Illiquid Homeownership and the Bank of Mom and Dad

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How much of the homeownership rate of the young (25-44) is accounted for by parental transfers?

- New life-cycle OLG model with altruistic parents
- Adult children and parents interact without commitment
- Transfers account for 15 pp (31%) of homeownership

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- Why are transfers so important?
  1. Current transfers relax borrowing constraints $\uparrow$
  2. Future transfers reduce risk of illiquid homeownership $\uparrow$
  3. No commitment $\implies$ undersaving $\downarrow$

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- Applications: policy, financing frictions, racial differences

Data and Empirical Results

Housing Outcomes and the Bank of Mom and Dad

Data: Parental Wealth, Transfers, Children's Housing Outcomes

- Survey of Household Economics and Decisionmaking
  - Reliance on downpayment assistance doubled since 2000

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- Panel Study of Income Dynamics 1999-2017
  - Panel with children and parents
  - I show that households with wealthier parents... ▸ Regressions
    1. Buy more expensive housing
    2. Are less likely to behind on mortgage payments
    3. Are less likely to downsize during unemployment

    ▸ Event study data and ▸ Model replication

Quantitative Life-Cycle Model

Model of Homeownership with Parental Transfers

Model Overview

▸ Literature

- Altruistic parent can transfer to adult child
- Discrete rent/own choice
- Loan-to-Value (LTV) requirement on mortgages
- Adjustment costs on housing $\Longrightarrow$ illiquid
- Child and parent interact without commitment

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- Contribution of altruistic transfers to homeownership

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  a) Contribution of LTV and illiquidity to transfers

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Research Question

- Contribution of altruistic transfers to homeownership
  a) Contribution of LTV and illiquidity to transfers
  b) How illiquidity affects the commitment problem

Altruism, Transfers, and No Commitment

Altruism

- Kids utility: $u(c_k, h_k)$
- Altruistic parents: $u(c_p, h_p) + \eta u(c_k, h_k)$
  - Warm glow: $u(c_p, h_p) + \eta f(t_p)$

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Parental Transfers

- Non-negative monetary transfers t_p
  - Equate marginal benefit of consumption bundles
- Bequests at death

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No Commitment

▸ Commitment

- Timing of transfers and wealth allocation within the family
- Empirical evidence: little risk-sharing between generations

Model Timeline: Economically Active Population

- Period: 2 years
- Overlap for 30 years

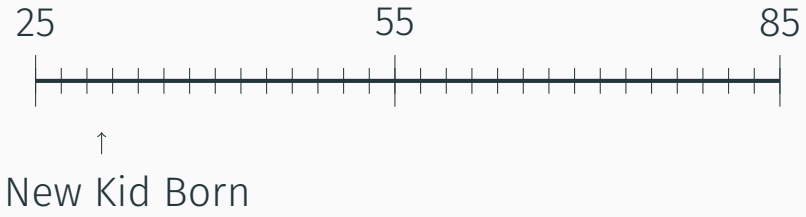
Kid $a_k \in \{25, 27, \ldots, 53\}$

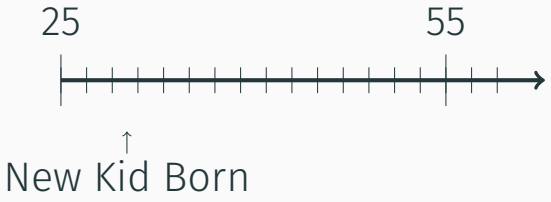
Parent $a_p \in \{55, 57, \ldots, 83\}$

- $a_p = a_k + 30$

Model Timeline: New Kids

- Period: 2 years
- Overlap for 30 years





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- Age 30: New kid is born

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Model Timeline: Kids → Parents → Bequest

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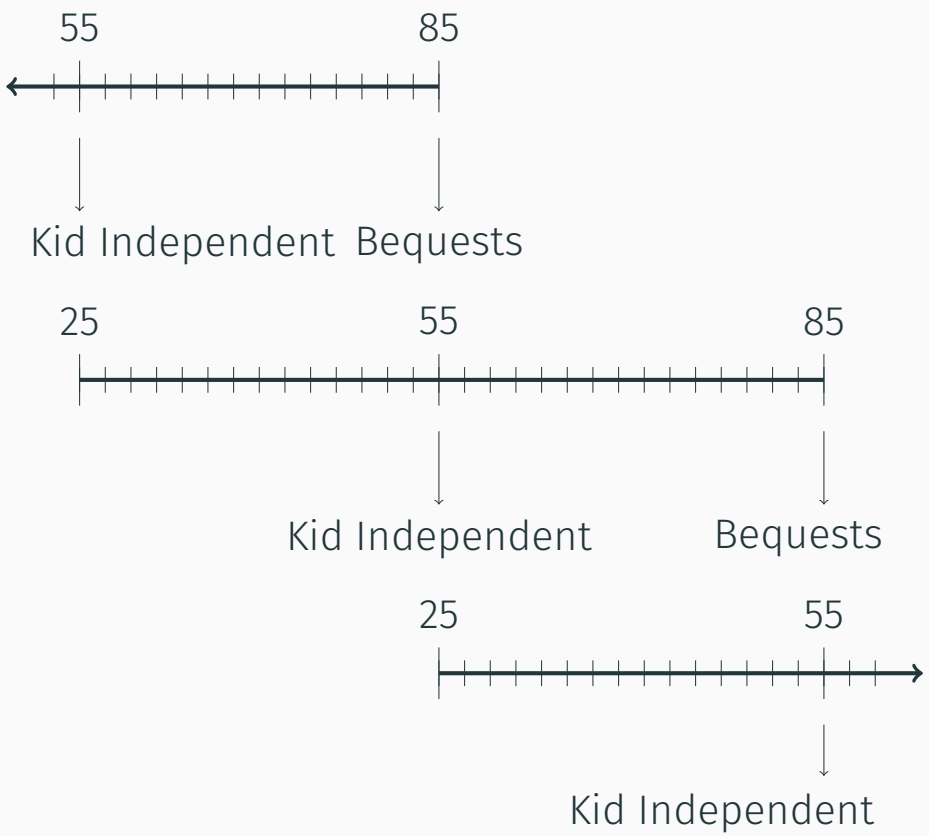
- Overlap for 30 years



Kid $a_k \in \{25, 27, \ldots, 53\}$

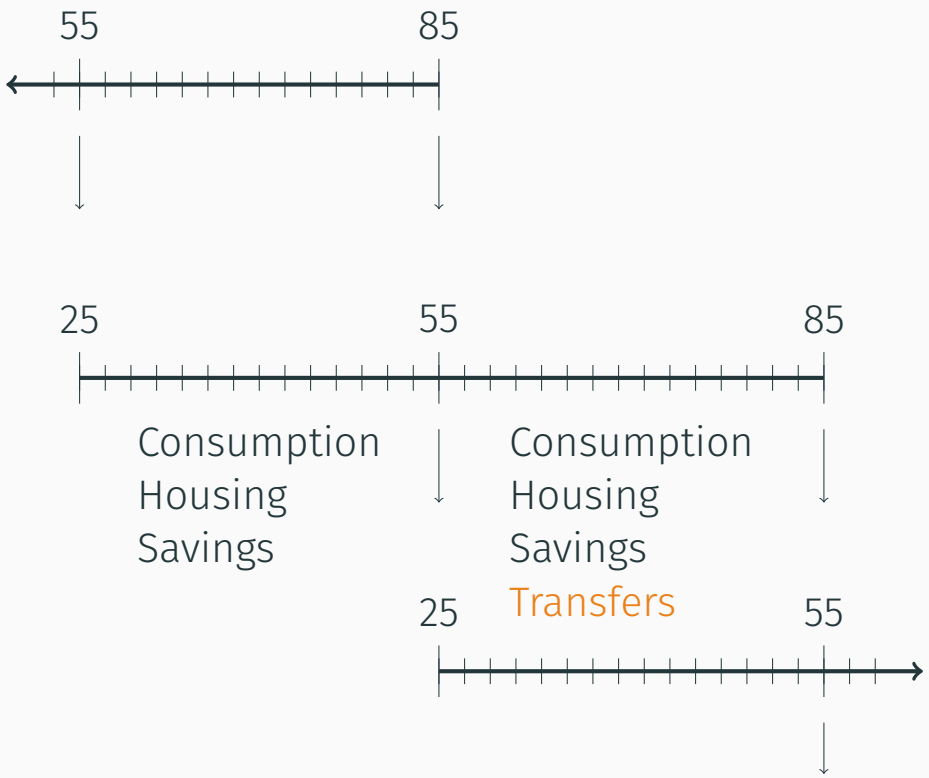
- Age 30: New kid is born
- Age 55: New kid independent, inherit

Parent $a_p \in \{55, 57, \ldots, 83\}$

- $a_p = a_k + 30$
- Age 85: Die, leave bequest

Model Timeline: Choices

- Period: 2 years
- Overlap for 30 years



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- Consumption/savings, Housing

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Two Assets and an Income Endowment

Housing ▸ More Details

- Can rent h_r or own h_o. $h_r < h_o$
- Exogenous owner-occupied price p and rental price $q \times p$
- Depreciation δ on owner-occupied housing
- Adjustment costs on owner-occupied housing $\implies$ Illiquid
  - Proportional sales cost m_s and buying cost $m_b \rightarrow adj(h, h')$

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Financial

- Can save using bonds $(1 + r)$
- Can borrow only in mortgages $(1 + r + r^m)$, LTV constraint

- Net bond position b with interest rate $r(b)$

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  - Transfer motive ▸ Kinks and Transfers #2
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Income Endowment

- Life cycle income l_a, includes retirement benefit
- Kids: $w_{i,a} = l_a y_{i,a}$, $y_{i,a}$ persistent productivity shock
- Parents: $w_{i,a} = l_a$, no risk

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- Income shock y_k realized at the beginning of the period
- Within period 2-stage game

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1. Parent:
    - Consumption c_p, housing h'_p, bonds b'_p, and transfers t_p
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▸ Decision Problems ▸ Distribution ▸ Utility, Intergenerational correlations

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Estimation

Standard Two-Step SMM Estimation

1. Some parameters directly from data and literature ▸ Table
   - Adjustment costs m_s = 0.075, $m_b = 0.02$
   - Max $LTV = 0.8$
   - Risk aversion $\gamma = 2.0$
   - Expenditure share housing $\phi = 0.175$

2. Estimate 6 parameters with 8 moments

Time Pref β	Altruism η	Own. Pref. χ	Mortg. Prem. r^m	Price p	Size Ratio h_o/h_r
0.925	0.457	1.379	0.020	81.966	3.12
(0.004)	(0.068)	(0.156)	(0.006)	(6.610)	(0.291)

Model Fit

▸ Identification

Moment	Data	Model	Informative
Median Wealth (25-44)	23.54	23.49	η
Median Wealth (55-74)	206.67	206.82	β
Owner (25-44)	0.49	0.48	p
Rent / Income (25-44)	0.23	0.21	h_o/h_r
Age First Own (25-44)	32.53	32.89	χ
LTV at purchase (25-44)	0.67	0.66	r^m
Parent Transfers (55-74)	0.36	0.45	η
Transfers Around Purchase (25-44)	0.39	0.38	η

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Non-Targeted Moment			
Parent Wealth Owners/Renters (25-44)	2.52	2.49	
Owners (25-73)	0.65	0.60	
$Prob(NewOwner\|t_p > \$5000, Controls)$ $-Prob(NewOwner\|t_p \leq \$5000, Controls)$	(0.03-0.07)	0.06	

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Contribution of Transfer to Homeownership

Homeownership With/Without Altruism

1. Constant parameters & prices, set $\eta = 0$
    - Standard single-household model
2. Find new stationary distribution

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Median Wealth (25-44)	23.54	23.49	42.13
Median Wealth (55-74)	206.67	206.78	208.20
Owner (25-44)	0.49	0.48	0.33
LTV at Purchase (25-44)	0.67	0.66	0.46
Wealth at Purchase (25-44)	33.36	46.85	74.31
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- Lower ownership, but wealth doubles? Purchase threshold
- Parental wealth gradient driven by transfers
  - Not by intergenerational persistence in productivity

Policy, Frictions, Transfers, and Homeownership

Which Frictions Generate a Role for Parental Wealth

1. Remove LTV requirement $LTV = 0.8 \rightarrow 1.0$
    - Now transfers account for 4pp, down from 15pp
    - No need for transfers to buy
    - Can always afford to stay in house

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2. Make housing liquid $m_s = 7.5\% \rightarrow 0\%, m_b = 2\% \rightarrow 0\%$
    - Transfers account for 6pp, down from 15pp
    - Wealthy parents: small effect
    - Poor parents: housing less risky, higher ownership

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- Illiquidity almost as important as mortgage constraints

▸ Table of Results

Recent Policy Attention to First-Time Buyers

- US policy attempts to increase homeownership
- Recent attention to young & first-time buyers
- Two common policies
  1. Reduced downpayments (e.g. DC, Texas)
  2. Reduced purchase cost m_b (e.g. Wisconsin, FHA, UK)
- How do these policies affect the role of parental wealth?
  - Introduce policy change to stationary distribution
    - Only for kids (aged 25-53)
  - Outcomes after one generation

Effect of Policies on Parental Wealth Effect

Moment	Bench	LTV 0.85	$m_b = 0.0$	$m_s = 0.055$
Median Wealth (25-44)	23.47			
Owner (25-44)	0.48			
Parent top 50%	0.61			
Parent bottom 50%	0.34			
Transfers Rate (55-74)	0.45			
Owner (25-73)	0.60			
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- LTV ↑: Increase ownership, parents more important
  - LTV binding for households with wealthy parents
- m_b ↓: Almost no effects
- m_s ↓: Decrease ownership(!), parents less important
  - Reduces over-consumption of housing

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  - OLG life-cycle model with altruism and housing
- Policies and parental transfers
  - Stricter regulation often increases reliance on transfers
  - Reducing sales costs decrease role of transfers

Conclusion

How much of the homeownership rate of the young is accounted for by parental transfers?

- Transfers account for 15pp (31%)
  - OLG life-cycle model with altruism and housing
- Policies and parental transfers
  - Stricter regulation often increases reliance on transfers
  - Reducing sales costs decrease role of transfers
- Interaction between liquidity, altruism, and commitment
  - Transfers generate preferences for illiquidity

Appendix

Timing

▸ Back

- Income shock y_k realized at the beginning of the period
- Within period 2-stage game

Timing

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   - Consumption c_p, housing h'_p, bonds b'_p, and transfers t_p
   - Parent States $\mathbf{s}_p = (x_p, h_p, x_k, y_k, h_k, a_k)$

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Kid's Decision Problem

Kid's Problem: Enter as owner, leaving as renter

$$
\begin{aligned}
V_k^r(\mathbf{s_k}) = \quad & \max_{c_k, b'_k, h'_k = h_r} u(c_k, h_r) + \beta \mathbb{E}\left[V_k(\mathbf{s'_k})\right] \\
\text{s.t.} \quad & b'_k = x_k + t_p + w_k - c_k - qph_r - m_s ph_o \\
& x'_k = b'_k(1 + r(b'_k)) \\
& b'_k \geq 0
\end{aligned}
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▸ All Decisions Problem ▸ Back to solution overview

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- Expensive downsizing (illiquid)
- 'Wealthy Hand-to-Mouth': High MPC households

▸ All Decisions Problem ▸ Back to solution overview

Solution

- Dynastic overlapping generations life-cycle model with stage games
- Solve backward & fixed point iteration
- Markov Perfect Equilibrium
- Stationary Distribution ▸ Distribution

Literature: Life-Cycle, Housing, and Altruism ▸ More ▸ Model

Model

	Without Housing	With Housing
Without Altruism	Standard Life-Cycle	A
With Altruism	B	This Paper

Literature: Life-Cycle, Housing, and Altruism ▸ More ▸ Model

Model

	Without Housing	With Housing
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Contributions

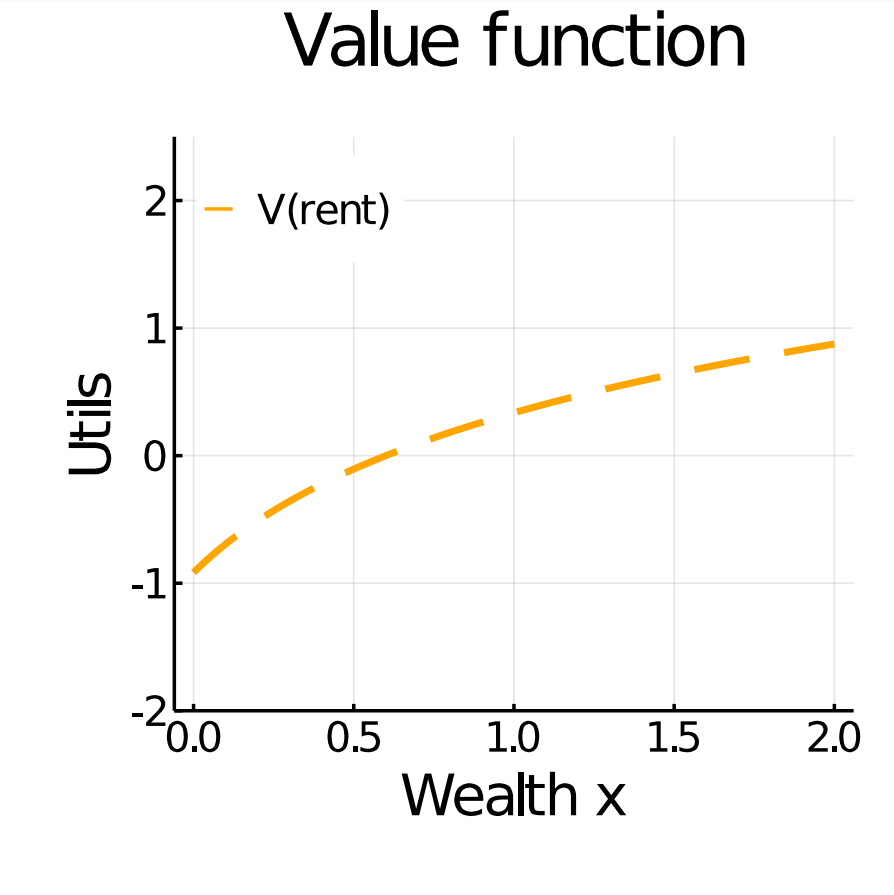
A) Housing: Mabille (2020), Paz-Pardo (2020), Fisher & Gervais (2012), *Barczyk, Fahle, Kredler (2020)*

New: Parental transfers

B) Altruism: Altonji, Hayashi, Kotlikoff (1997), Kaplan (2012), Barczyk & Kredler (2018), *Boar (2020)*

New: Housing

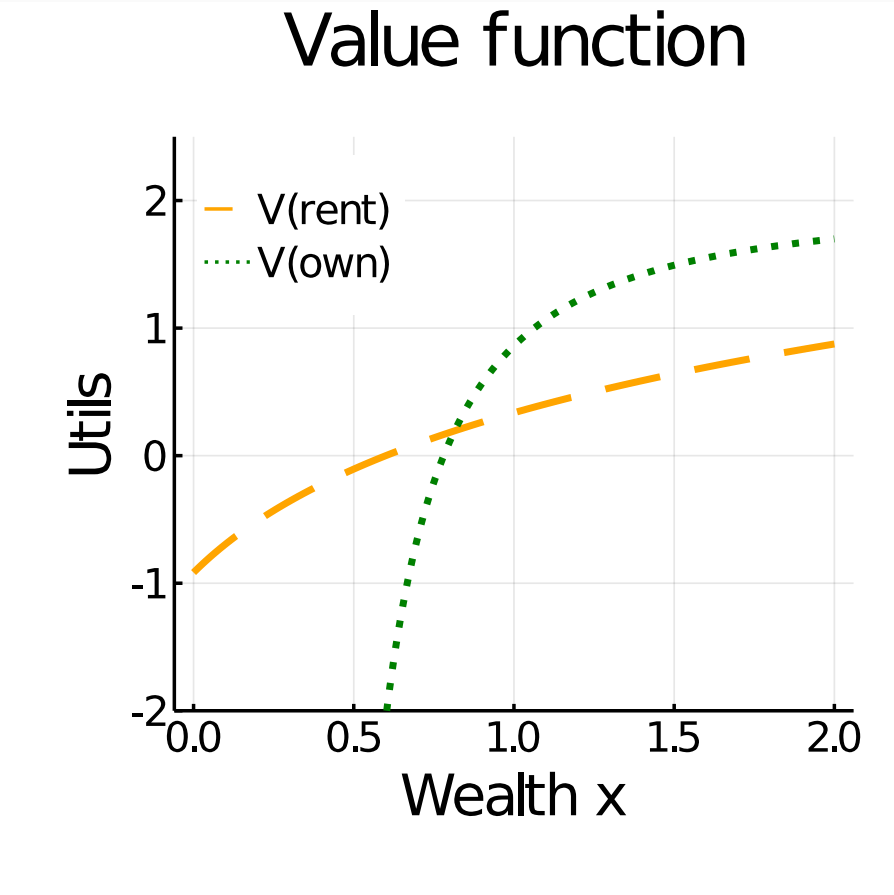
Ex: Housing & Borrowing Constraints Induce Non-Convexities



- Can always rent

▸ Back to markets

Ex: Housing & Borrowing Constraints Induce Non-Convexities



- Can always rent
- Low wealth: no feasible down payment
- Just enough to buy: $c_k = \varepsilon$ ("house poor")

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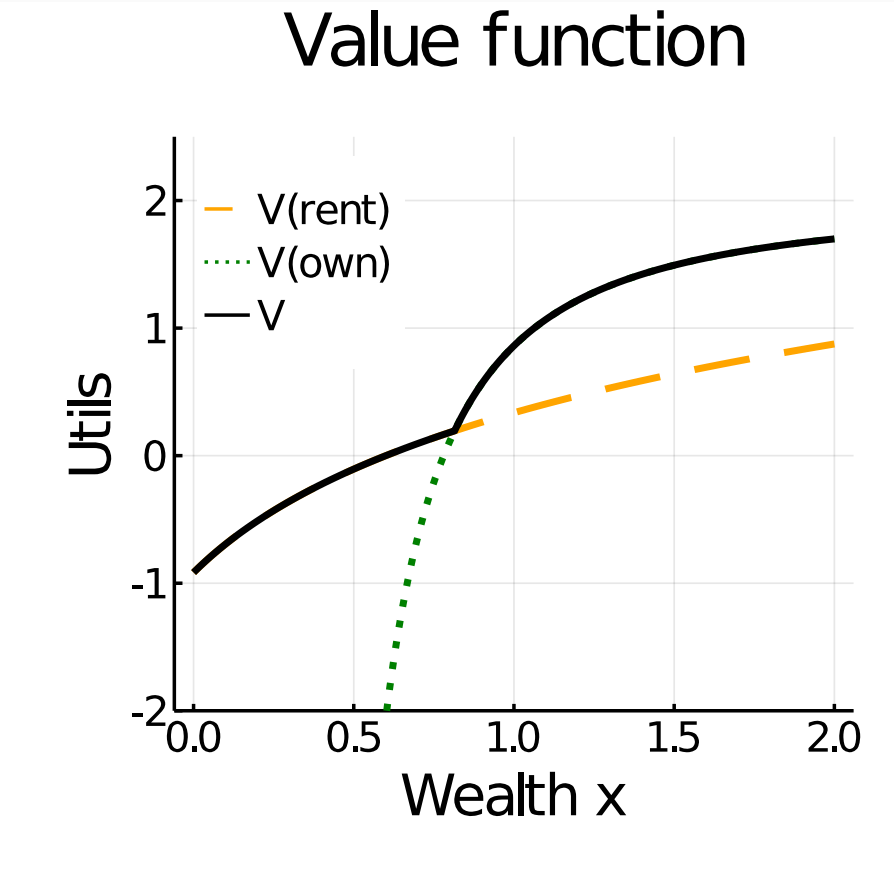

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  $\Longrightarrow$ the marginal utility of wealth V_x jumps at tenure transition

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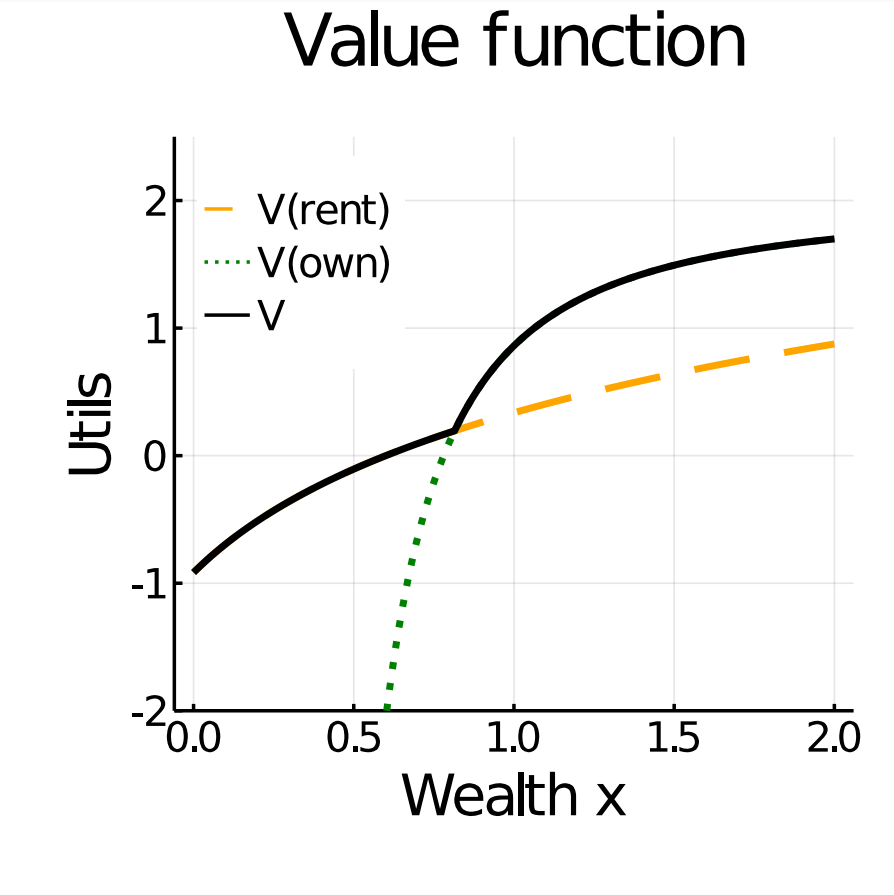

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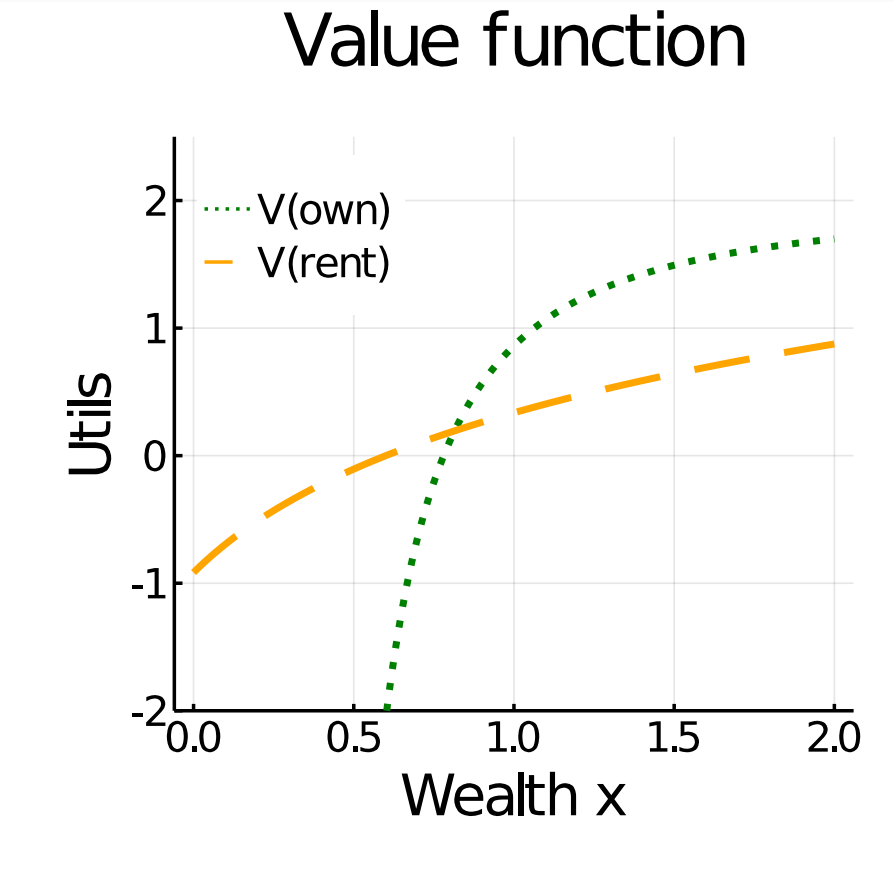
  $\Longrightarrow$ the marginal utility of wealth V_x jumps at tenure transition

- Gifts around the kink: increases bang for parent buck
  - Child may strategically allocate around kinks

▸ Back to markets

Ex: Adjustment Costs Exacerbates Non-Convexities



- What happens to envelope with costs?

▸ Back to markets

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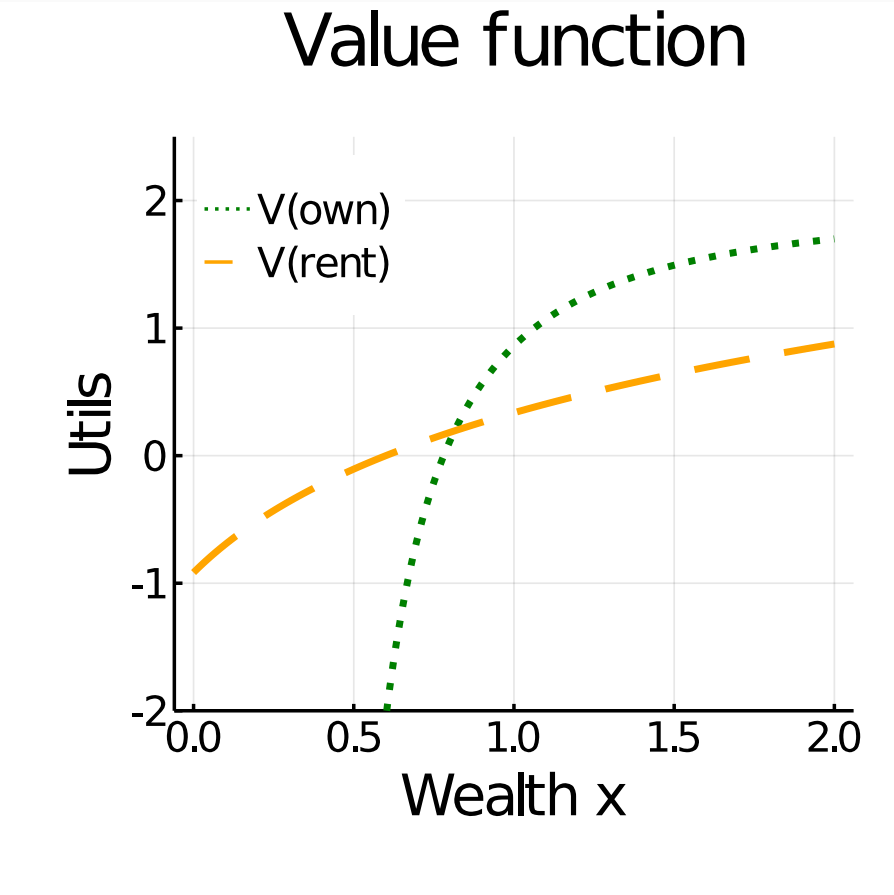

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- Assume household own. If he sells pays extra cost

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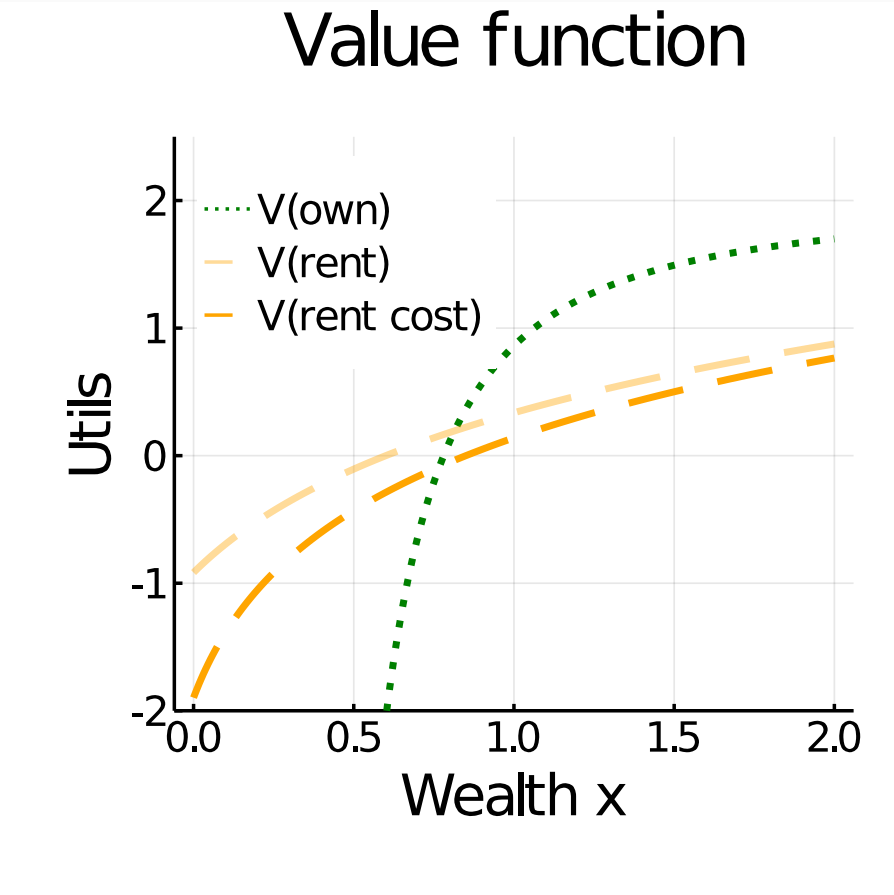

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  - & in upper envelope

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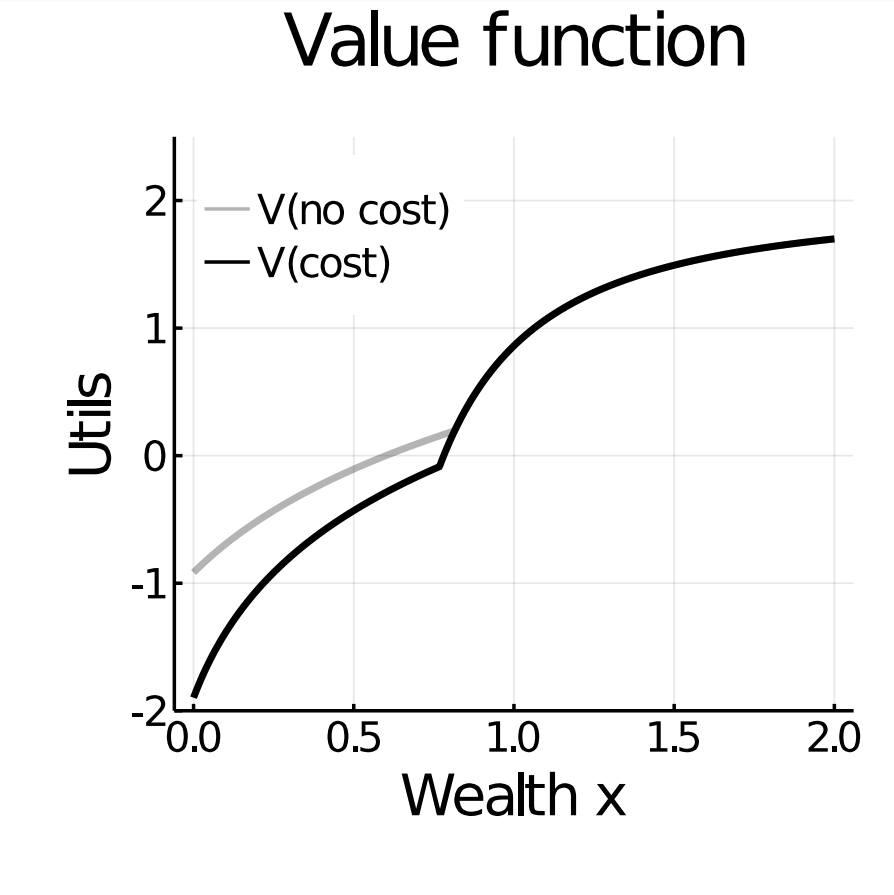


- What happens to envelope with costs?
- Assume household own. If he sells pays extra cost
- Shift in $V(rent)$
  - & in upper envelope
- Steeper value function at threshold

- Incentive to give transfers to keep child in the house

▸ Back to markets

Regression Formulation

$$\begin{aligned} Y_i = &\beta_1 \ln(Wealth)_{p(i),t-2} + \beta_2 \ln(Income_{i,t-2}) + \beta_3 \ln(NetWorth_{i,t-2}) \\ &+ \gamma X_{i,t} + \varepsilon_i, \end{aligned}$$

Regressions

Back

	ln(House Value)	Ever Behind	Behind First
Parent			
ln(Wealth) (t-2)	0.072***	-0.023**	-0.022**
	(0.020)	(0.008)	(0.007)
Child			
ln(Net Worth) (t-2)	0.079***	-0.014*	-0.017*
	(0.016)	(0.007)	(0.006)
ln(Income) (t-2)	0.388***	0.001	0.019
	(0.035)	(0.015)	(0.013)
N	884	709	372

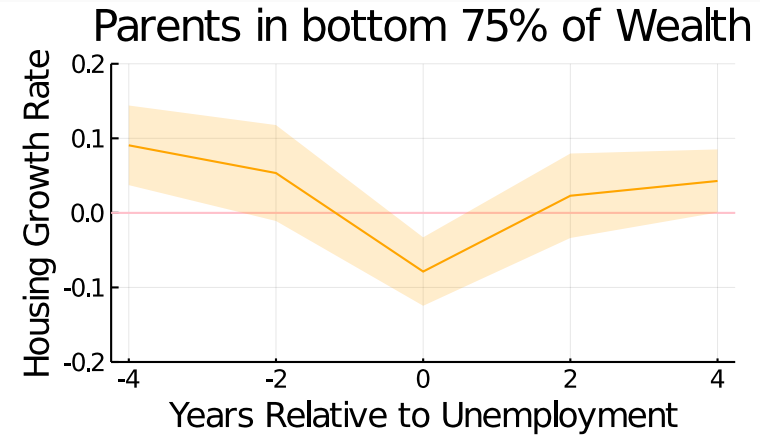
PSID 1999-2017, and include year fixed-effects, linear and cubic age trends, and control for education, race, and family size.

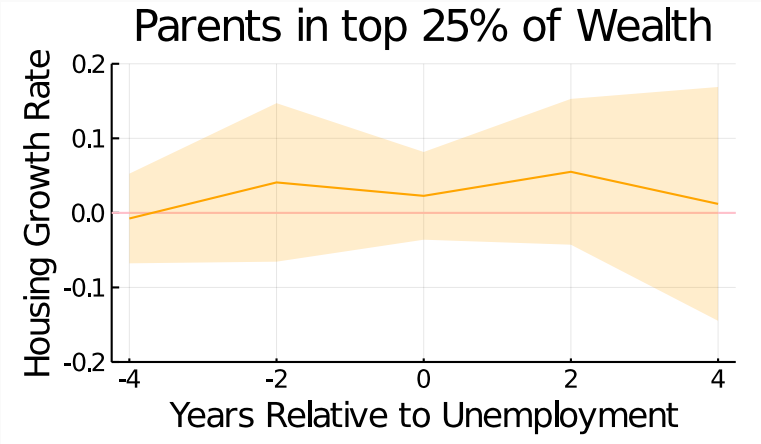
- Parental wealth associated with buying pricier houses
- Parental wealth associated with better mortgage outcomes

Event Study With Control Variables

Back

Without controls





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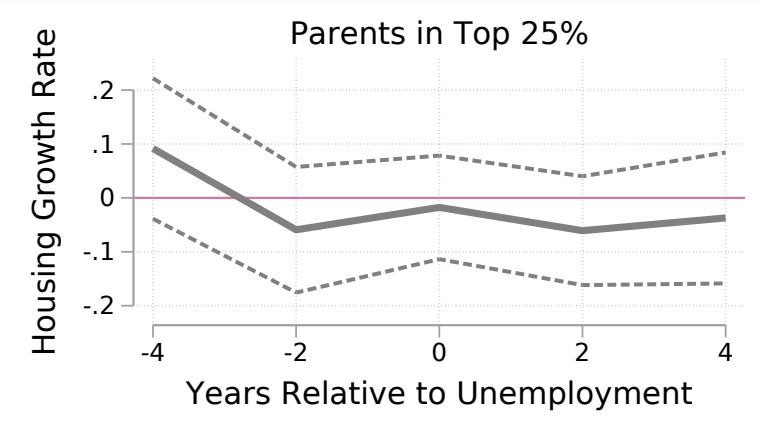

PSID 1999-2017. The set of controls include dummies for children's wealth and income quintiles, a full set of age, year, and state dummies, and dummy variables for college, high-school, and marriage.

Kid's problem conditional on buying

$$
\begin{aligned}
V_k(\mathbf{s_k}) = \quad & \max_{c_k, b'_k, h'_k = h_o} \; u(c_k, h'_k) + \beta \mathbb{E}\left[V_k(\mathbf{s'_k})\right] \\
\text{s.t.} \quad & b'_k = x_k + t_p + w_k - c_k - p h'_k - adj(h_k, h'_k) \\
& x'_k = b'_k(1 + r(b'_k)) + p h'_k (1 - \delta) \\
& b'_k \geq - LTV p h'_k,
\end{aligned}
$$

$$
\begin{aligned}
\mathbf{s_k} &= (b'_p, h'_p, x_k + t_p, y_k, h_k, a_k), \\
\mathbf{s'_k} &= (b^*_p(\mathbf{s'_p}), h^*_p(\mathbf{s'_p}), x'_k + t^*_p(\mathbf{s'_p}), y'_k, h'_k, a_k + 2), \\
\mathbf{s_p} &= (x_p, h_p, x_k, y_k, h_k, a_k), \\
\mathbf{s'_p} &= (x'_p, h'_p, x'^*_k(\mathbf{s_k}), y'_k, h'^*_k(\mathbf{s_k}), a_k + 2)
\end{aligned}
$$

Back

Parent's problem conditional on buying

$$V_p(\mathbf{s_p}) = \max_{c_p, b'_p, h'_p, t_p} u(c_p, h'_p) + \eta u\left(c^*_k(\mathbf{s_k}), h^*_k(\mathbf{s_k})\right) + \beta \mathbb{E}\left[V_p(\mathbf{s'_p})\right]$$

$$\begin{aligned}
\text{s.t.} \quad b'_p &= x_p + w_p - c_p - t_p - p h'_p - adj(h_p, h'_p) \\
x'_p &= b'_p(1 + r(b'_p) + p h_p(1 - \delta) \\
t_p &\geq 0, b'_p \geq -LTV p h'_p
\end{aligned}$$

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\end{aligned}$$

Back

Distribution

Law of Motion for Kids 25-51

$$f_a(\mathbf{s}'_p) = \int_{\mathbf{s}_p \in \mathcal{S}_p} \mathbf{1}_{\{x'_p = x^*_p(\mathbf{s}_p)\}} \mathbf{1}_{\{h'_p = h^*_p(\mathbf{s}_p)\}} \mathbf{1}_{\{x'_k = x^*_k(\mathbf{s}_k(\mathbf{s}_p))\}} \mathbf{1}_{\{h'_k = h^*_k(\mathbf{s}_k(\mathbf{s}_p))\}} \times \pi(y'_k | y_k) \, \mathrm{d}f_{a-2}(\mathbf{s}_p).$$

Law of Motion for Kids 53

$$f_{25}(\mathbf{s}'_p) = \int_{\mathbf{s}_p \in \mathcal{S}_p} \mathbf{1}_{\{x'_p = x^*_p(\mathbf{s}_p) + x^*_k(\mathbf{s}_k(\mathbf{s}_p))\}} \mathbf{1}_{\{h'_p = h^*_p(\mathbf{s}_p)\}} \mathbf{1}_{\{h'_k = h_r\}} \times F(x'_k, y'_k | x_k, y_k) \, \mathrm{d}f_{53}(\mathbf{s}_p).$$

Fixed point: $f^*(\mathbf{s}_p) = \mathcal{H}(f^*(\mathbf{s}_p), \mathbf{g}(\mathbf{s}_p)))$

▸ Back to Solution

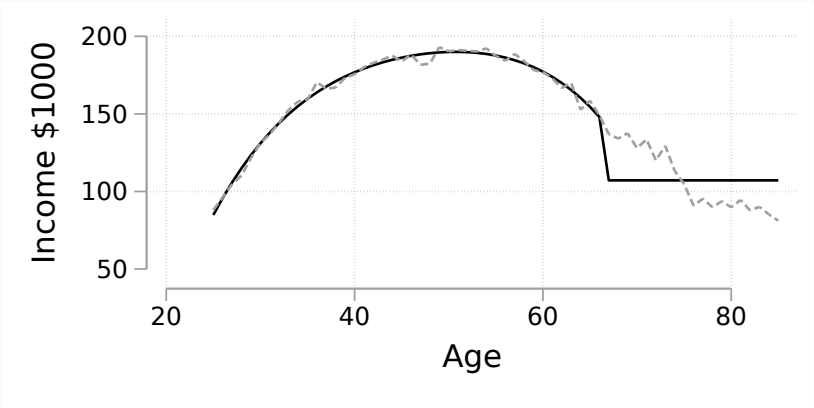
Outside Parameters

Back

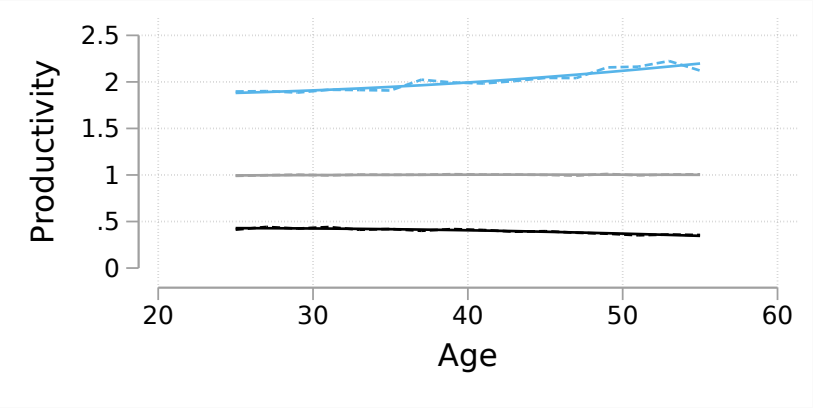
Parameter		Value	Source
Period Length	–	2 years	PSID Frequency
Rental Price	q	0.10	Standard
Deprecation	δ	0.05	Standard
Risk-free Rate	r^f	0.04	Standard
Expenditure Share Housing	ξ	0.175	Standard
Risk Aversion	γ	2.0	Standard
Max Loan-to-Value	LTV	0.8	Standard
Rental Size	h_r	1.0	Normalization
Initial Distribution	$F(x_{53}, v_{53})$	Fig. 4	PSID
Deterministic Income	l_a	Fig. 2a	PSID
Productivity Shocks for Kids	$y, \Pi(y'\|y)$	Fig. 2b,3	PSID
Selling & Buying Cost	(m_s, m_b)	(0.075,0.02)	Yang (2009)

Figure 1: Calibrated Income Process

(a) Deterministic Income Profile y_a

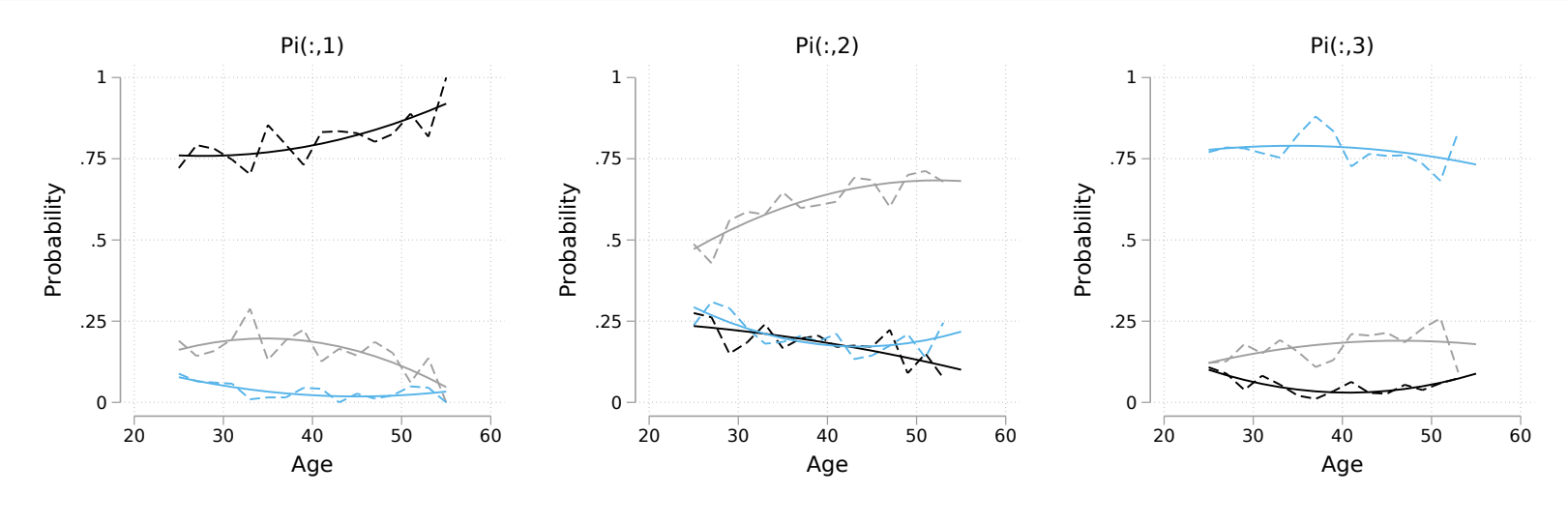


(b) Productivity Shifter $y_{i,a}$



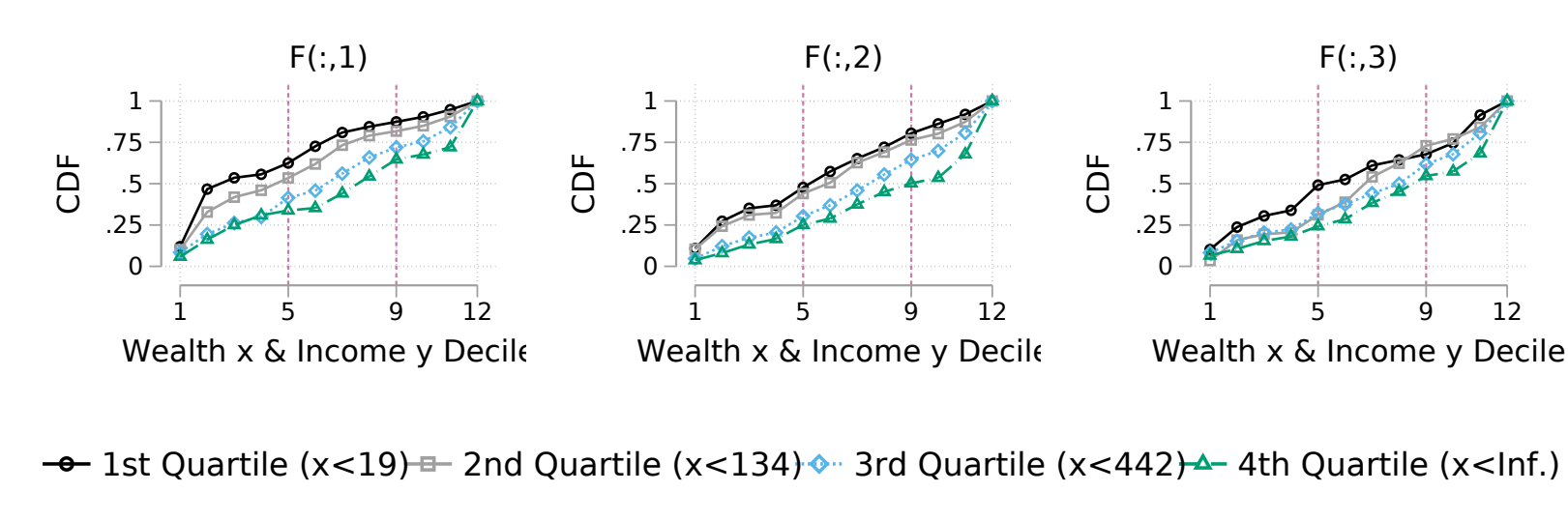
▸ Table of Values

Figure 3: Age-State Dependent Transition Probabilities $\Pi(y_{i,a+2}|y_{i,a})$



▸ Table of Values

Figure 4: Initial Distribution $F(x_{53}, y_{53})$ by wealth x_{53} and productivity y_{53}



Note: The vertial lines denote the first, second, and third income shifters for the kids. Within each interval each point denotes a wealth quartile.

▸ Table of Values

Why No Commitment Two Period Full Model

1. Wealth allocation matter $\iff$ lack of commitment Figure
   - More important with housing due to LTV constraint

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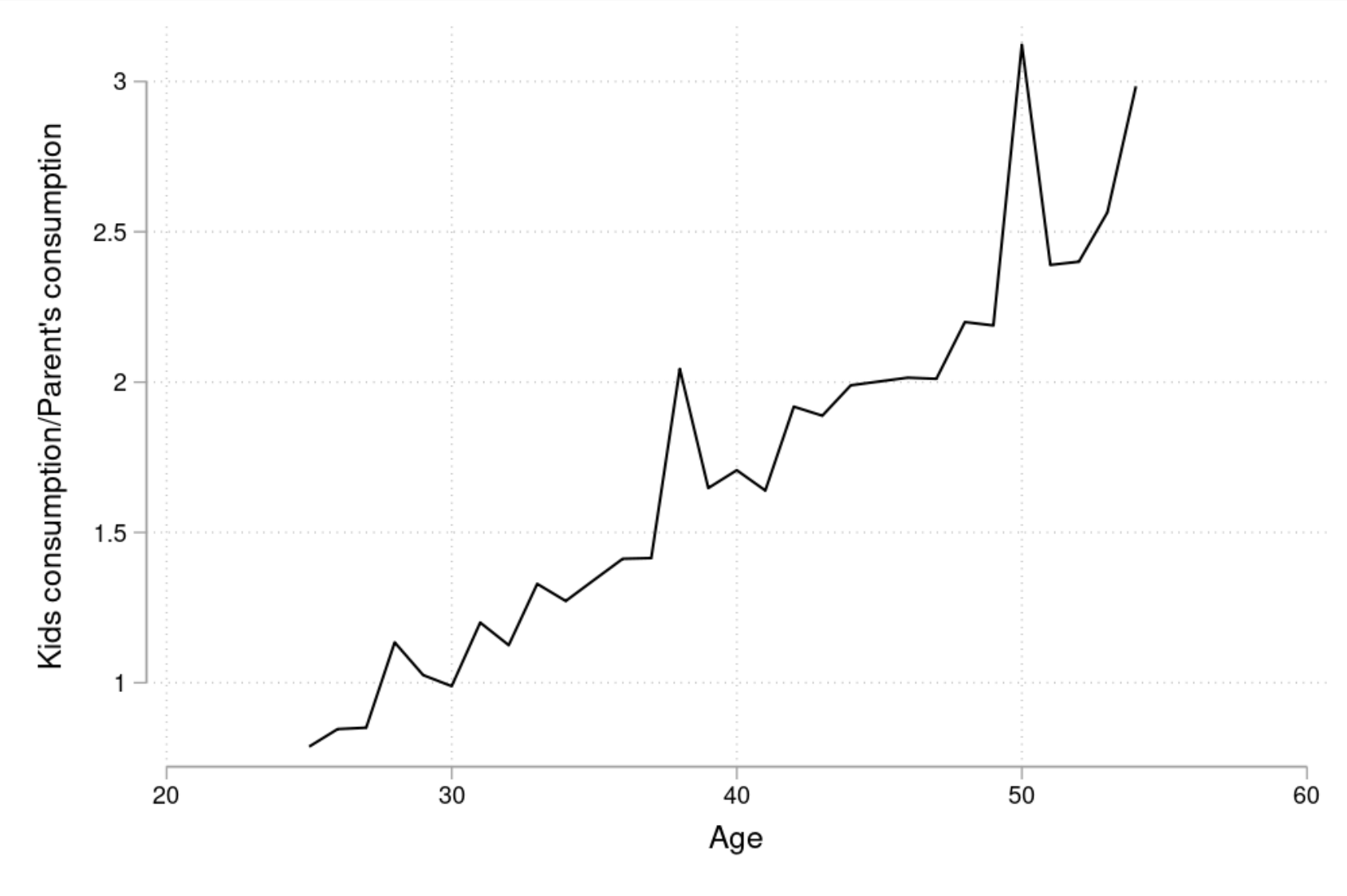
4. Consumption ratio $\frac{c_k}{c_p}$ move with age Figure
   - Commitment $\implies$ constant c_k/c_p

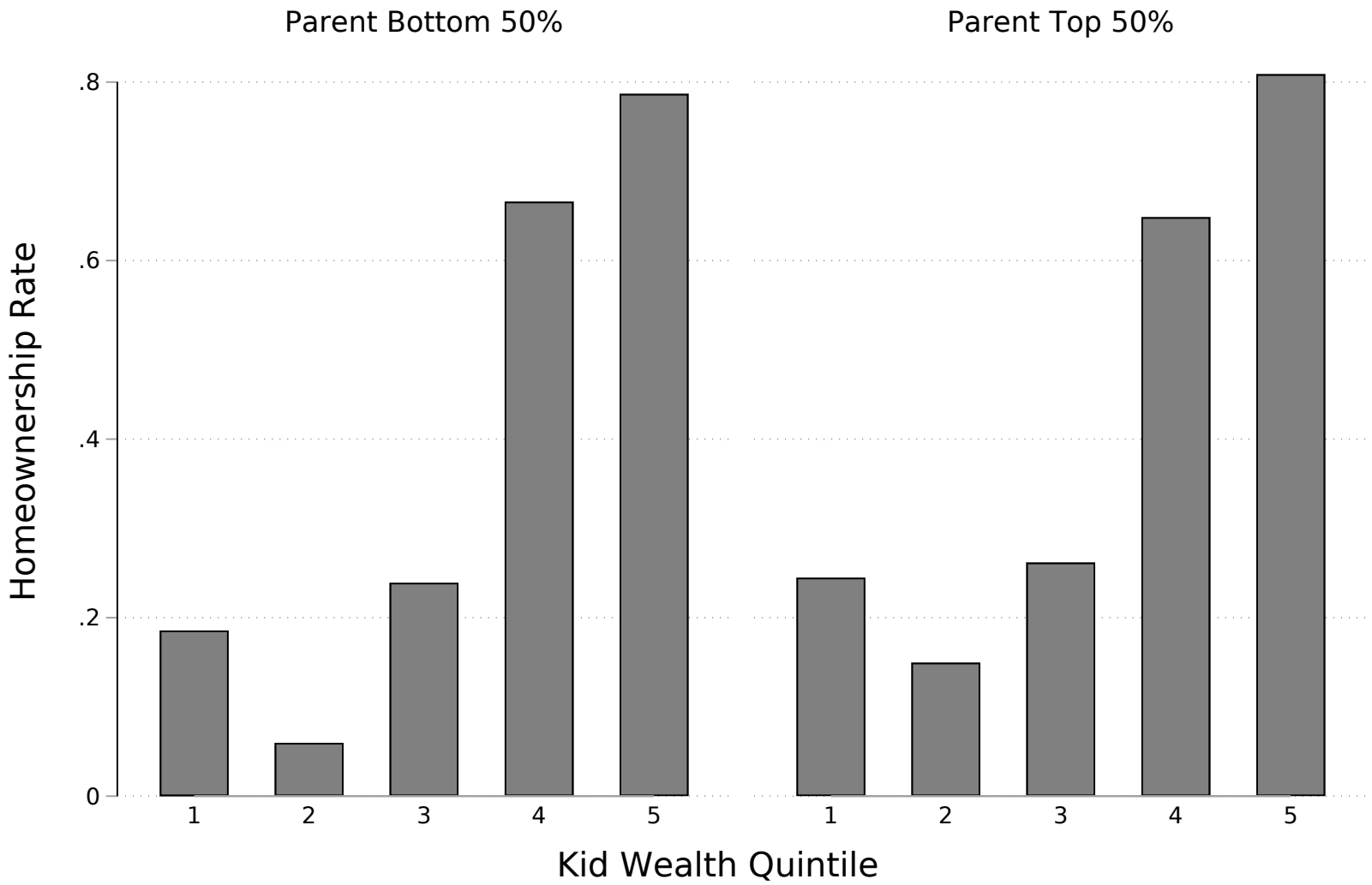
Consumption ratio c_k/c_p over age

Back



Homeownership by Kid and Parent Wealth

Back



Endogenous Prices

Back

Supply: $log(H^s) = \alpha_0 + \alpha_1 log(p)$

Endogenous Prices

Back

Supply: $log(H^s) = \alpha_0 + \alpha_1 log(p)$

Moment	Altruism	Without Altruism		
	Benchmark	Elastic	Middle	Inelastic
Aggregate Moments				
Supply Elasticity		∞	5.00	0.00
House Price	81.97	81.97	80.89	77.85
Owner (25-73)	0.60	0.55	0.56	0.60
Targeted Moments				
Median Wealth (25-44)	23.47	42.13	42.24	43.00
Median Wealth (55-74)	206.78	208.20	209.95	206.32
Owner (25-44)	0.48	0.33	0.35	0.37
Rent / Income (25-44)	0.21	0.20	0.20	0.19
Age First Own (25-44)	32.89	37.52	36.72	36.81
LTV at Purchase (25-44)	0.66	0.46	0.48	0.49
Parent Transfers (55-74)	0.45	0.00	0.00	0.00
Transfers Around Purchase (25-44)	0.37	0.00	0.00	0.00

Aggregate Price Risk or Parent's Income Risk

Back

- Transitory income and health expense shocks for parents
- Persistent aggregate stochastic price level $(0.7, 1.0, 1.3)p_{bench}$ as in Corbae & Quintin (2015)

Aggregate Price Risk or Parent's Income Risk

Back

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		Benchmark		Parent Inc. Risk		Price Risk	
Moment	Data	$\eta > 0$	$\eta = 0$	$\eta > 0$	$\eta = 0$	$\eta > 0$	$\eta = 0$
Median Wealth (K)	23.54	23.65	42.10	22.75	42.36	33.68	55.74
Median Wealth (P)	206.67	206.86	208.64	222.66	227.48	212.77	221.08
Owner (K)	0.49	0.48	0.33	0.46	0.33	0.47	0.32
Rent / Income (K)	0.23	0.21	0.20	0.21	0.20	0.21	0.20
Age First Own (K)	32.53	32.85	37.52	32.89	36.94	32.50	36.86
LTV at Purchase (K)	0.67	0.65	0.46	0.65	0.46	0.58	0.44
Parent Transfers (55-74)	0.36	0.45	0.00	0.44	0.00	0.44	0.00
Transfers Purchase (K)	0.39	0.36	0.00	0.39	0.00	0.26	0.00

- Transfers account for 15pp (benchmark) , 13pp (parent income risk), 15pp (aggregate price risk)

Removing Frictions

	Benchmark		No LTV		Liq. Housing		Certain Inc.	
Moment	Altr	No Altr	Altr	No Altr	Altr	No Altr	Altr	No Altr
Targeted Moments								
Median Wealth (25-44)	23.47	42.13	12.09	39.71	17.50	39.18	29.03	29.03
Median Wealth (55-74)	206.78	208.20	182.58	202.51	194.68	194.02	194.03	179.64
Owner (25-44)	0.48	0.33	0.55	0.51	0.51	0.45	0.62	0.61
Rent / Income (25-44)	0.21	0.20	0.22	0.18	0.23	0.22	0.13	0.13
Age First Own (25-44)	32.89	37.52	32.60	32.19	31.04	33.28	32.53	32.73
LTV at Purchase (25-44)	0.66	0.46	0.71	0.65	0.70	0.63	0.74	0.74
Parent Transfers (55-74)	0.45	0.00	0.44	0.00	0.42	0.00	0.33	0.00
Transfers Purch. (25-44)	0.37	0.00	0.48	0.00	0.43	0.00	0.22	0.00
Non-Targeted Moments								
Parent Wealth Gradient	2.49	1.25	4.26	0.79	1.62	1.44	1.03	1.03
Owner (25-73)	0.60	0.55	0.68	0.73	0.65	0.67	0.85	0.85
Wealth at Purc. (25-44)	46.85	74.31	41.51	52.11	40.47	48.31	43.08	40.84
Mortgage (25-44)	123.93	60.25	146.85	125.28	126.81	90.93	186.84	186.70

▸ Back

Literature on Housing and Transfers ▸ Intro ▸ Back

- **Intra-generational:** Marriage/divorce, student loans:
  - Chang (2020), Fisher & Gervais (2011, IER), Mabille (2020), Paz-Pardo (2020)
  - This paper: Across generations, parents → kids
- **Inter-generational:** No papers with rent/own for kids.
  - Barczyk, Fahle & Kredler (R&R REStud): Purchase *only* at retirement, Focus: Kid's care decisions
  - Lan (WP), Kaplan (2012)
  - This paper: Transfers to kids & kid's homeownership
- **Life-Cycle Savings & Inequality**: Ignore housing or transfers
  - Boar (2019), Lee & Seshadri (2019 JPE), Altonji, Hayashi & Kotlikoff (1997 JPE),
  - This paper: Focus on housing and transfers
- **Empirical/Reduced Form:** Effect of transfers on buying
  - Guiso & Jappeli (2001 JMCB), Charles & Hurst (2005 ReStat), Lee et al. (2020 JHE), Blickle and Brown (2019 JMCB)...
  - This paper: Aggregate outcomes, illiquidity

Identification of Altruism η

▸ Back to Model Fit

Estimation procedure lends itself to verifying identification

1. Solve model for ‘many’ parameter vectors from quasi-random hypercube

2. Local search from best candidate

Identification of Altruism η

▸ Back to Model Fit

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   - $\frac{\partial moment}{\partial parameter}$ with constant *distribution* of other parameters
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Identification of Altruism η

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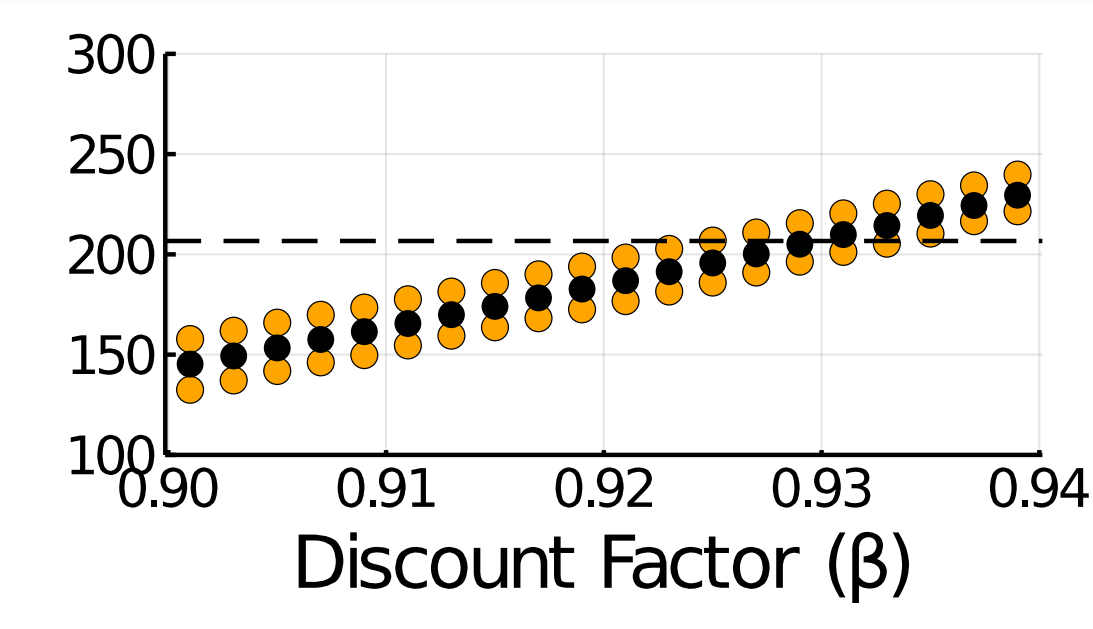
Estimation procedure lends itself to verifying identification

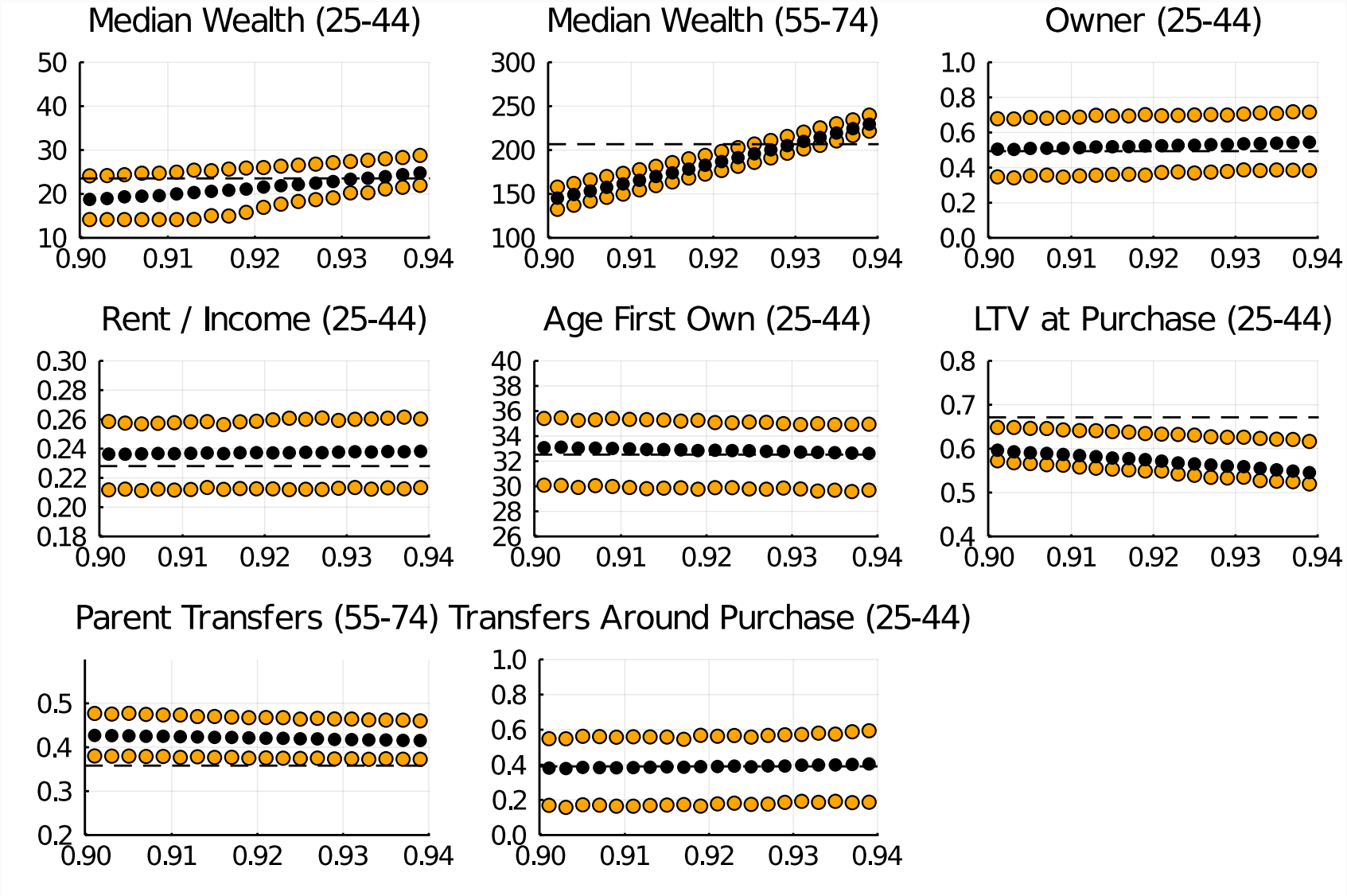
1. Solve model for 'many' parameter vectors from quasi-random hypercube
   - $\frac{\partial moment}{\partial parameter}$ with constant *distribution* of other parameters
2. Local search from best candidate

The Effect of Discount Factor β on Median Wealth (55-74)



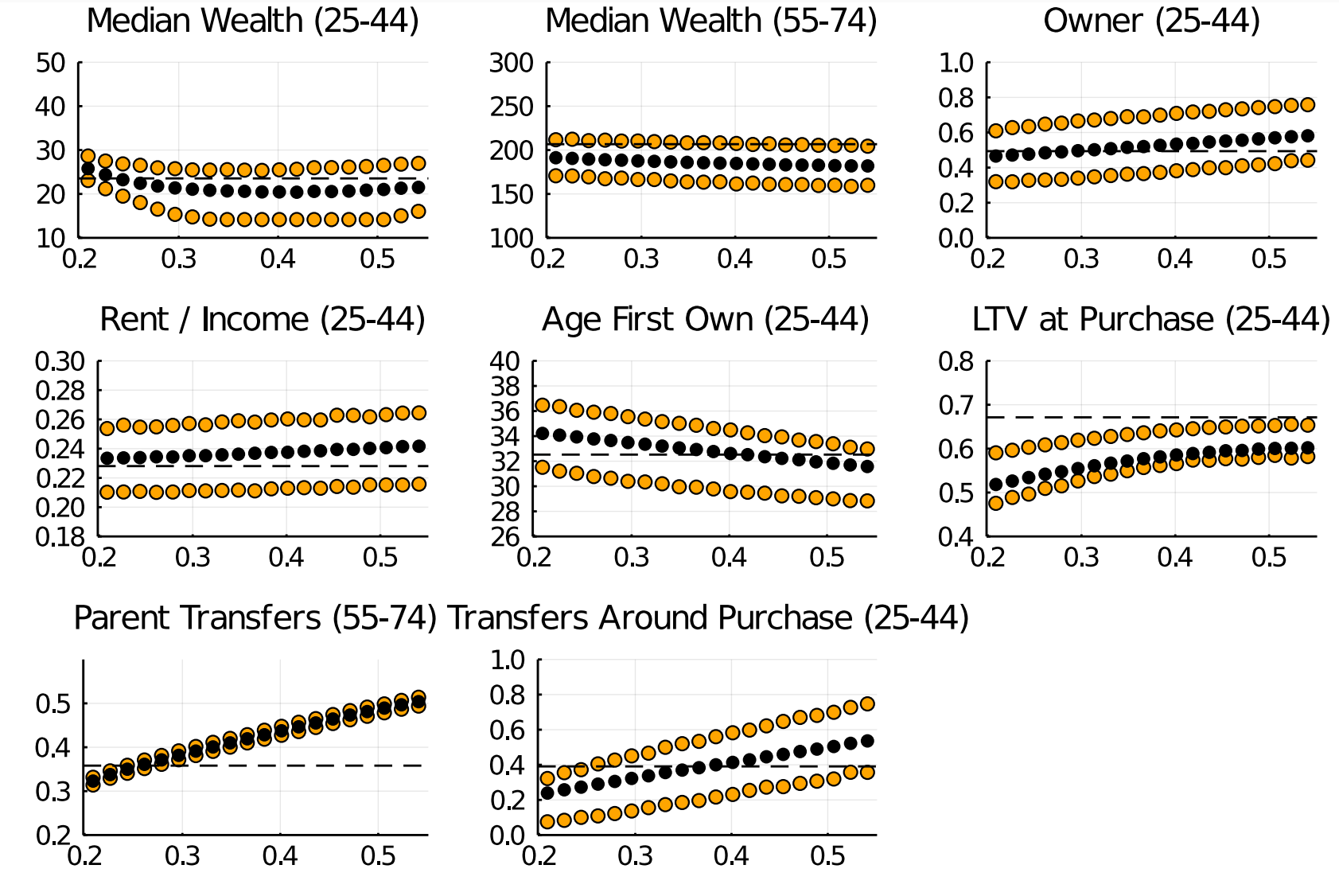
Identification of Discount Factor β

Back to Model Fit



Identification of Altruism η

Back to Model Fit



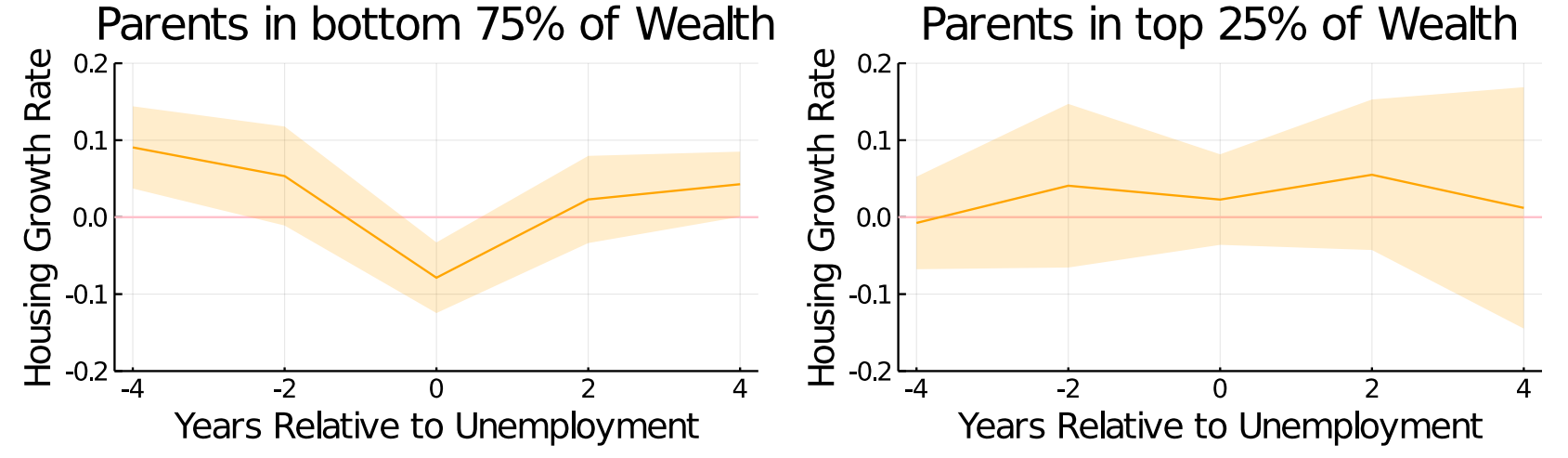
Non-Targeted Moment: Event Study

Chetty & Szeidl (2007, JPE)

- Income/wealth shocks may induce house downsizing
- Event study
  - Changes in housing consumption growth at unemployment
  - Unemployment somewhat exogenous
  - Housing consumption = rent or 5% of market value
- Illiquid housing $\Longrightarrow$ smaller response for food
- This paper: By parental wealth

Non-Targeted Moment: Event Study

- I replicate Chetty & Szeidl (2007 JPE)
  - But I break it down by parental wealth

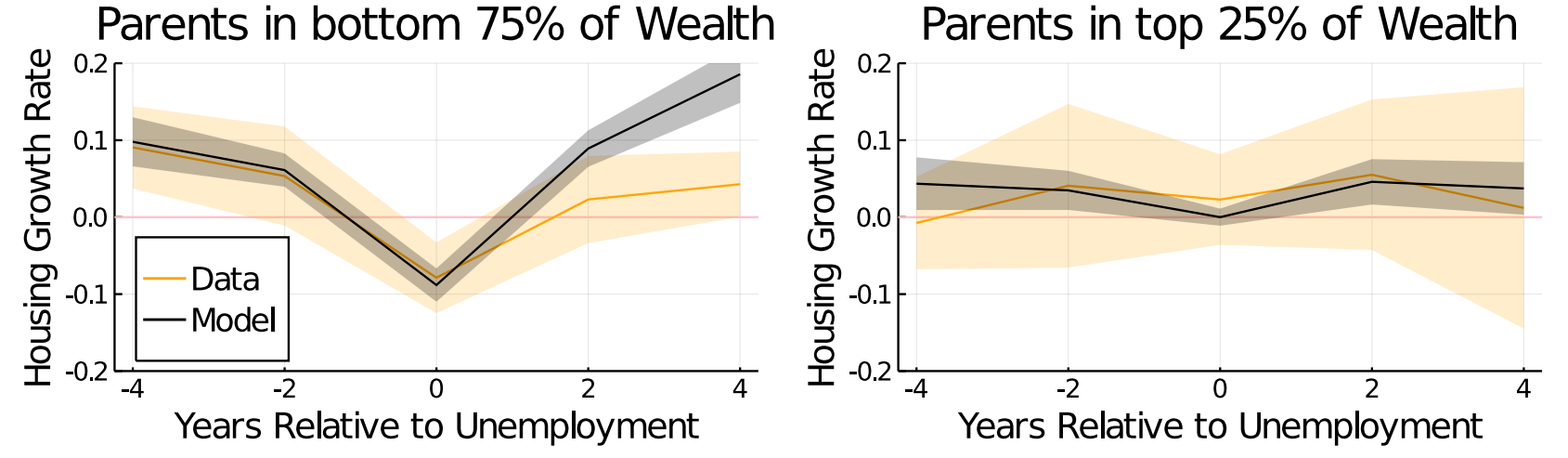


Model: Bottom 75%: Significant negative growth, Top 25%: No change

▸ Back to Model Fit ▸ Back to Empirical Evidence

Non-Targeted Moment: Event Study

- I replicate Chetty & Szeidl (2007 JPE)
  - But I break it down by parental wealth
  - Unemployment in model = lowest productivity $v_{i,a}$ level



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▸ Back to Model Fit ▸ Back to Empirical Evidence

Non-Targeted Moment: Event Study

- I replicate Chetty & Szeidl (2007 JPE)
  - But I break it down by parental wealth

Model: Bottom 75%: Significant negative growth, Top 25%: No change

- Model patterns consistent with data
- Drop only for households with non-wealthy parents

▸ Back to Model Fit ▸ Back to Empirical Evidence

Regressions

Back to Empirical Evidence

	(1) House Value	(2) Ever Behind	(3) Behind First	(4) Behind RE	(5) Behind FE
Parent					
Wealth (t-2)	0.072***	-0.023**	-0.022**	-0.008*	-0.007
	(0.020)	(0.008)	(0.007)	(0.004)	(0.009)
Child					
Net Worth (t-2)	0.079***	-0.014*	-0.017*	-0.008*	-0.002
	(0.016)	(0.007)	(0.006)	(0.003)	(0.004)
Income (t-2)	0.388***	0.001	0.019	-0.001	0.014
	(0.035)	(0.015)	(0.013)	(0.007)	(0.011)
N	884	709	372	2,057	2,057

All regressions use PSID 1999-2017, and include year fixed-effects, linear and cubic age trends, and control for education, race, and family size.

Housing Market Details

$$adj(h_{a+1}, h_a) = \begin{cases} m_b p_t h_o & \text{if new owner: } h_a = h_r, h_{a+1} = h_o \\ m_s p_t h_o & \text{if new renter: } h_a = h_o, h_{a+1} = h_r \\ 0 & \text{if no change: } h_{a+1} = h_a, \end{cases}$$

▸ Markets

With Commitment

Does Illiquidity Reduce Commitment Friction?

Introducing commitment technology improves welfare

- Commitment $\Longrightarrow$ Family planner problem ▸ Formulation
  - Pick Pareto weights to match c_p/c_k ratio = 1.09
- What is the distance between stationary allocations?

Does Illiquidity Reduce Commitment Friction?

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- Commitment $\Longrightarrow$ Family planner problem ▸ Formulation
  - Pick Pareto weights to match c_p/c_k ratio = 1.09
- What is the distance between stationary allocations?

		Illiquid		Liquid	
Variable	Com.	No Com.	|Dist.|	No Com.	|Dist.|
Owner (25-44)	0.14	0.48			
Owner (55-73)	0.53	0.71			
Median Family Wealth (25-44)	75.91	311.39			
Age First Own (25-44)	41.50	32.85			
Lifetime Utils Kid	8.88	7.00			
Lifetime Utils Parent	12.99	10.25			

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Owner (25-44)	0.14	0.48	0.34		
Owner (55-73)	0.53	0.71	0.18		
Median Family Wealth (25-44)	75.91	311.39	235.48		
Age First Own (25-44)	41.50	32.85	8.65		
Lifetime Utils Kid	8.88	7.00	1.88		
Lifetime Utils Parent	12.99	10.25	2.74		

Does Illiquidity Reduce Commitment Friction?

Introducing commitment technology improves welfare

- Commitment $\Longrightarrow$ Family planner problem ▸ Formulation
  - Pick Pareto weights to match c_p/c_k ratio = 1.09
- What is the distance between stationary allocations?

		Illiquid		Liquid	
Variable	Com.	No Com.	|Dist.|	No Com.	|Dist.|
Owner (25-44)	0.14	0.48	0.34	0.51	0.38
Owner (55-73)	0.53	0.71	0.18	0.77	0.24
Median Family Wealth (25-44)	75.91	311.39	235.48	298.27	222.36
Age First Own (25-44)	41.50	32.85	8.65	30.92	10.58
Lifetime Utils Kid	8.88	7.00	1.88	7.01	1.88
Lifetime Utils Parent	12.99	10.25	2.74	10.25	2.74

- **Takeaway**: Illiquidity reduces commitment problem
  - Decreases overconsumption of housing

Family Planner Problem

Back

- Pools wealth: $x_f = x_k + x_p$
- Pareto weight θ on kids utility:
- States: $\mathbf{s}_f = \left(x_f, h_k, h_p, v_k, a_k\right)$

Both rented & both rent:

$$V_f(\mathbf{s}_f) = \max_{c_k, c_p, h'_k = h'_p = h_r, b'_f} (1-\theta)u(c_p, h'_p) + [(1-\theta)\eta + \theta]\, u(c_k, h'_k) + \beta \mathbb{E} V_f(\mathbf{s}'_f),$$

$$\text{s.t. } b'_f = x_f + w_k + w_p - c_k - c_p - qp(h'_k + h'_p),$$
$$x'_f = b'_f(1 + r(b'_f)),$$
$$b'_f \geq 0, c_k \geq 0, c_p \geq 0.$$

Two-Period Model

Assumption

A1: *Limits Kid's Utility*: The first derivative of u approaches i) infinity at zero, and ii) zero at infinity for both goods

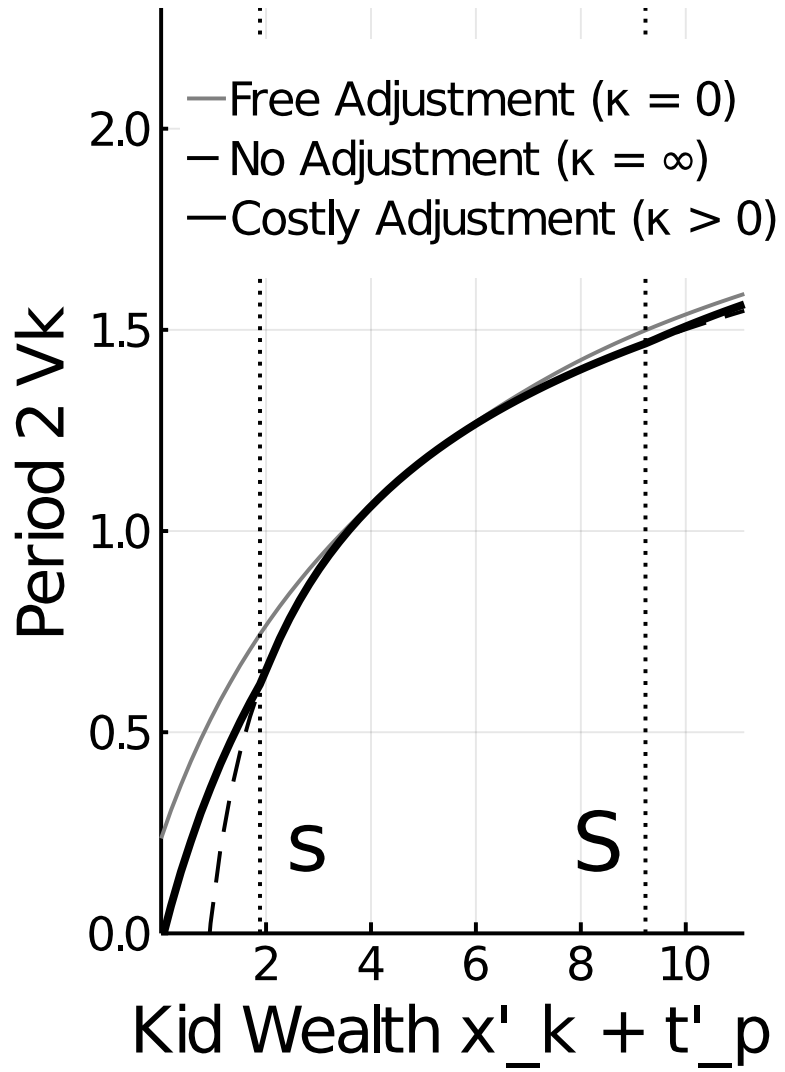
A2: *Substitution in Housing*: The marginal utility of consumption is non-decreasing in housing consumption. (Not perfect substitutes)

A3: *Parent's Utility*: Increasing, concave and satisfies Inada conditions

Two-Period Setup

Adjustment Costs & $V_{k'}(x'_k + t'_p, h_k)$: Non-Convexities

- Free adjustment ($\kappa = 0$)
- No adjustment ($\kappa = \infty$)
  - Tangency point
  - More curvature
- Costly adjustment ($\kappa > 0$)
  - Away from tangency $\Longrightarrow$ pay cost
  - Kinks at (s, S)
  - Risk loving around kinks
  - Kinks $\Longrightarrow$ slope jumps
- Chetty & Szeidl (2007): Risk aversion
- This paper: Transfers



▸ Back to markets

Adjustment Costs & $V_{k'}(x'_k + t'_p, h_k)$: Jumps in Marginal Utility

- Free adjustment ($\kappa = 0$)
- No adjustment ($\kappa = \infty$)
  - Tangency point
  - More curvature
- Costly adjustment ($\kappa > 0$)
  - Away from tangency $\Longrightarrow$ pay cost
  - Kinks at (s, S)
  - Risk loving around kinks
  - Kinks $\Longrightarrow$ slope jumps
- Chetty & Szeidl (2007): Risk aversion
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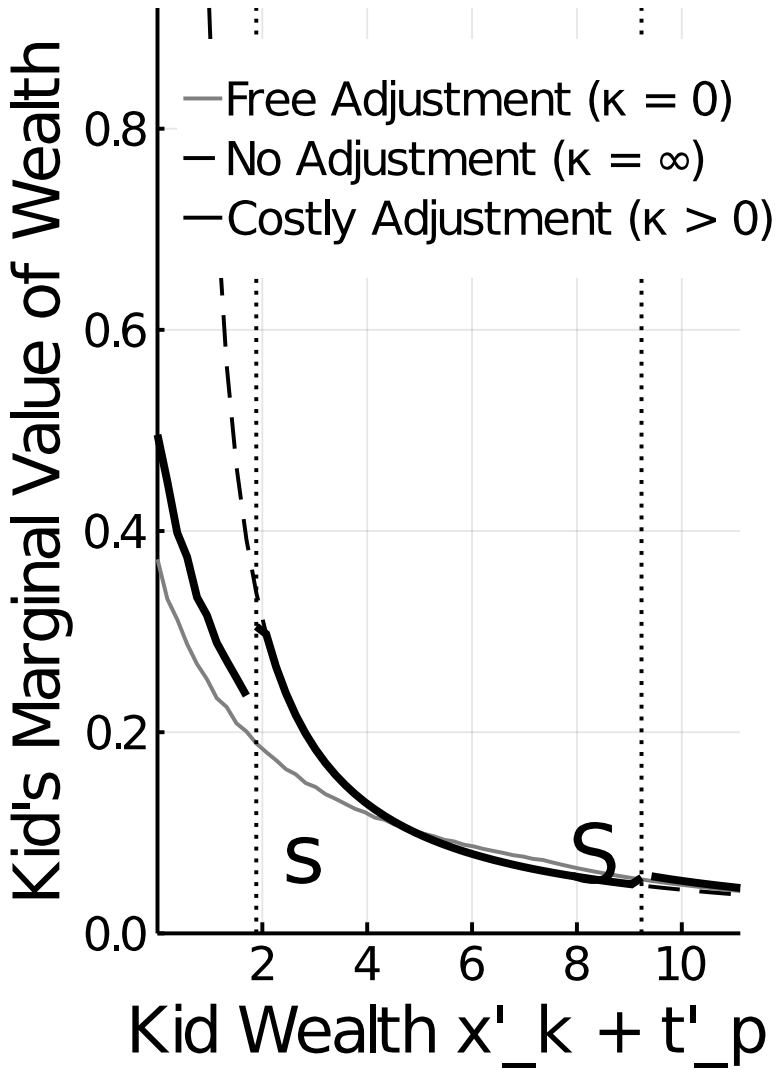
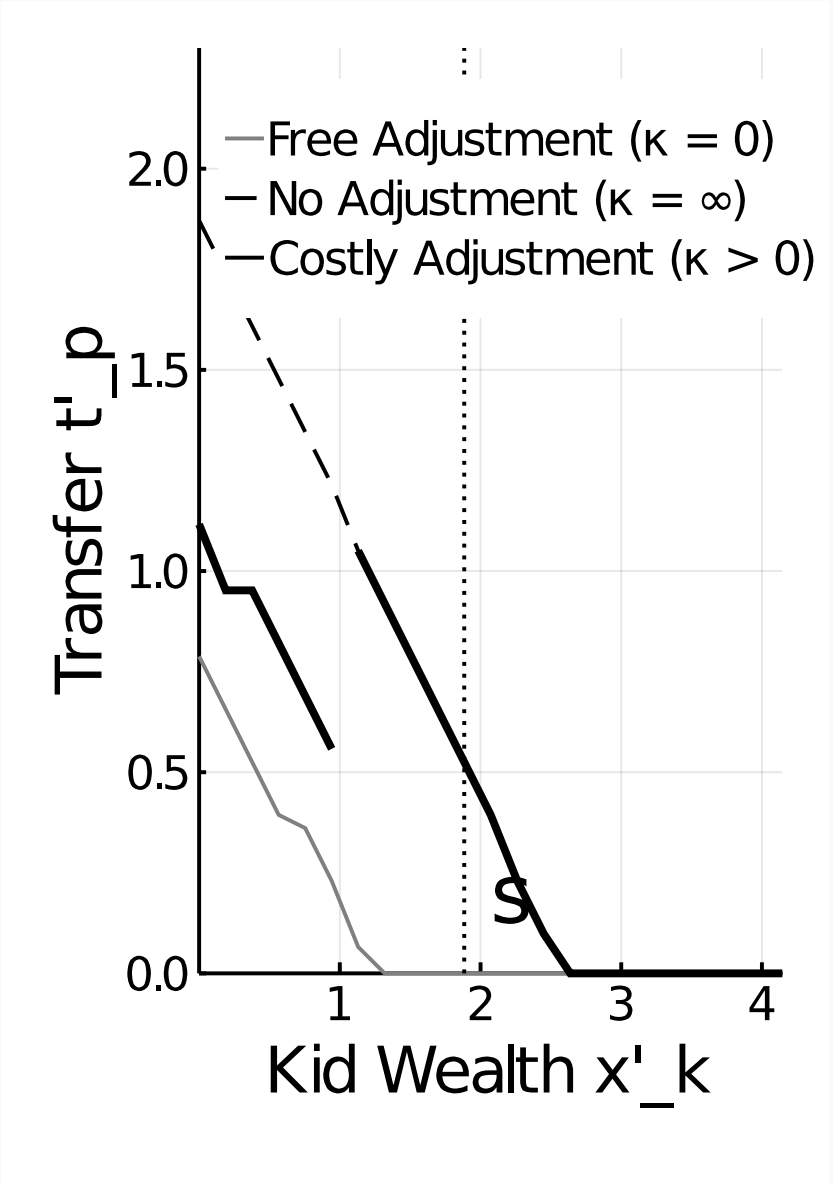


▸ Back to markets

The Effect of Illiquidity on Parent's Transfers $t'_p(x'_p, x'_k, h_k)$

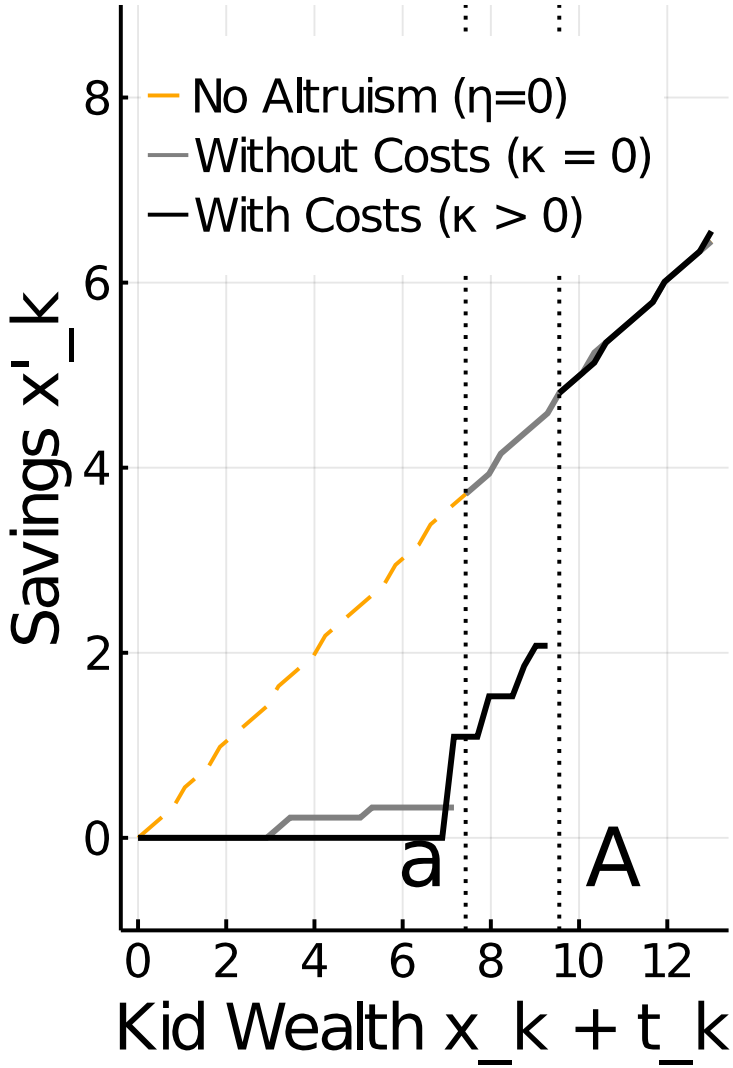
- Free adjustment ($\kappa = 0$)
  - Transfers decreasing in kid wealth
- No adjustment ($\kappa = \infty$)
  - Larger transfers
- Costly adjustment ($\kappa > 0$)
  - Jump in transfer
  - To the left of s
- Kid should be at jump point
  - Hand-to-Mouth
  - House poor

▸ Back to markets



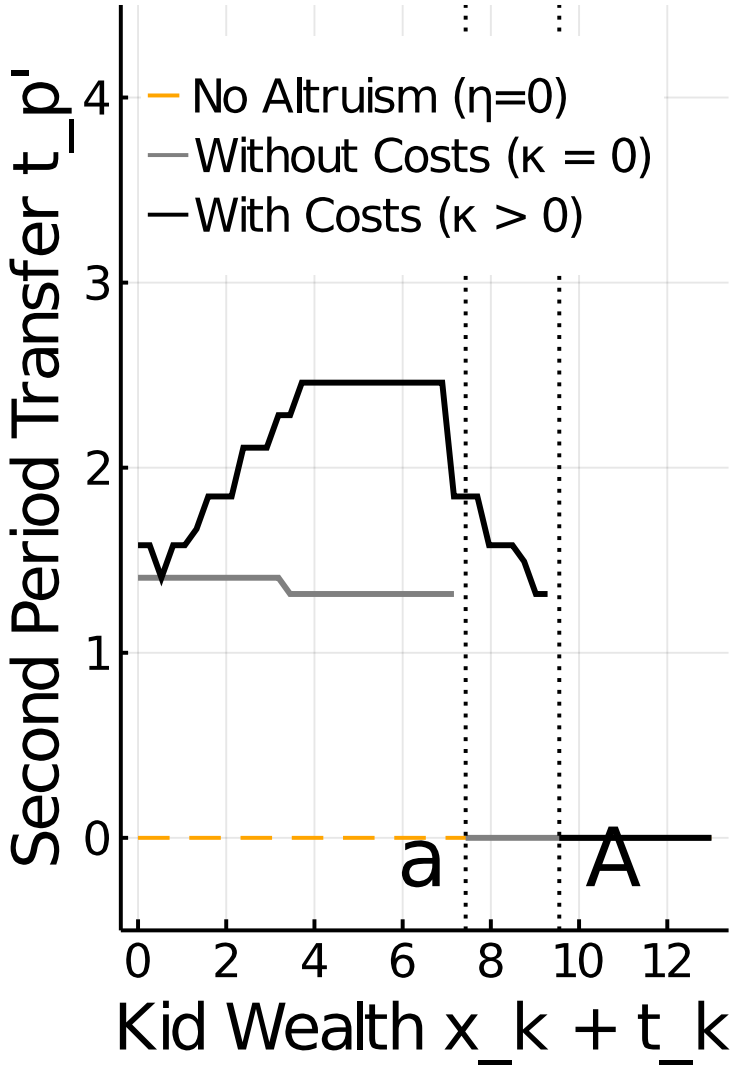
Illiquid Housing Increases Kid's Over-Consumption $x'_k(x'_p, x_k)$

- Without altruism ($\eta = 0$)
  - Perfect intertemporal smoothing
- Free adjustment ($\kappa = 0$)
  - Overconsumption
  - Jump to autarky at a
  - Better to smooth than leech
- Costly adjustment ($\kappa > 0$)
  - Later jump to autarky
- $\kappa > 0$?: More overconsumption?



Illiquid Housing Increases Transfers $t'_p(x'_p, x'_k(x'_p, x_k), h_k(x'_p, x_k))$

- Without altruism ($\eta = 0$)
  - Perfect intertemporal smoothing
- Free adjustment ($\kappa = 0$)
  - Overconsumption
  - Jump to autarky at a
  - Better to smooth than leech
- Costly adjustment ($\kappa > 0$)
  - Later jump to autarky
- $\kappa > 0$?: More overconsumption?
  - Transfers increasing in wealth $x_k + t_p$
- Illiquid housing: Expenditure commitments



Black-White Homeownership Gap

Back

Moment	White			Black		
	Data	Altr	No Altr.	Data	Altr.	No Altr.
Targeted Moments						
Median Wealth (25-44)	32.99	26.76	47.02	3.70	20.38	21.98
Median Wealth (55-74)	265.40	227.86	233.34	39.26	105.12	98.47
Owner (25-44)	0.54	0.52	0.37	0.28	0.28	0.23
Rent / Income (25-44)	0.22	0.20	0.19	0.24	0.25	0.25
Age First Own (25-44)	31.94	32.56	36.73	34.87	36.02	37.40
LTV at Purchase (25-44)	0.69	0.67	0.49	0.57	0.42	0.37
Parent Transfers (55-74)	0.40	0.47	0.00	0.21	0.20	0.00
Transfers Purchase (25-44)	0.45	0.45	0.00	0.20	0.06	0.00
Non-Targeted Moments						
Parent Wealth Gradient	1.79	2.49	1.28	2.91	2.23	1.43
Owner (25-73)	0.70	0.67	0.62	0.44	0.41	0.37
Wealth Purchase (25-44)	37.33	42.36	69.57	16.19	80.81	86.94
Mortgage (25-44)	147.57	124.63	62.98	107.15	59.05	42.17

Preferences and Initial Conditions

Preferences

$$u(c, h) = \frac{\left(c^{1-\phi} g(h)^{\phi}\right)^{1-\gamma} - 1}{1-\gamma}$$

$$g(h) = \begin{cases} h_r & \text{if } h = h_r, \\ \chi h_o & \text{if } h = h_o. \end{cases}$$

Preferences and Initial Conditions

Preferences

$$u(c, h) = \frac{\left(c^{1-\phi} g(h)^{\phi}\right)^{1-\gamma} - 1}{1-\gamma}$$

$$g(h) = \begin{cases} h_r & \text{if } h = h_r, \\ \chi h_o & \text{if } h = h_o. \end{cases}$$

Intergenerational Correlations: Initial Conditions

- Initial wealth and productivity $x_{25}, y_{25} \sim F(x_{53}, y_{53})$
  - Depends on parent's states when they are 53
- Captures inter-generational correlations in income and wealth

▸ Timing