Debt Rollover in Rental Housing

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Introduction

- Mortgages rates on apartment buildings fell from 8% in 2000 to 4% in the late 2010s
- Rising concerns over increasing rent-to-income ratios & declining housing affordability
- Recent rate hikes have led to concerns over real effects of debt rollover

Do landlords pass along any of the benefits from lower financing costs to their tenants?

It's not clear that landlords should pass through an idiosyncratic change in cost of debt at all. At debt rollover, landlords' property is re-appraised, which generally requires them to show their current "rent roll" and most recent 2-3 years of financial statements.

Data Construction

I link two datasets on apartment buildings over 2000-2020.

- Universe of securitized multifamily mortgages, including mortgage characteristics, monthly payments, and annual financial performance for 64k properties (Trepp)
- Address-level data allows me to construct a dataset that follows 1k properties across mortgage contracts
- Annual asking rents for market-rate apartments in the 50 largest U.S. cities (REIS)

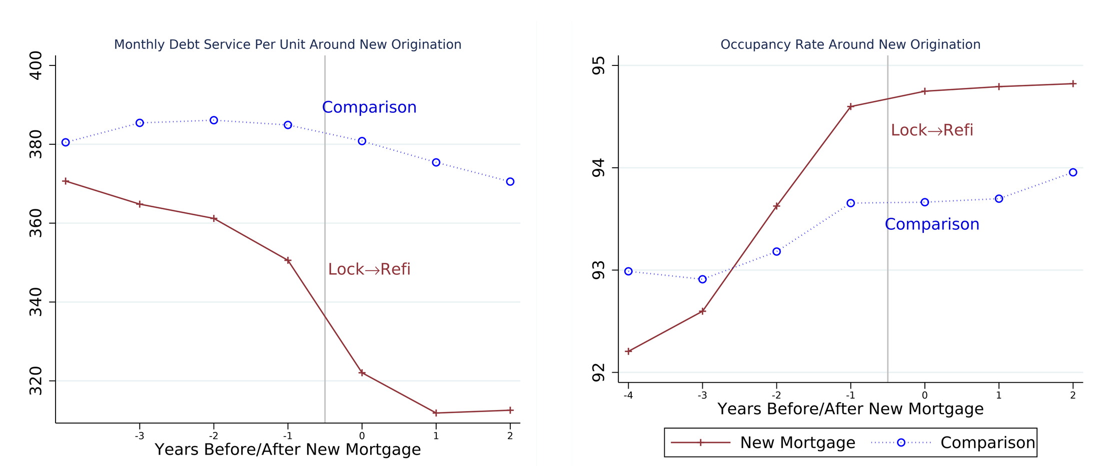


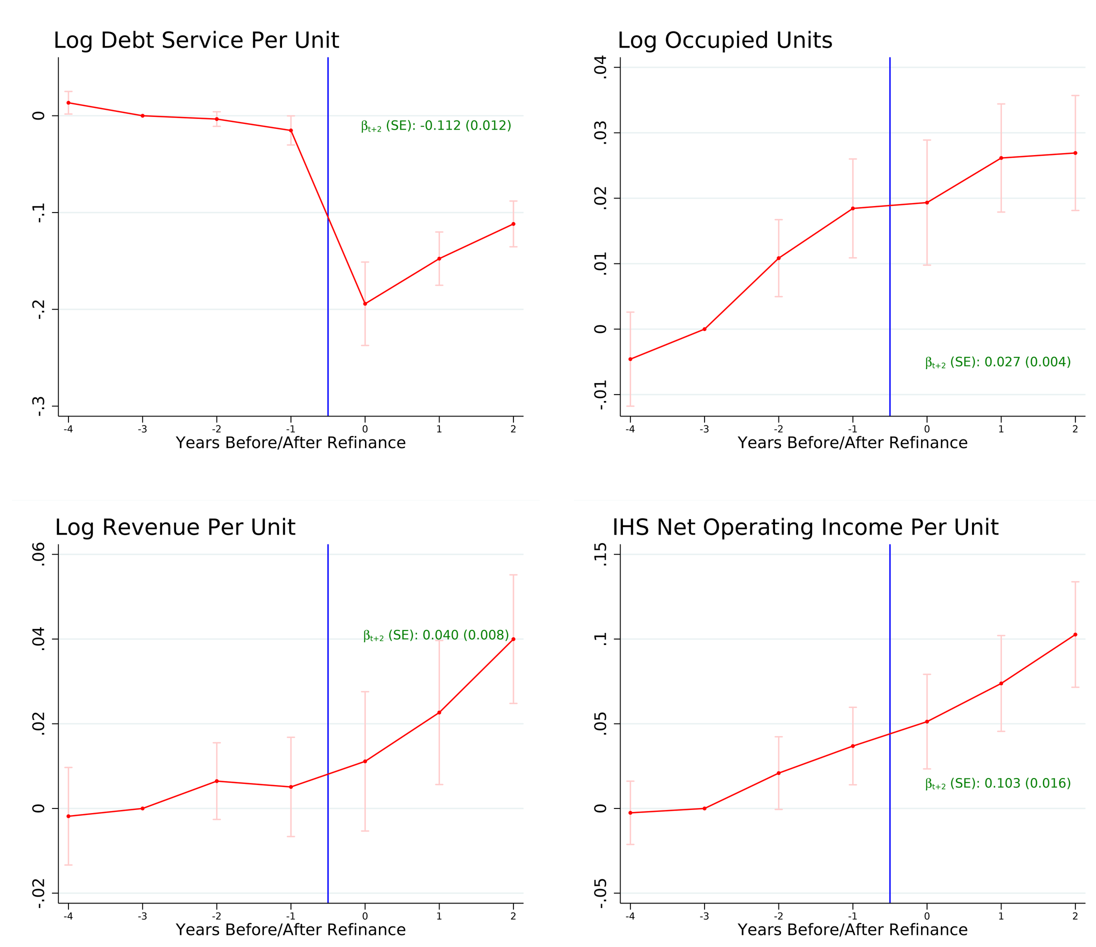
Figure 1: Mortgages refinancing at the end of lock-out periods ↓ mortgage payments 11-13%; ↑ occupancy 2-3%.
Note: GSEs underwriting requires 90%+ occupancy.

Empirical Strategy

- Exploit variation in "prepayment lock-out periods": on 10-year loan, landlords unable to refinance until the final 6 months
- Outcome $\Delta y_{pt;-3}$, relative to 3 years pre-refi
- Construct comparison group for stacked event study and difference-in-difference
- In event study, recover event time d relative to calendar year t, $\mathbb{1}_{pt}(t=d)$, comparing cohort of loans in middle of mortgage term to treated loans about to finish lock-out period indicated by new origination $\mathbb{1}_p(Orig)$

$$\Delta y_{pt;-3} = \alpha_{td} + \sum_{d=-4}^{7} \beta_d \mathbb{1}_{pt}(t=d)\mathbb{1}_p(Orig) + \epsilon_{pt}$$

Rental Income Rises Around Refi



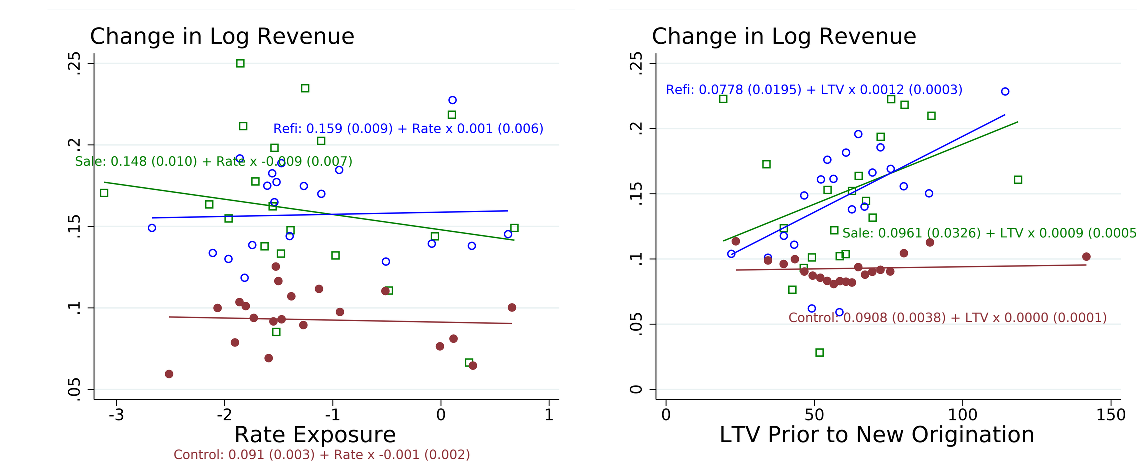
Summary of Results

Rather than "passing through" financing cost declines, I find evidence that landlords increase average rental income 3-4% & occupancy 2-3% in the years just prior to and following a refinance or sale.
This suggests landlords undertake costly adjustments in rent-setting & leasing which may involve lumpy costs or discrete adjustments (e.g. information acquisition & processing) during the high stakes period around refinance or re-appraisal.

Effects Including All Refinances and Sales, Controlling for Renovations

	Debt Service	Revenue	Expenses	Occupied Units	NOI	NCF
Panel A: Diff-in-Diff Log and IHS Specifications						
Post X Refi	-0.121***	0.034***	-0.003	0.024***	0.090***	1.096***
	(0.013)	(0.007)	(0.008)	(0.003)	(0.014)	(0.120)
Post X Sale	-0.117***	0.027***	-0.006	0.015***	0.076**	1.367***
	(0.026)	(0.010)	(0.012)	(0.005)	(0.030)	(0.224)
Renovation	0.067***	0.044***	0.007	0.001	0.101**	-0.050
	(0.026)	(0.012)	(0.012)	(0.007)	(0.039)	(0.193)
Obs.	1195372	1195372	1195372	1117788	1195372	1195372
Event-Year-Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Property FE	Yes	Yes	Yes	Yes	Yes	Yes

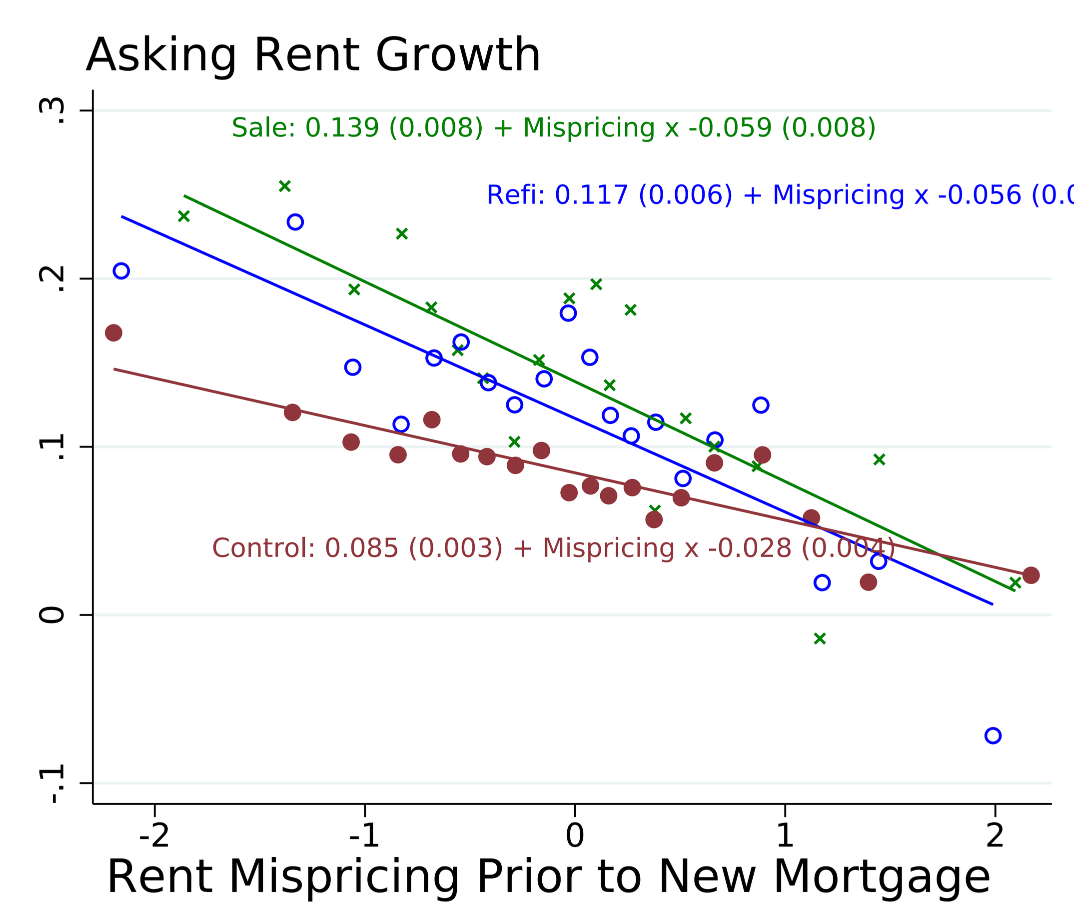
Financing Cost Mechanism



During this period of declining rates, landlords increased rental income at debt rollover, but:

- This was not strongly correlated with landlords' interest rate exposure (measured as the gap between current mortgage rates & rates on their prior loan) [left panel]
- Mark-to-market leverage just prior to refi is positively correlated with increasing rental income around a refi (or acquisition) [right panel]

Pricing Channel



Landlords raise rents 2.6% on average. I construct a mispricing measure using hedonic regression adjustment and comparison of other buildings in same submarket. From t-3 to t+1, the largest rent increases are on buildings sold or refinanced that look ex ante underpriced. Nominal asking rents decline for the most overpriced apartments.