

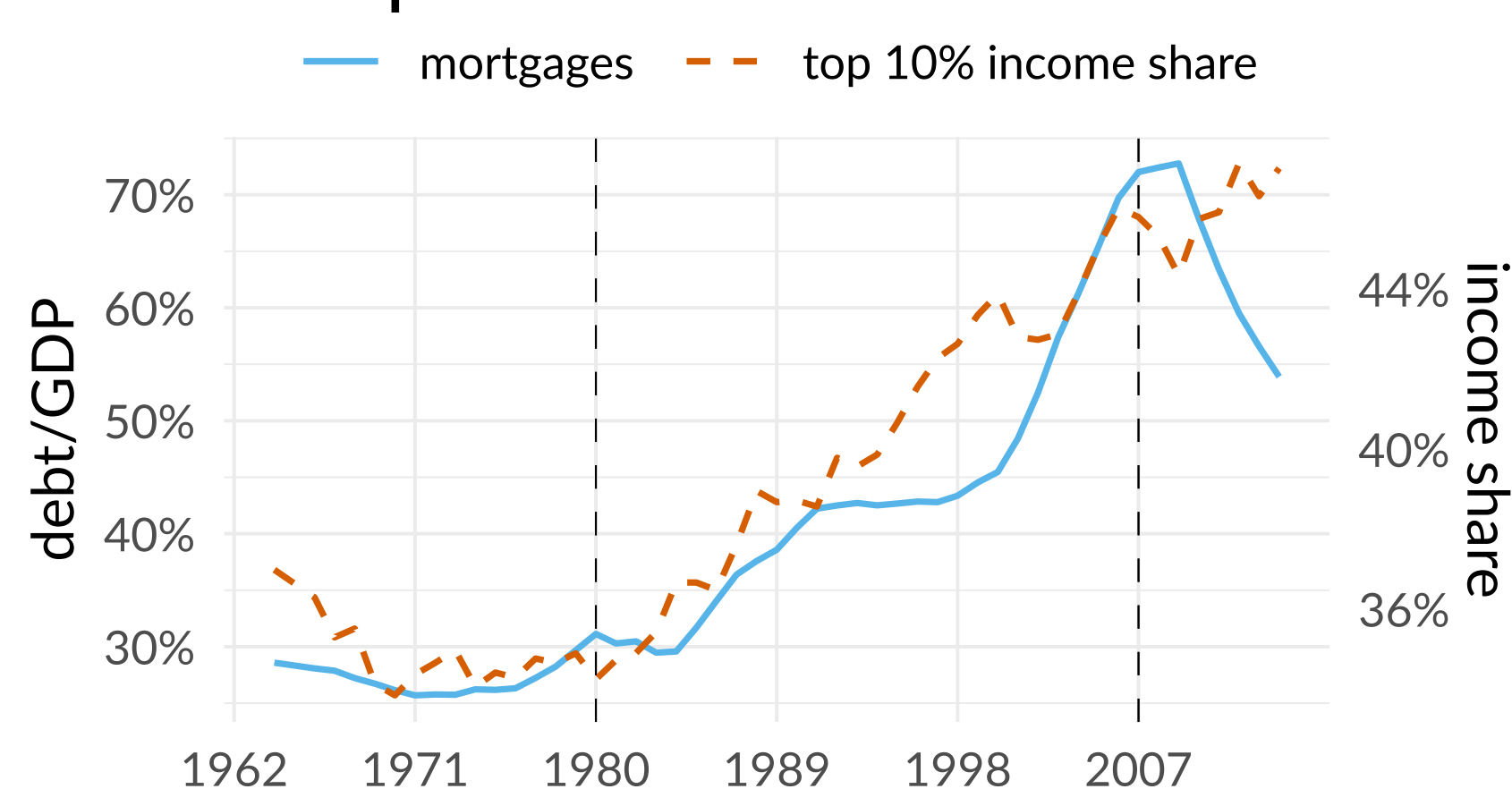
Rising inequality drives mortgages and house prices because households want to keep up with the Joneses.

Falling Behind: Has Rising Inequality Fueled the American Debt Boom?

Moritz Drechsel-Grau & Fabian Greimel University of Mannheim, Germany

Overview

- inequality and mortgage debt have risen in lockstep since 1980



- we formalize a causal link: rising inequality *caused* part of the debt boom (and the house price boom) because households want to *keep up with the Joneses*
- mechanism generates about 50% of observed mortgage and house price booms

Model

- Bewley-Huggett-Aiyagari model
- consumption c , durable housing h
- relative preferences:
 - based on micro-evidence Bellet (2017)
 - housing status $s(h, \bar{h})$
 - \bar{h} is P90 of h -distribution

$$E_0 \int_0^{\infty} e^{-\rho t} u(c_t, s(h_t, \bar{h}_t)) dt$$

$$\text{s.t. } \dot{a}_t = y_t + r_t a_t - c_t - p_t x_t$$

$$\dot{h}_t = -\delta h_t + x_t$$

$$a_t > -\omega p h_t$$

- rich income process (Guvenen et al., 2019)
- fixed supply of mortgages a^S , endogenous housing supply (construction sector)

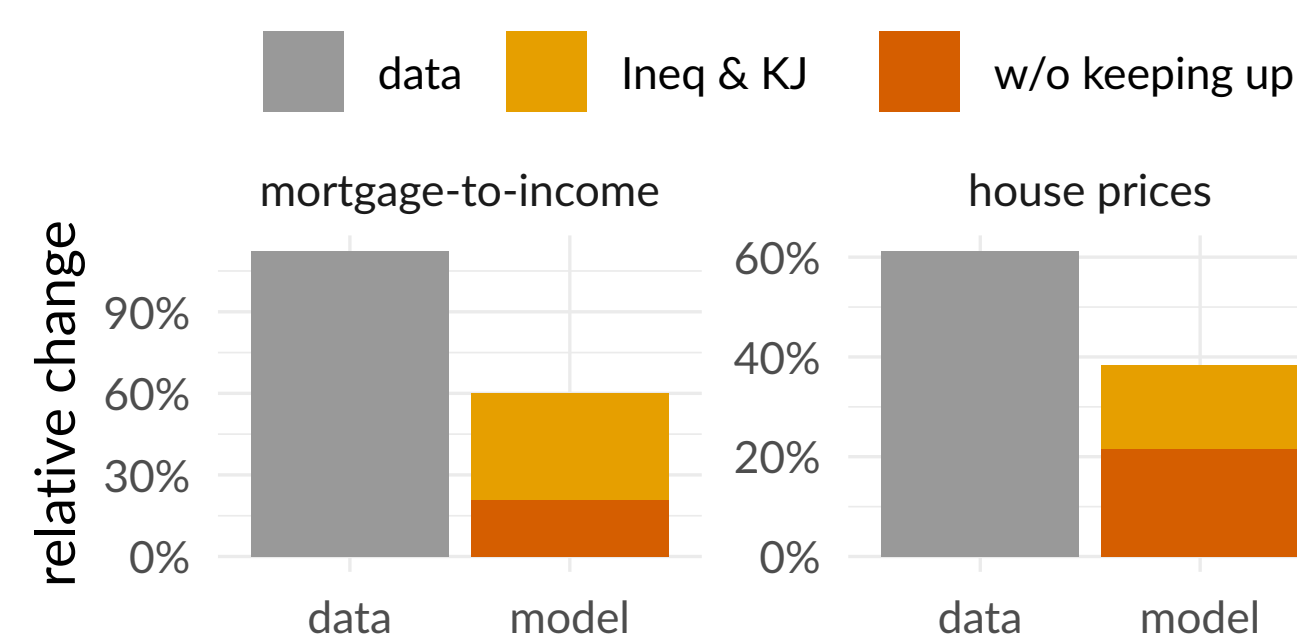
How inequality drives mortgages

income inequality $\xrightarrow{\text{Keeping up}}$ debt boom

- rich become richer (exogenously)
- rich improve houses, raise ref. point
- non-rich want to keep up with the rich
- non-rich improve houses using mortgage
- debt boom across the income distribution

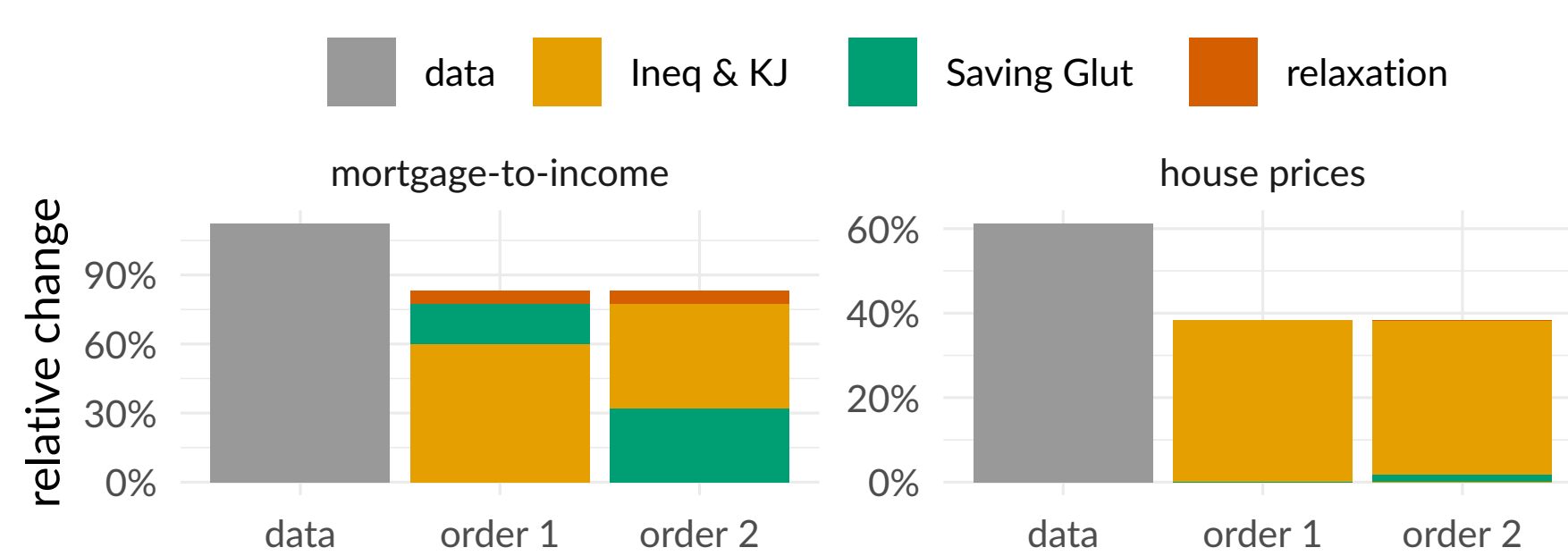
Note: non-rich \approx bottom 90 %

Main result



- mechanism generates about 50% of debt and house price booms
- keeping up with the Joneses* (KJ) is quantitatively important to generate results

Horse race with other channels



- Saving Glut (vary a^S) generates similar debt boom but no house price boom
- relaxing collateral constraint does not generate booms

Related literature: micro-evidence on mechanism

- neighbours of lotter winners: bigger cars, more debt, more likely to default Kuhn et al. (2011, AER), Agarwal et al. (2018)
- top-10% expenditures drive expenditures of non-rich on state-level (especially housing) Bertrand and Morse (2016, REStat)
- non-rich care about own house and top-10% housing equally—drives home improvements, borrowing Bellet (2017)
- comparisons are upward-looking many

Stylized version of model

- three types, const. incomes y_P, y_M, y_R
- upward-looking comparisons

$$\begin{pmatrix} \bar{h}_P \\ \bar{h}_M \\ \bar{h}_R \end{pmatrix} = \underbrace{\begin{pmatrix} 0 & g_{PM} & g_{PR} \\ 0 & 0 & g_{MR} \\ 0 & 0 & 0 \end{pmatrix}}_{G \text{ (adjacency matrix)}} \begin{pmatrix} h_P \\ h_M \\ h_R \end{pmatrix}$$

Closed-form results

- debt is increasing in the reference group's incomes

$$h = \kappa_2 y + \kappa_2 \left(\sum_{i=1}^{\infty} (\kappa_1 \phi)^i G^i \right) y$$

$$-a = \frac{\kappa_2}{1+r} (\rho(1-\delta)y + \kappa_3 \phi \left(\sum_{i=1}^{\infty} (\kappa_1 \phi)^i G^i \right) y)$$

$$\text{where } \sum_{i=1}^{\infty} (\kappa_1 \phi)^i G^i =$$

$$\begin{pmatrix} 0 & \tilde{\phi} \cdot g_{PM} & \tilde{\phi} \cdot g_{PR} + \tilde{\phi}^2 \cdot g_{PM} \cdot g_{MR} \\ 0 & 0 & \tilde{\phi} \cdot g_{MR} \\ 0 & 0 & 0 \end{pmatrix}$$

$$\kappa_1, \kappa_2 > 0, \quad \tilde{\phi} \propto \phi$$

(similar results for all invertible, non-negative adjacency matrices)

- aggregate debt is increasing in top incomes



References

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