# Fiscal Stimulus Payments, Housing Demand, and House Price Inflation

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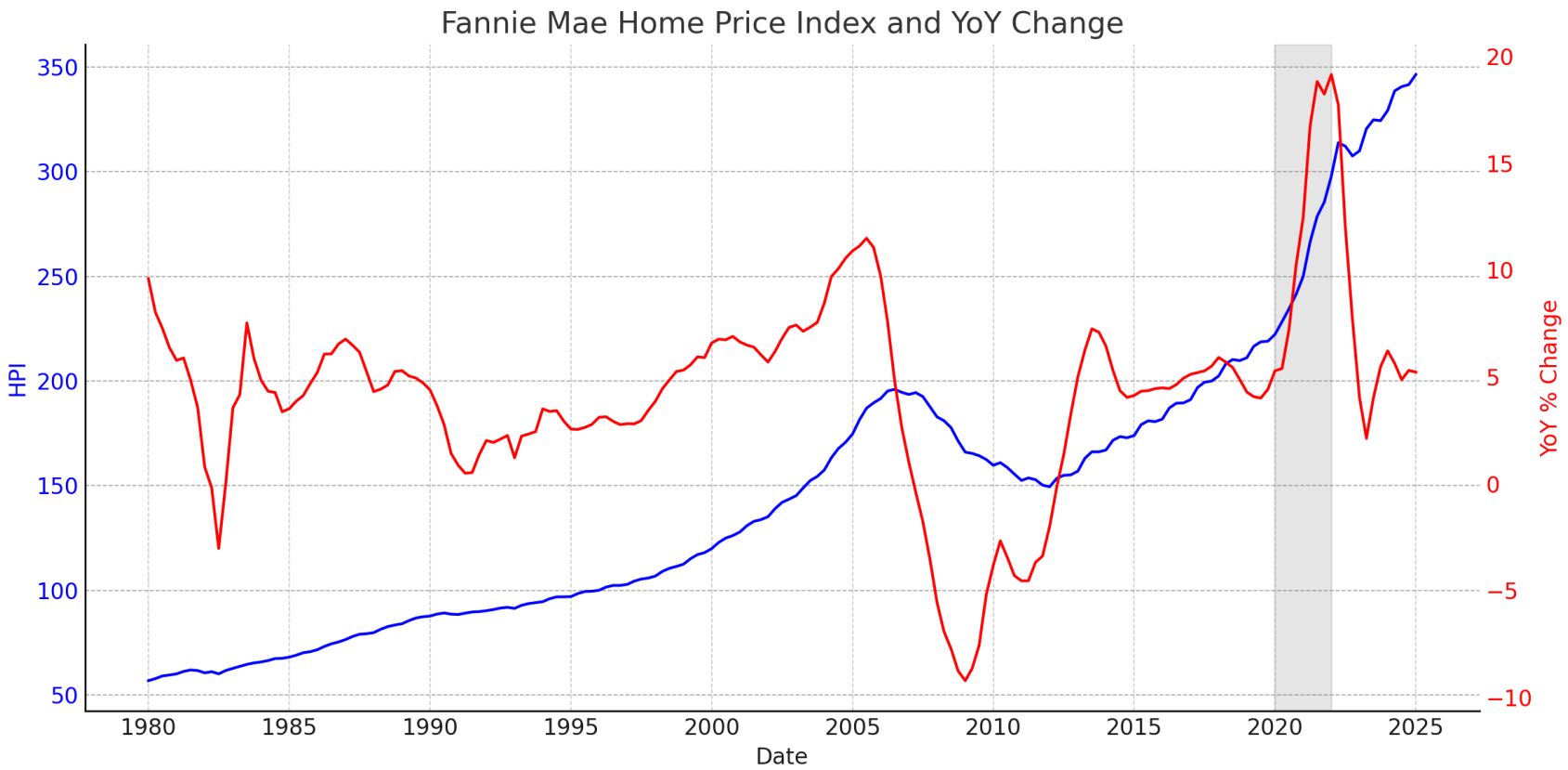
# Motivation - Covid housing boom



# Introduction

What explains the COVID housing boom? Remote work, supply constraints, interest rates, speculation,...

This paper: the role of fiscal stimulus programs.

Why this matters?

- Drivers of the recent housing boom
- Transfer payments and consumer spending
- Fiscal stimulus programs and inflation

# Agenda

- COVID fiscal response and its impact on household finances
- Stimulus payments and housing consumption at the household level
- Stimulus payments and housing outcomes at the MSA level

# The historic fiscal responses

**Table 2.** Deficit Impact of US Pandemic-Related Legislation

| *Provision* | *Impact on deficit ($ billions)* |
|---|---|
| Enhanced unemployment benefits | 748 |
| Direct assistance to state and local governments[a] | 597 |
| Health care spending[b] | 629 |
| Direct payments to households | 870 |
| Paycheck Protection Program | 808 |
| Other loan and grant provisions | 232 |
| Other spending provisions[c] | 890 |
| Tax reductions | 426 |
| Total | 5,200 |

Source: Romer (2021)

The disposable personal income per capita increased substantially from 2019 to 2021, with an especially large increase for the bottom 50% of the income distribution.

The paper focuses on the economic impact payments and expanded child tax credits, which cost more than $900 billion in total.

# Stimulus Payments

Three rounds of direct payments were made during the pandemic:

- March 2020, CARES Act: $270 billion
- December 2020, Tax Relief Act: $140 billion
- March 2021, American Rescue Plan: Over $400 billion in direct payments and $100+ billion in expanded Child Tax Credit (CTC)

Payments were phased out for individuals with adjusted gross income (AGI) above $75,000 ($150,000 for joint filers).

A family of four with income below the threshold could receive:

- $11,400 in Economic Impact Payments (EIPs)
- $6,000–$7,200 in expanded CTC (half received as advanced payments in 2021)

# Stimulus Payments and Housing Demand

The payments are sizable relative to household finances:

- Median household had $26,000 in non-retirement financial assets (2019)
- Typical down payment was around $14,000 (early 2020)

Relaxation of borrowing constraints could be an important channel:

- 2021 Redfin survey: stimulus checks were the second-most common source of down payment.

# Literature

- Remote work and population migration on housing during COVID.
  - E.g., Mondragon and Wieland (2022), Gupta et al. (2022), Stanton and Tiwari (2021), Brueckner et al. (2021), Gamber et al. (2022), Howard et al. (2023)
- Consumer spending responses to fiscal stimulus payments.
  - E.g., Shapiro and Slemrod (2003), Johnson et al. (2006), Agarwal et al. (2007), Parker et al. (2013), Cox et al. (2020), Coibion et al. (2020), Parker et al. (2022), Baker et al. (2023)
  - Durable consumption rises with stimulus size, but disagreements remain on housing response: Beraja and Zorzi (2023), Berger et al. (2023)
- Down payment/LTV constraints
  - E.g., Dynarski & Sheffrin (1985), Stein (1995), Fuster and Zafar (2021), Greenwald and Guren (2024)

# Empirical approach

Study how housing outcomes vary across households and regions with different levels of stimulus payment exposure.

Households:

- Changes in housing consumption across the income distribution
- A regression kink design exploiting the phase-out of payments above income eligibility thresholds

Regions (MSAs, counties):

- Per-capita stimulus payments and changes in house prices and transaction volumes

# Household-level Results

# Changes in real household income by income group, 2019–2021

Data source: Blanchet, Saez, and Zucman (2022)

$$\Delta\%Income = \frac{\Delta Income_{20-19} + \Delta Income_{21-19}}{Income_{2019}}$$

| | Factor income |
|---|---|
| Bottom 50% | -7.7% |
| Middle 40% | -2.2% |
| Top 10% | 0.3% |

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$$\Delta\%Income = \frac{\Delta Income_{20-19} + \Delta Income_{21-19}}{Income_{2019}}$$

| | Factor income | Pretax income |
|---|---|---|
| Bottom 50% | -7.7% | 3.1% |
| Middle 40% | -2.2% | 1.3% |
| Top 10% | 0.3% | -4.2% |

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$$\Delta\%Income = \frac{\Delta Income_{20-19} + \Delta Income_{21-19}}{Income_{2019}}$$

| | Factor income | Pretax income | Disposable income |
|---|---|---|---|
| Bottom 50% | -7.7% | 3.1% | 32.0% |
| Middle 40% | -2.2% | 1.3% | 18.8% |
| Top 10% | 0.3% | -4.2% | 1.3% |

# Changes in housing consumption by income levels

**Estimation equation**:

$$\begin{aligned} Y_{i,j,t} =& \alpha + \beta_{j,1} \textit{Income quintile}_{j,t} \times \textit{Post} + \beta_{j,2} \textit{Income quintile}_{j,t} \\ &+ \gamma_1 \mathbf{X}_{i,t} \times \textit{Post} + \gamma_2 \mathbf{X}_{i,t} + \epsilon_{i,j,t}, \end{aligned} \tag{1}$$

**Dependent variable** $Y$: housing consumption:

- Homeownership indicator
- Rooms per person

**Interpretation:** $\beta_{j,1}$ is expected to be larger (more positive) for lower-income quintiles, because:

- Lower-income households are more likely to be eligible for the payments
- Among the eligible, the fixed payments represent a larger income boost for lower-income households.

**Controls**:

- Household size and age of household head

# Changes in housing consumption by income levels

| | Homeownership | | Rooms per person | | |
|---|---|---|---|---|---|
| | | | All | Homeowners | Renters |
| | (1) | (2) | (3) | (4) | (5) |
| *Quintile* 1×*post* | 0.018*** | 0.022*** | 0.054*** | 0.041*** | 0.009 |
| | (0.002) | (0.002) | (0.008) | (0.011) | (0.017) |
| *Quintile* 2×*post* | 0.014*** | 0.015*** | 0.025*** | 0.023*** | -0.003 |
| | (0.002) | (0.002) | (0.007) | (0.008) | (0.016) |
| *Quintile* 3×*post* | 0.008*** | 0.008*** | 0.009 | 0.009 | -0.004 |
| | (0.002) | (0.002) | (0.006) | (0.006) | (0.012) |
| *Quintile* 4×*post* | 0.003 | 0.004* | 0.006 | 0.005 | -0.009 |
| | (0.002) | (0.002) | (0.007) | (0.007) | (0.014) |
| Quintile dummies | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes |
| Controls*post | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | No | No | No | No |
| County*year FE | No | Yes | Yes | Yes | Yes |
| R-squared | 0.211 | 0.255 | 0.412 | 0.480 | 0.350 |
| N | 3362299 | 3362299 | 3362299 | 2459272 | 903027 |

# Changes in homeownership by income levels

| | Homeownership | | Rooms per person | | |
|---|---|---|---|---|---|
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# Stimulus payments and homeownership: A RK design

Examine whether there is a "kink" in the homeownership-income relationship around income eligibility thresholds.

A decline in the slope for incomes above the limit would suggest that stimulus payments have positively influenced homeownership.

$$Own_i = \alpha + \beta_1(Income_i/c_i) + \beta_2(Income_i/c_i) \times \mathbf{1}\{Income_i \geq c_i\} + \gamma X_i + \epsilon_i,$$

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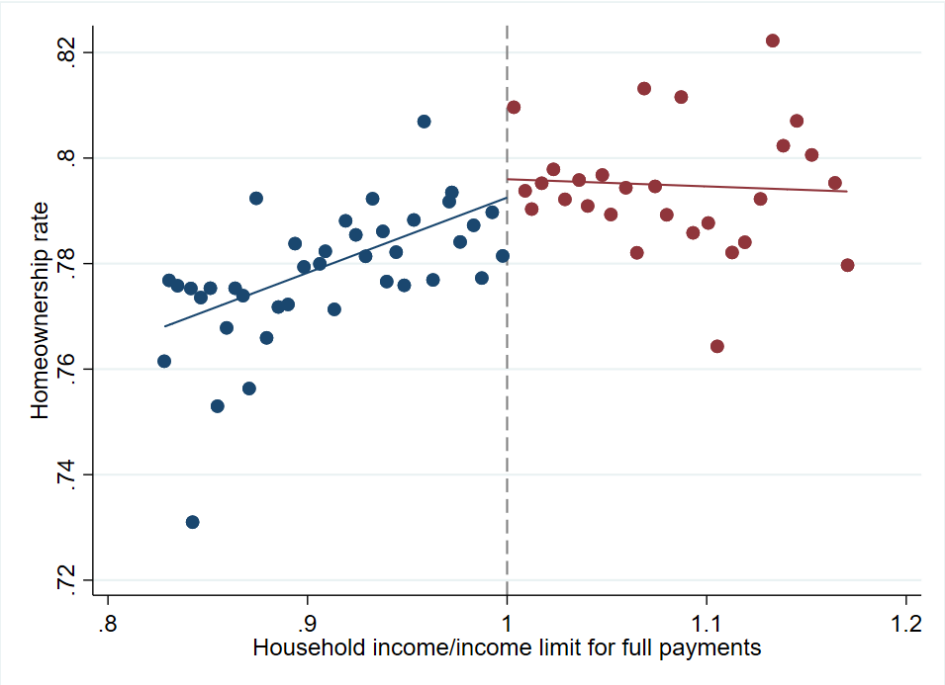

# Stimulus payments and homeownership: A RK design

| Panel A: 2021 | | | | |
|---|---|---|---|---|
| | [0.9,1.1] | [0.875,1.125] | [0.85,1.15] | [0.825,1.175] |
| *Income*×*Above* | −0.124 | −0.289*** | −0.140** | −0.162*** |
| | (0.101) | (0.079) | (0.059) | (0.040) |
| Controls | *Yes* | *Yes* | *Yes* | *Yes* |
| Year FE | *Yes* | *Yes* | *Yes* | *Yes* |
| R-squared | 0.179 | 0.178 | 0.175 | 0.176 |
| N | 91316 | 112388 | 134013 | 160898 |

Compared to households comprising married couples with no kids and an income of $150,000 ($6,400 payment), those with an income of $160,000 ($1,600 payment) exhibit a relative decline in homeownership by 0.8 to 1.9 percentage points.

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| Panel B: 2019 | | | | |
|---|---|---|---|---|
| | [0.9,1.1] | [0.875,1.125] | [0.85,1.15] | [0.825,1.175] |
| *Income*×*Above* | 0.011 | −0.037 | −0.055 | −0.007 |
| | (0.142) | (0.089) | (0.069) | (0.058) |

# Stimulus payments and LTI

Stimulus payments are not counted as income in mortgage applications, so if used to increase down payments, we should see LTI ratios $\uparrow$.

Use HMDA transaction-level data to examine the dynamics of LTI ratios across income groups.

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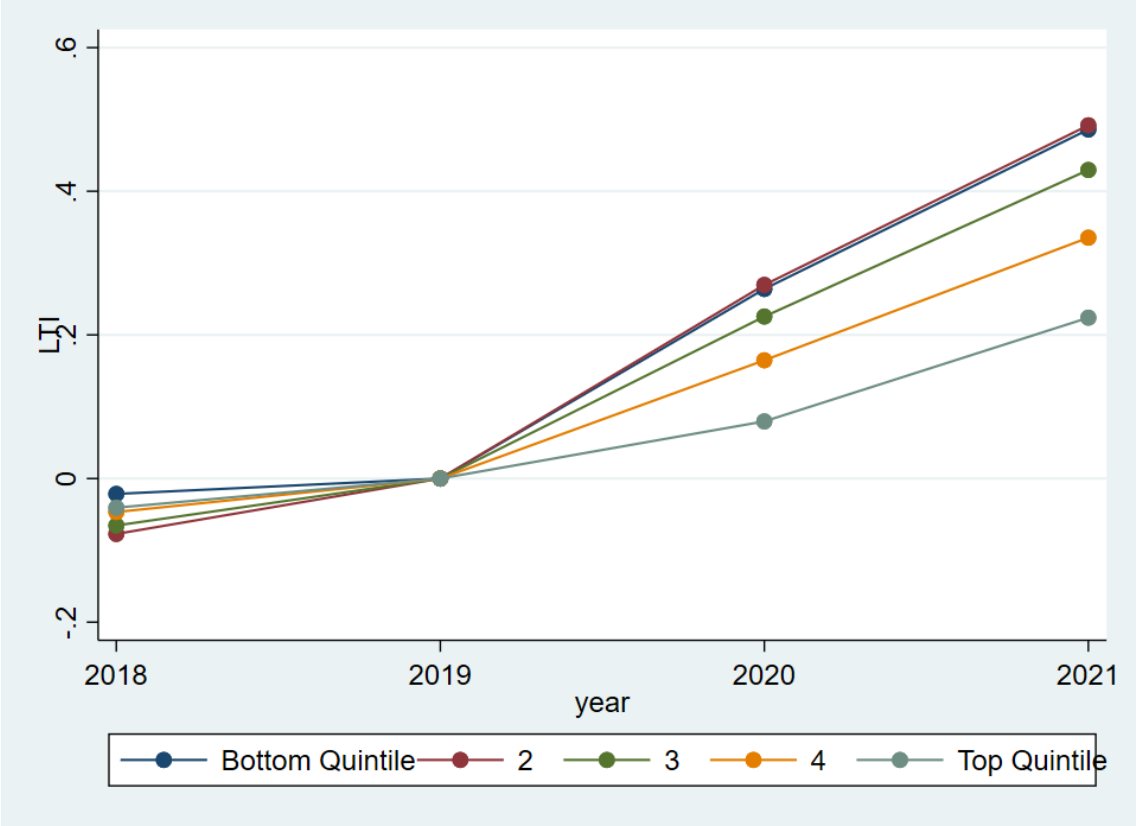

# Stimulus payments and LTI

| | (1) | (2) |
|---|---|---|
| *Quintile* 1×*post* | 0.251*** | 0.416*** |
| | (0.027) | (0.028) |
| *Quintile* 2×*post* | 0.258*** | 0.354*** |
| | (0.021) | (0.021) |
| *Quintile* 3×*post* | 0.198*** | 0.256*** |
| | (0.011) | (0.020) |
| *Quintile* 4×*post* | 0.104*** | 0.128*** |
| | (0.006) | (0.012) |
| Quintile dummies | Yes | Yes |
| Controls | Yes | Yes |
| Controls*post | Yes | Yes |
| Year FE | Yes | No |
| County*year FE | No | Yes |
| R-squared | 0.165 | 0.350 |
| N | 9501567 | 9501548 |

# MSA-level Results

# Stimulus payments and housing outcomes across MSAs

**Estimation equation**:

$$\Delta Y_{i,19-21} = \alpha + \beta \textit{Stimulus payments}_{i,20-21} + \gamma \mathbf{X}_i + \epsilon_i,$$

**Key variables**:

- $\Delta Y_{i,19-21}$: Change in housing outcomes (e.g., house prices, transactions) from 2019 to 2021
- $\textit{Stimulus payments}_{i,20-21}$: Total per-capita stimulus payments in 2020 and 2021

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**Controls**:

- Changes in non-stimulus transfers, non-transfer income, unemployment rate
- Population size, growth, migration, and density, WFH exposure
- Pre-2020 house price level, house price trends, housing supply
- Income per capita
  - Why this helps: City A (100% earn \$75K) vs. City B (50% earn \$50K, 50% earn \$100K)—same average income, but very different stimulus eligibility.

# Stimulus payments and house price growth across MSAs

**Key findings**:

- House prices rose significantly more in MSAs that received larger per-capita stimulus payments.
- Estimates are stable and robust across a wide range of control specifications.
- Similar patterns hold when comparing counties within the same MSA, controlling for population density, distance to CBD, and other local factors.

**Additional supporting evidence:**

- Housing transactions and listings increased more in high-payment areas—consistent with stronger demand.
- No evidence of looser credit conditions in high-payment areas.

# Magnitude of the Effects

- A 10 percentage-point increase in the share of the population eligible for the full $3,200 payments is associated with a 1-2% increase in house prices from 2019 to 2021.
- Equivalently, given an average household size of 2.5, a 10 percentage-point increase in the share of households eligible for $8,000 corresponds to a 1-2% price increase.
- Extrapolating the cross-sectional estimates suggests that stimulus payments could explain a substantial portion of the total house price appreciation during this period.
- The magnitude is in line with predictions from recent quantitative models on the effects of LTV constraint relaxation and transfer payments (Greenwald & Guren, 2024; Gupta et al., 2024; Berger et al., 2024).

# Timing of the housing market response

When did the effects start to appear within the two year window?

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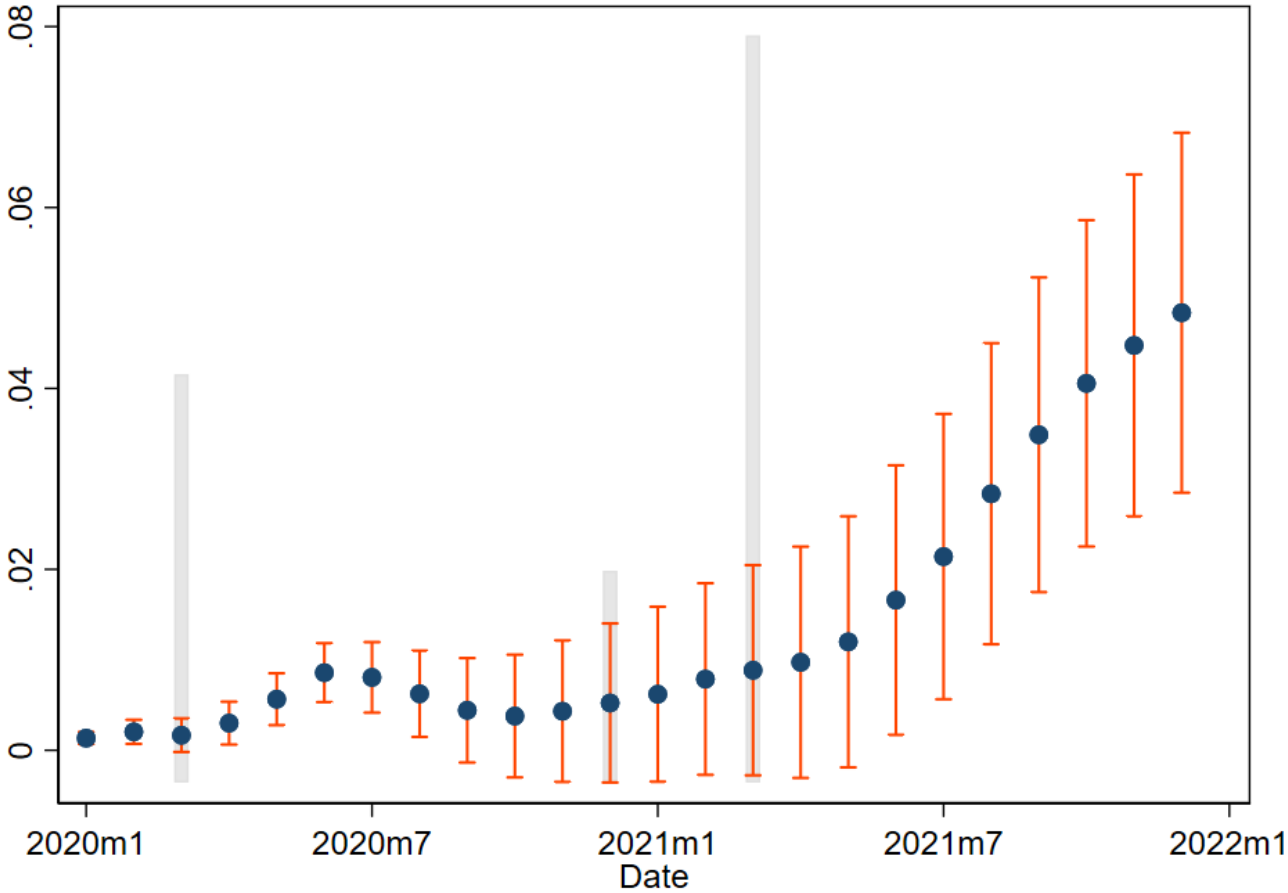

# What happens after 2021?

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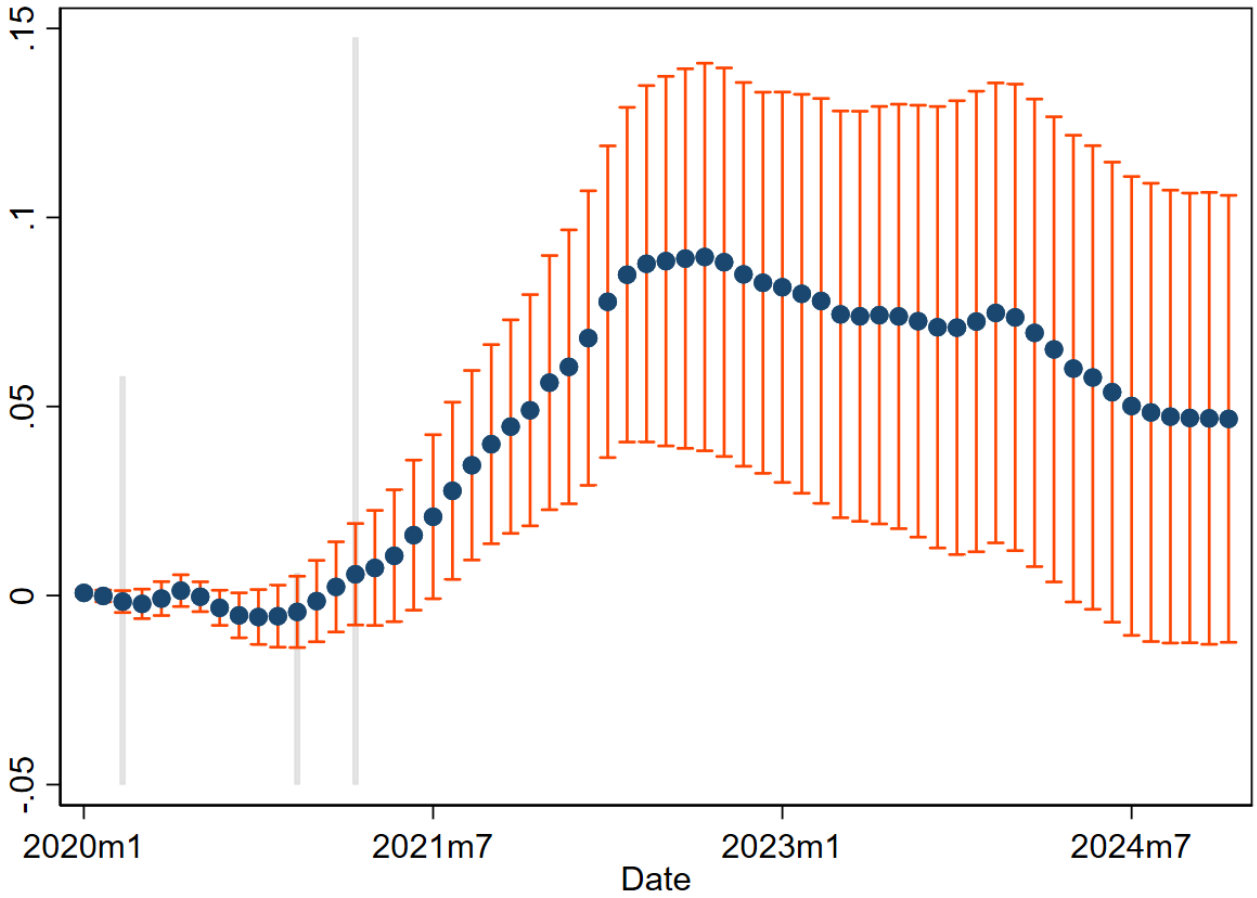

# Implications

- The estimates suggest that fiscal transfer payments had a substantial stimulating effect on housing demand and contributed to the COVID-era housing boom.
- Housing consumption and investment could be important transmission channels through which fiscal stimulus affects the broader economy.
- The results also support the view that pandemic-era stimulus contributed to the post-COVID surge in inflation.