Can Higher Mortgage Rates Cause Rent Inflation?
(Section II, Empirical Tests)

In Sep-21 mortgage rates began increasing due to an increased demand to buy a home. Then in response to rising inflation, the Federal Reserve raised the federal funds rate by 25 bps on March 17, 2022. This took the benchmark rate from 25 bps to 50 bps. The federal funds rate currently is 5.50%. In June 2022, it began reducing its balance sheet gradually (known as quantitative tightening, or QT) by not reinvesting all the proceeds of maturing securities. Higher demand to own a home and this series of actions raised mortgage rates from 2.84% in Aug-21 to 6.78% by the end of Feb-24. What impact has higher mortgage rates had on year-over-year home price appreciation (HPA) and year-over-year rent appreciation for single family properties (RRA) in 20 cities?

The Center for Housing and Tax Research had rental data for three bedroom properties going back to Jan-13 (RRA3bd). We can use this data to empirically measure the impact of mortgage rates on rental appreciation. First, we restrict the data to just rents on three bedroom detached properties and think of mortgage rate (mortgage rate) from a year earlier as being an important driver of those rents. Since renters do not take out a mortgage, why should we expect a strong relationship between mortgage rates and rent?

In a recent paper, Dias and Duarte (2019) find that, in contrast to house prices, housing rents increase after a contractionary monetary policy shock. This finding was corroborated by Haidorfer (2024). Dias and Duarte conjecture that it is reasonable to expect that all nominal prices of goods and services (rents included) should decline (or at least not increase) after a contractionary monetary policy shock. However, this is not what they find. They posit that monetary policy affects the housing tenure decisions — own versus rent. They argue “If both the supply of housing for rental and of housing for ownership are inelastic in the short run, and there is limited convertibility between homes for sale and homes for rent, when interest rates go up, mortgage rates rise, and the cost of homeownership increases. As

homeownership costs rise, the demand for rental housing also increases, and, as a result, housing rents rise."

To test this hypothesis, we might try to measure solely the impact of mortgage rates twelve months earlier on rent appreciation. To start, we can use a simple equation such as

$$RRA3bd = \alpha + \beta\ L12mortgage\ rate \quad (1)$$

The problem with Equation 1 is that over time other things will impact how rents are determined (other co-factors or confounders). In Equation 2, I have included other variables which would impact rental inflation.

$$\begin{aligned} RRA3bd = \ & \alpha + \beta_1\ L3RRA3bd + \beta_2\ L3HPA3bd \\ & + \beta_3\ L12RVP\_3bd + \beta_4\ L12mortgage\_rate \\ & + \beta_5\ employment + \beta_6\ llordc\_shr \\ & + \beta_7\ L12vacc + \beta_8\ dum\_cov + \varepsilon \end{aligned} \quad (2)$$

Here:

- HPA3bd is home price appreciation
- RVP_3bd is the monthly rental rate versus the price of buying
- Mortgage_rate is the monthly average 30-year fixed rate mortgage from Freddie Mac.
- Employment is the year-over-year change each month in payroll employment from Bureau of Labor Statistics
- Llordc_shr is the share of properties that are rental properties in a city from Department of Census.
- Vacc is the rental property vacancy rate from Department of Census.
- Dum_cov is value of 1 from 2020-03-01 to 2022-12-01 and 0 otherwise.

Table 1 shows the estimated β_4 coefficient using Equation 2 at different lags on the mortgage rate. The cells that are highlighted indicate that my

estimated coefficient was statistically significant. We see that for a lag of 12 months, or 15 months, in 11 cities, higher mortgage rates are followed 12 months later by statistically faster rent appreciation. Two cities had slower rent appreciation.

Table 1. Impact of FRM on RRA3bd at Different Lags, Data is Jan-13 to Feb-24

			RRA by L9FRM		RRA by L12FRM		RRA by L15FRM		RRA by L18FRM		RRA by L21FRM		RRA by
			Coef	Prob	Coef	Prob	Coef	Prob	Coef	Prob	Coef	Prob	Coef
1	Albuquerque, NM	698	-0.53003	0.05959	0.13223	0.61433	0.01200	0.95968	0.40945	0.12642	0.5354	0.06062	0.58401
2	Baltimore, MD	667	0.17837	0.65085	1.19597	0.00403	0.72178	0.10904	1.99180	0.00016	2.2287	0.00015	1.83608
3	Boston, MA	735	-0.94267	0.00574	-0.60977	0.08410	-0.42681	0.19368	0.16102	0.67170	0.6016	0.12455	0.60645
4	Chicago, IL	676	0.78494	0.00386	0.53964	0.05923	0.20907	0.46822	0.33288	0.36256	0.5473	0.15424	-0.31476
5	Dallas, TX	661	-0.76278	0.01280	0.73621	0.07201	0.73621	0.07201	0.94866	0.01346	0.9941	0.00374	0.81322
6	Denver, CO	714	1.30217	0.00111	1.31092	0.00474	0.08091	0.82549	-0.22638	0.53603	-0.3191	0.36344	-0.84180
7	Houston, TX	662	0.44168	0.12069	0.99096	0.00164	0.92291	0.00776	0.51081	0.19587	-0.1716	0.66336	-0.39310
8	Indianapolis, IN	666	-0.57421	0.20392	0.73785	0.07319	0.73785	0.07319	0.61585	0.17083	0.8630	0.05394	1.18190
9	Las Vegas, NV	632	-1.64730	0.00021	-0.71310	0.15094	-0.12265	0.80271	0.78635	0.14919	1.7181	0.00201	2.84726
10	Los Angeles, CA	689	-0.86019	0.00308	-0.01385	0.96680	-0.29634	0.34542	0.17638	0.63708	0.4623	0.22320	1.14230
11	Memphis, TN	633	0.19238	0.76482	1.13997	0.12565	0.73671	0.34414	1.04807	0.23043	1.0644	0.18318	1.68325
12	Miami, FL	679	-0.10895	0.73164	0.07239	0.84167	-0.05631	0.88955	0.20131	0.71601	0.7418	0.22863	2.02545
13	Milwaukee, WI	650	0.44132	0.31646	1.08493	0.01530	1.40979	0.00052	1.79072	0.00011	0.9436	0.07506	-0.04039
14	Minneapolis, MN	735	-0.27168	0.37241	0.64872	0.06301	0.64872	0.06301	1.04748	0.00238	1.2744	0.00019	1.46753
15	New York, NY	728	-0.37055	0.36131	-1.08504	0.00274	-1.11145	0.00079	-1.22495	0.00415	-1.1685	0.01427	-1.29905
16	Phoenix, AZ	675	-0.59527	0.29379	-0.35242	0.55872	-0.76656	0.19098	0.23235	0.75048	1.0612	0.16284	4.09161
17	San Francisco, CA	755	0.61075	0.19524	1.59941	0.00128	0.88149	0.05498	1.16170	0.02550	1.0404	0.05579	0.23152
18	Seattle, WA	752	0.59226	0.16988	1.46101	0.00069	0.75806	0.03789	0.98165	0.01404	0.2446	0.56417	-0.01535
19	Tulsa, OK	669	0.19884	0.70021	0.19170	0.75223	-0.36799	0.48392	-0.52790	0.35238	0.2742	0.63135	0.45930
20	Washington, DC	708	0.33560	0.14544	0.52453	0.04170	0.54078	0.03072	0.53591	0.08787	0.5207	0.11637	0.48854

The point is that in some cities, when the Federal Reserve embarks on a contractionary monetary policy which results in higher mortgage rates, renters can and often do face faster rent appreciation twelve months later.

From the table above, in Chicago, IL, a 100 bps higher mortgage rate 12 months earlier causes rent appreciation to increase by 50 bps on average over the period of Jan-13 through Mar-24 (i.e., rents that were growing at 4.0% are now growing at 4.5%, on average) – a semi-elasticity of 0.5.

More specifically, in Mar-22, the 30-year FRM was 4.13% and in Mar-23, the 30-year FRM was 6.54%. This is an increase of 237 bps which potential homebuyer in Mar-24 in Chicago, IL would confront (column 2). Initially, both renter and landlords are constrained by the rent contract, they do not pay attention to the rates in Mar-24. In Chicago, IL the YOY rent appreciation (RRA3bd) jumped from 5% in Mar-23 to 7.8% in Mar-24. This is an increase in rent appreciation of 280 bps (column 4) – a local semi-elasticity of 1.18.

	Table 1.b Estimating the Semi-Elasticity For Chicago, IL as of Mar-24				
	(1)	(2)	(3)	(4)	(5) = (4)/(2)
	mortgage_rate	Δ L12mortgage_rate	RRA3bd = %Δrent3bd	Δ in %ΔRRA3bd	semi-elasticity
3/1/2022	0.0417				
3/1/2023	0.0654	0.0237	0.050		
3/1/2024			0.078	0.0280	1.18

The survey process used by the BLS results in OER being reported with a lag vis-à-vis Altisource.com which collects the average of rents in each city each month. This is true because the BLS takes a massive, nationwide, rolling sample of housing units, splits them into panels, and then surveys each panel once every six months. The data then must be cleaned, checked, and matched to the same property twelve months earlier. They then take an average rent and a one month year-over-year change of that average. The surveying process essentially delays reporting changes in market conditions.

The faster appreciation shows up in the market data tracked by Altisource.com or Zillow.com 12 or 15 months following a mortgage rate change (but not in the BLS data). None-the-less, and more to the point, the rate of rent appreciation of these three bedroom SFR properties eventually feeds directly, albeit with a lag (an additional lag of about 12 months), into OER. OER then feed into core CPI. Thus higher mortgage rates can drive rent inflation.

Bibliography

Dias, Daniel A. and João B. Duarte (2019) “Monetary Policy, Housing Rents and Inflation Dynamics”. International Finance Discussion Papers 1248.

Haidorfer, Anton (2024) “The Dynamic Impact of Monetary Policy Over Short Horizons on Local Rental Markets”, Submitted to the AREUEA 2014 June conference.