes by Tenant Type

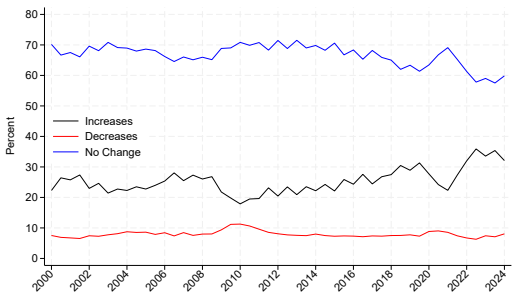


Frequency of Rent Changes by Tenant Type

New Tenants



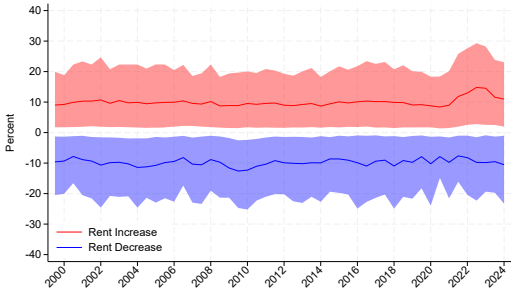
Continuing Tenants



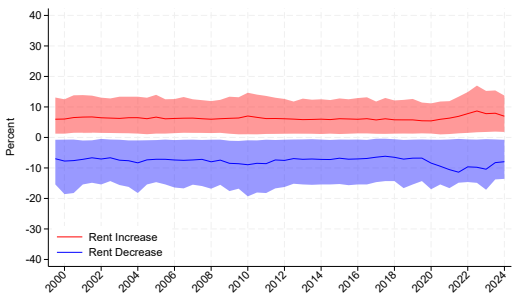
Percent of rents changed every half-year.

Size and Dispersion of Rent Changes Over Time

New Tenants

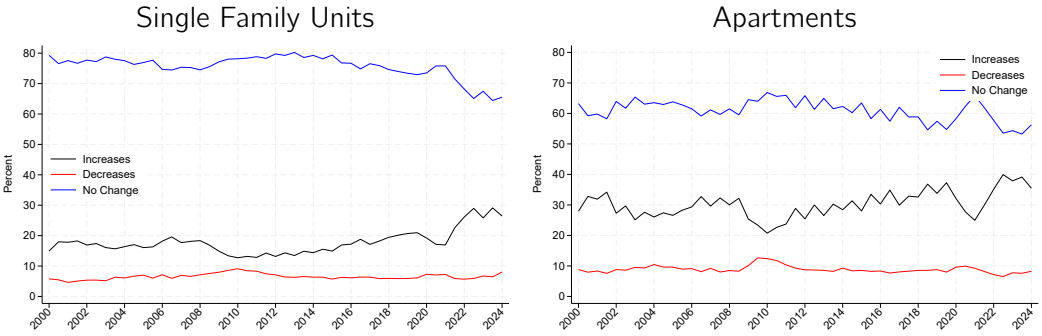


Continuing Tenants



Shaded areas represent the 10th and 90th percentile of rent changes.

Frequency of Rent Changes for Continuing Tenants By Property Type



Percent of rents changed every half-year.

Rent Gap

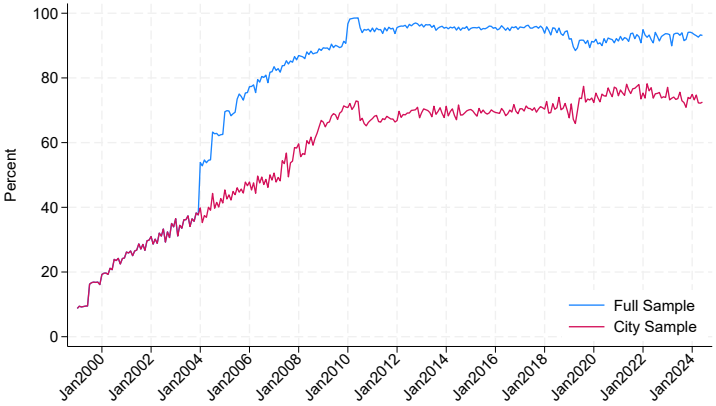
- $R_{i,c,t}$ = rent for tenant i at time t in city c
- $L_{c,t}$ = new-tenant rent at date t in city c
- $\tilde{R}_{i,c,t}$ = hypothetical new-tenant rent for tenant i.
- t_m = move-in date

$$\tilde{R}_{i,c,t} = R_{i,c,tm} \frac{L_{c,t}}{L_{c,tm}}$$

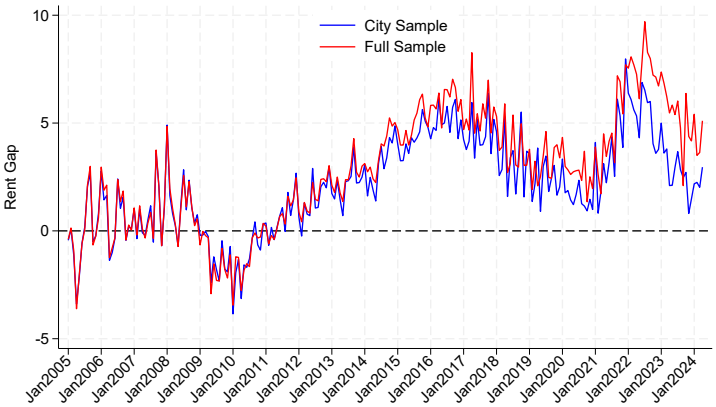
$$\text{Rent Gap}_{i,c,t} = \ln \tilde{R}_{i,c,t} - \ln R_{i,c,t}$$

- Use city-level, property type specific new-tenant rent measures.
- Units w/or move-in rent = avg. of Rent $\text{Gap}_{t,c}$ with that tenure and prop type
- Tenures $>$ 6 years = avg. Rent $\text{Gap}_{t,c}$ avg. 6-year tenancy for that prop type.
- Winsorize the rent gap at negative and positive 60 percent.

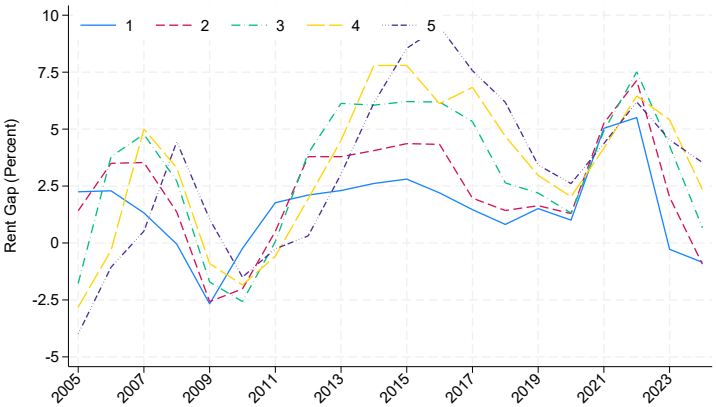
Share of Sample with an Estimated Rent Gap



The Rent Gap Over Time



Rent Gap By Year Since Move In



The Rent Gap and Rent Changes

Q: How does the rent gap relate to the frequency and size of rent changes for continuing tenants?

$$Y_{i,c,t} = \alpha + \beta \text{Gap}_{c,t-1} + \boldsymbol{\delta X}_{i,c,t} + \gamma_t + \gamma_p + \gamma_c + \varepsilon_{i,c,t}$$

- Where $Y_{i,c,t}$ is either an indicator of any rent change, a positive rent change, a negative rent or the size of the rent change continuing tenants i, in city c, at time t.
- γ_t are survey month fixed effects.
- γ_p are property type fixed effects.
- γ_c are city fixed effects.
- X is a vector of controls including ex-shelter CPI inflation, new-tenant rent inflation, an indicator for whether the property is rent controlled, population growth, wage growth, the local multifamily vacancy rate, and the change in the local unemployment rate.

The Rent Gap as a Predictor of Rent Changes

	Probability of Rent Change						Size of Rent Change			
	Rent Change (%)		Rent Up (%)		Rent Down (%)		Rent Change (Up)		Rent Change (Down)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rent Gap_{t-1}	-0.05**	-0.04*	0.08***	0.06***	-0.13***	-0.10***	0.07***	0.09***	0.08***	0.10***
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)
SF Attached × Rent Gap_{t-1}		-0.13**		-0.10**		-0.03		0.01		0.01
		(0.06)		(0.04)		(0.04)		(0.05)		(0.05)
Multifamily × Rent Gap_{t-1}		0.00		0.03		-0.03*		-0.03*		-0.03
		(0.03)		(0.04)		(0.02)		(0.02)		(0.03)
Δ ln New-Tenant $Rent_{t-1}$	0.85***	0.85***	0.98***	0.98***	-0.13*	-0.13*	0.10***	0.10***	0.30***	0.29***
	(0.13)	(0.13)	(0.10)	(0.10)	(0.07)	(0.07)	(0.02)	(0.02)	(0.08)	(0.08)
Rent Controlled	3.24**	3.24**	3.09**	3.09**	0.15	0.15	-1.21***	-1.22***	-0.18	-0.18
	(1.35)	(1.35)	(1.19)	(1.19)	(0.31)	(0.31)	(0.16)	(0.16)	(0.66)	(0.66)
Δ ln CPI Ex $Shelter_{t-1}$	-0.05	-0.05	0.10	0.10	-0.15	-0.14	0.00	0.00	0.13	0.14
	(0.16)	(0.16)	(0.14)	(0.14)	(0.09)	(0.09)	(0.04)	(0.04)	(0.16)	(0.16)
Δ ln $Population_{t-1}$	19.08***	19.09***	14.44***	14.44***	4.65**	4.65**	1.67***	1.67***	-0.35	-0.34
	(4.89)	(4.89)	(3.03)	(3.03)	(2.12)	(2.13)	(0.32)	(0.32)	(1.05)	(1.06)
Δ ln $Wage_{t-1}$	-1.34	-1.34	13.06	13.06	-14.40***	-14.40***	6.83***	6.82***	-1.58	-1.58
	(10.34)	(10.36)	(13.50)	(13.52)	(5.01)	(5.01)	(1.36)	(1.36)	(3.95)	(3.94)
Vacancy $Rate_{t-1}$	-55.78**	-55.78**	-72.06***	-72.03***	16.28**	16.25**	1.66	1.59	7.57	7.58
	(20.94)	(20.91)	(17.57)	(17.55)	(7.30)	(7.29)	(3.97)	(3.98)	(16.42)	(16.44)
ΔUnemp. $Rate_{t-1}$	-0.14	-0.14	-0.32**	-0.32**	0.18	0.18	0.08	0.08	0.09	0.09
	(0.23)	(0.23)	(0.15)	(0.15)	(0.13)	(0.13)	(0.07)	(0.07)	(0.16)	(0.16)
Possible Remodel	10.49***	10.49***	5.76**	5.76**	4.73***	4.72***	3.24***	3.23***	-1.73**	-1.74**
	(2.04)	(2.04)	(2.66)	(2.66)	(1.07)	(1.07)	(1.07)	(1.07)	(0.65)	(0.65)
R^2_a	0.05	0.05	0.06	0.06	0.01	0.01	0.02	0.02	0.03	0.03
Observations	335,650	335,650	335,650	335,650	335,650	335,650	95,547	95,547	28,210	28,210
Month FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Prop Type FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PSU FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

The Rent Gap and Tenure Length

Q: Does the rent gap help predict tenure length?

$$\text{Move Out}_{it} = \beta \text{Rent Gap}_{it} + \boldsymbol{\gamma X}_{ict} + \delta_c + \delta_{tm} + \epsilon_{it}$$

- Move Out$_{it}$ is an indicator for whether the tenant moves out before the next survey
- Rent Gap$_{it}$ is the rent gap for unit i at time t
- X is a vector of other covariates that includes
  - year-on-year growth in new-tenant rents
  - an indicator for whether the property is rent controlled
  - year-on-year ex-shelter CPI inflation
  - population growth; wage growth; the multifamily vacancy rate
  - change in the unemployment rate
- Also include city fixed effects (δ_c) and survey month by move-in month fixed effects (δ_{tm}).

Effect of Rent Gap on Probability of Moving Out

	Probability of Moving Out (in percentage points)							
	Single Family Homes				Multifamily Homes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rent Gap	-0.03**	-0.03**	-0.03**	-0.03**	-0.03***	-0.02***	-0.02***	-0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Δ ln New-Tenant Rent$_t$	-0.12***	-0.08*	-0.08*	-0.08*	-0.32***	-0.24***	-0.23***	-0.23***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Δ ln CPI Ex Shelter	0.19	0.19	0.19	0.19	0.25**	0.22**	0.23**	0.23**
	(0.18)	(0.18)	(0.18)	(0.18)	(0.10)	(0.10)	(0.10)	(0.10)
Δ ln Population	0.05	0.13	0.13	0.14	0.44***	0.51***	0.53***	0.53***
	(0.18)	(0.18)	(0.18)	(0.19)	(0.09)	(0.09)	(0.09)	(0.09)
Rent Controlled	-2.33***	-2.28***	-2.28***	-2.28***	-0.59*	-0.57*	-0.57*	-0.57*
	(0.85)	(0.85)	(0.85)	(0.85)	(0.31)	(0.31)	(0.31)	(0.31)
Vacancy Rate		0.45***	0.45***	0.46***		0.36***	0.35***	0.35***
		(0.12)	(0.12)	(0.12)		(0.06)	(0.06)	(0.06)
Δ ln Wage$_{t-1}$			0.00	0.01			-0.10***	-0.10***
			(0.06)	(0.06)			(0.03)	(0.03)
ΔUnemp. Rate				-0.13				-0.02
				(0.15)				(0.07)
R^2_a	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Observations	105,763	105,763	105,763	105,763	419,271	419,271	419,271	419,271
Mean(Move Out)	12.88	12.88	12.88	12.88	20.51	20.51	20.51	20.51
sd(Move Out)	33.49	33.49	33.49	33.49	40.38	40.38	40.38	40.38
Mean(Rent Gap)	4.16	4.16	4.16	4.16	1.08	1.08	1.08	1.08
sd(Rent Gap)	10.01	10.01	10.01	10.01	7.57	7.57	7.57	7.57
Survey Month × Move-In Month FEs	✓	✓	✓	✓	✓	✓	✓	✓
Prop Type FEs	✓	✓	✓	✓	-	-	-	-
City FEs	✓	✓	✓	✓	✓	✓	✓	✓

Conclusion

- Continuing-tenant rent inflation is an increasingly important part of overall inflation.
- Continuing-tenant rents are sticky!
  - And that stickiness is not very correlated with the business cycle.
  - Stickier for detached units consistent with Gallin and Verbrugge (2019).
- Current average outstanding "rent gap" is around 2.5–5 percent.
  - Rent gap generally increases with tenure.
  - Rent gap correlated with both intensive and extensive margin of rent changes.
  - A higher rent gap predicts lower tenant turnover.

Thank you.

Decomposition of Year-on-Year CPI OER Inflation