The Housing Channel of Intergenerational Wealth Persistence

Ella Getz Wold, Knut Are Aastveit, Eirik Brandsaas, Ragnar Juelsrud & Gisle Natvik

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Motivation

- Parents continue to support their children as they enter adulthood
- **Housing** stands out as especially attractive for parental support due to
  - amplified return on equity due to leverage example
  - large barriers to entry
- We ask: how important is housing for intergenerational wealth persistence?

Motivation

- Parents continue to support their children as they enter adulthood
- **Housing** stands out as especially attractive for parental support due to
  - amplified return on equity due to leverage example
  - large barriers to entry
- We ask: **how important is housing for intergenerational wealth persistence?**
  - parent wealth $\rightarrow$ housing outcomes $\rightarrow$ later-in-life wealth

Our paper lies in the intersect of three distinct literatures

- Wealth persists across generations
  - Chiteji and Stafford (1999), Charles and Hurst (2003), Boserup, Kopczuk, and Kreiner (2014), Black, Devereux, Lundborg, and Majlesi (2017), Adermon, Lindahl, and Waldenström (2018) and Fagereng, Mogstad, and Rønning (2021)

    → we focus on the housing channel
- Parents matter for offsprings housing outcomes
  - Engelhardt and Mayer (1998), Guiso and Jappelli (2002), Luea (2008), Kolodziejczyk and Leth-Petersen (2013), Blickle and Brown (2019), Brandsaas (2021), Benetton, Kudlyak, and Mondragon (2022), Halvorsen and Lindquist (2017), Lee, Myers, Painter, Thunell, and Zissimopoulos (2020), Bond and Eriksen (2021) and Daysal, Lovenheim, and Wasser (2022)

    → we consider (causal effect of) parent wealth in general and novel mechanisms
- Housing matters for wealth accumulation
  - Eggum and Larsen (2021), Di, Belsky, and Liu (2007), Turner and Luea (2009), Bach, Calvet, and Sodini (2020) and Bernstein and Koudijs (2020)

    → we use timing of intra-family deaths to estimate causal impacts

Data

1. **Norwegian tax data w/parent-child links**
2. **Housing transactions** from The Land Registry

- Data period: 1992-2017, hh id's available from 2004
- 1.5 million households
  - condition on observing parent wealth when hh is 20 years old
    $\rightarrow$ (child) households born 1972-1997

- In addition: **online survey** directed at parents

summary statistics | survey results

Outline

1. Parent wealth matters for offspring's housing outcomes
2. Housing outcomes matter for intergenerational wealth persistence
3. *Mechanisms for parental support*
4. *Counterfactuals using life-cycle model with housing and parental wealth*

Mediation framework: parent wealth $\rightarrow$ housing outcomes

Assume that a housing outcome h_i can be written as

$$h_i = \beta_0 + \beta_1 p_i^{w20} + \beta_2 p_i^o + \beta_3 x_i + \eta_i \tag{1}$$

- baseline: h_i measures homeownership at a given age
  - also consider entry probabilities + purchase price and leverage upon entry
- p_i^{w20} captures parent financial wealth when child hh is 20
  - baseline: above/below median
- p_i^o captures parent attributes
  - income, education, location and number of children
- x_i captures household attributes
  - income, financial wealth, education, location, household members, (age)

Mediation framework: parent wealth $\rightarrow$ housing outcomes

Taking the covariance

$$\frac{cov(h_i, p_i^{w20})}{var(p_i^{w20})} = \underbrace{\beta_1}_{\text{i)parental wealth}} + \underbrace{\beta_2 \frac{cov(p_i^o, p_i^{w20})}{var(p_i^{w20})}}_{\text{ii)parental attributes}} + \underbrace{\beta_3 \frac{cov(x_i, p_i^{w20})}{var(p_i^{w20})}}_{\text{iii)hh attributes}} + \underbrace{\frac{cov(\eta_i, p_i^{w20})}{var(p_i^{w20})}}_{\text{iv)unobservables}}$$

Differences in housing outcomes depends on effects and gaps.

Mediation framework: parent wealth → housing outcomes

Taking the covariance

$$\frac{cov(h_i, p_i^{w20})}{var(p_i^{w20})} = \underbrace{\beta_1}_{\text{i)parental wealth}} + \underbrace{\beta_2 \frac{cov(p_i^o, p_i^{w20})}{var(p_i^{w20})}}_{\text{ii)parental attributes}} + \underbrace{\beta_3 \frac{cov(x_i, p_i^{w20})}{var(p_i^{w20})}}_{\text{iii)hh attributes}} + \underbrace{\frac{cov(\eta_i, p_i^{w20})}{var(p_i^{w20})}}_{\text{iv)unobservables}}$$

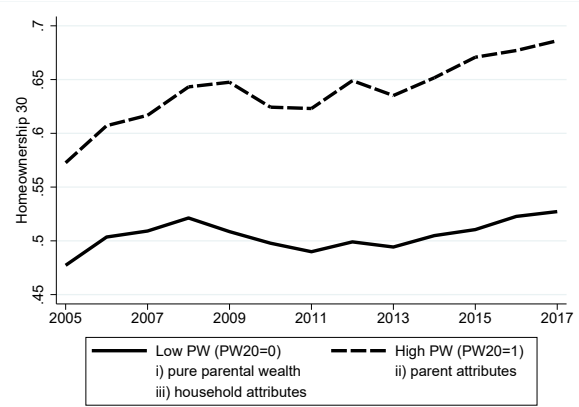
Differences in housing outcomes depends on effects and gaps.

Obtain i), ii), and iii) in two steps:

1. Estimate equation (1) to obtain $\hat{\beta}$'s
2. Estimate univariate regressions to get the gaps

Mediation framework: parent wealth → homeownership at 30

Richer parents: **17 pp (=33%)** more likely to be homeowners at age 30



parent rank | ownership by age

Mediation framework: parent wealth → homeownership at 30

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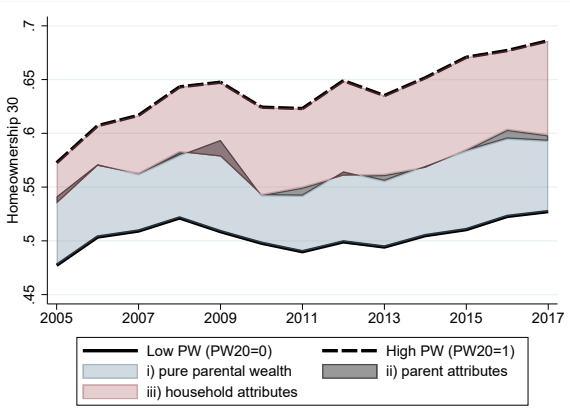
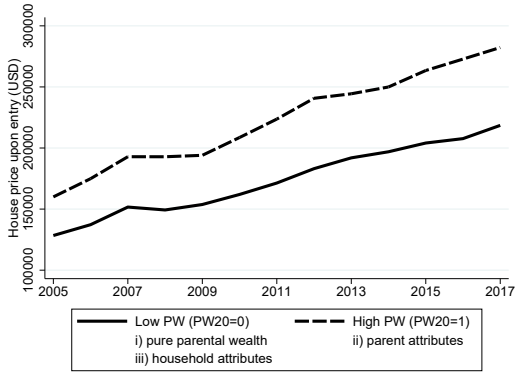


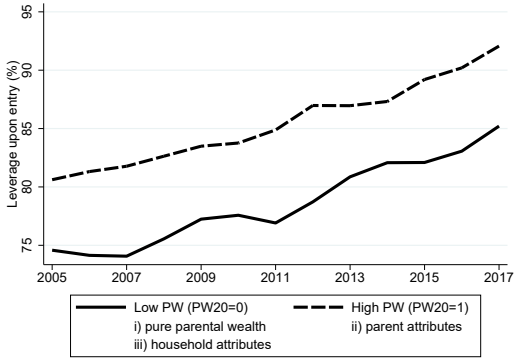
parent rank | ownership by age

Mediation framework: parent wealth → purchase price and leverage upon entry

Richer parents: homes worth **$75,000 (=33%)** more and leverage **7 pp (=8%)** higher



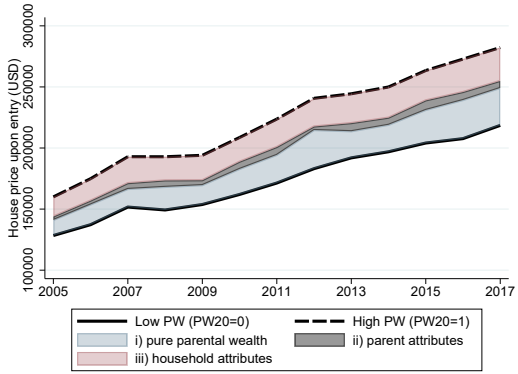
(a) Purchase price upon entry



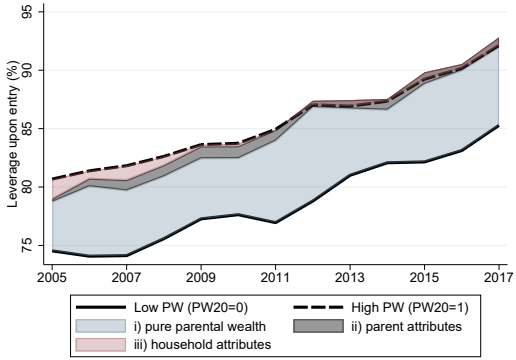
(b) Leverage upon entry

Mediation framework: parent wealth → purchase price and leverage upon entry

Richer parents: homes worth **$75,000 (=33%)** more and leverage **7 pp (=8%)** higher



(c) Purchase price upon entry



(d) Leverage upon entry

Shift-share instrument: parent wealth $\rightarrow$ housing outcomes

- Parental wealth important according to mediation analysis
  - potential for omitted variable bias
- Use **exogenous variation in parental wealth** caused by the interaction of:
  - international stock market returns r_t
  - lagged parent stock market exposure stock-share$_{i,t-1}$
- Can control for interaction of stock market returns and (child) household stock share

Shift-share instrument: parent wealth → housing outcomes

Having richer parents increases entry probability by 1.9 pp (≈40%)
→ implies 13 pp higher homeownership rate at 30

	(1) P(entry)	(2) P(entry)	(3) P(entry)
$p^w_{i,t}$	0.0131***	0.0189***	0.0204***
	(0.00156)	(0.00180)	(0.00167)
Model	OLS	IV	IV
N	3,955,433	3,955,433	3,955,433
Clusters	1,043,389	1,043,389	1,043,389
Mean	0.0438	0.0438	0.0438
Standard controls	Yes	Yes	Yes
HH stock share interaction	No	No	Yes

Outline

1. Parent wealth matters for offspring's housing outcomes
2. Housing outcomes matter for intergenerational wealth persistence
3. *Mechanisms for parental support*
4. *Study counterfactuals using life-cycle model with housing*

Mediation framework: housing → midlife wealth

Assume that **midlife wealth** $\bar{w}_i$ can be written as

$$\bar{w}_i = \alpha_0 + \alpha_1 p_i^{w20} + \alpha_2 \bar{p}_i^{o} + \alpha_3 \bar{x}_i + \alpha_4 h_i + \epsilon_i \tag{2}$$

- $\bar{p}_i^{o}$ captures parental attributes at midlife
  - income, education, location and number of children
- $\bar{x}_i$ captures household attributes at midlife
  - income, financial wealth, education, location, household members
- h_i **captures housing outcomes**
  - homeownership indicators at ages 27, 30, 33 and 36

Mediation framework: housing $\rightarrow$ midlife wealth

Taking the covariance yields

$$\frac{cov(\bar{w}_i, p_i^{w20})}{var(p_i^{w20})} = \underbrace{\alpha_1}_{\text{i) parental wealth}} + \underbrace{\alpha_2 \frac{cov(\bar{p}_i^o, p_i^{w20})}{var(p_i^{w20})}}_{\text{ii) parental attributes}} + \underbrace{\alpha_3 \frac{cov(\bar{x}_i, p_i^{w20})}{var(p_i^{w20})}}_{\text{iii) hh attributes}} + \underbrace{\alpha_4 \frac{cov(h_i, p_i^{w20})}{var(p_i^{w20})}}_{\text{iv) gross housing}} + \underbrace{\frac{cov(\epsilon_{i,t}, p_i^{w20})}{var(p_i^{w20})}}_{\text{v) unobservables}}$$

Intergenerational wealth persistence depends on parent wealth, other parent attributes, household attributes and housing outcomes

Mediation framework: housing → midlife wealth

Taking the covariance yields

$$\frac{cov(\bar{w}_i, p_i^{w20})}{var(p_i^{w20})} = \underbrace{\alpha_1}_{\text{i) parental wealth}} + \underbrace{\alpha_2 \frac{cov(\bar{p}_i^o, p_i^{w20})}{var(p_i^{w20})}}_{\text{ii) parental attributes}} + \underbrace{\alpha_3 \frac{cov(\bar{x}_i, p_i^{w20})}{var(p_i^{w20})}}_{\text{iii) hh attributes}} + \underbrace{\alpha_4 \frac{cov(h_i, p_i^{w20})}{var(p_i^{w20})}}_{\text{iv) gross housing}} + \underbrace{\frac{cov(\epsilon_{i,t}, p_i^{w20})}{var(p_i^{w20})}}_{\text{v) unobservables}}$$

Intergenerational wealth persistence depends on parent wealth, other parent attributes, household attributes and housing outcomes

- Note that the **gross housing channel** $\frac{cov(h_i, p_i^{w20})}{var(p_i^{w20})}$ is what we decomposed earlier
  - captures *total* difference in housing outcomes by parent wealth
  - can insert for this term to isolate impact of housing *due* to parent wealth

- The **net housing channel** is given by $\beta_1 \alpha_4$
  - β_1 tells us the impact of p^{w20} on housing → from equation (1)
  - α_4 tells us the impact of housing on $\bar{w}$ → from equation (2)

Mediation framework: housing → midlife wealth

$$\underbrace{\frac{cov(\bar{w}_i, p_i^{w20})}{var(p_i^{w20})}}_{0.15} = \alpha_1 + \underbrace{\alpha_2 \frac{cov(\bar{p}_i^{o}, p_i^{w20})}{var(p_i^{w20})}}_{5\%} + \underbrace{\alpha_3 \frac{cov(\bar{x}_i, p_i^{w20})}{var(p_i^{w20})}}_{13\%} + \underbrace{\alpha_4 \frac{cov(h_i, p_i^{w20})}{var(p_i^{w20})}}_{27\%} + \frac{cov(\epsilon_{i,t}, p_i^{w20})}{var(p_i^{w20})}$$

- Having richer parents makes you 15 pp (=35%) more likely to be rich yourself
- 27% is working through housing ("gross housing channel")
  - 12% is working through the impact of parent wealth on housing ("**net housing channel**")
- Parent wealth→ housing ≈ Parent wealth→ income, education, location, household members

Intra-family death instrument: housing $\rightarrow$ midlife wealth

- The housing channel of intergenerational wealth persistence relies on an unbiased measure of the impact of housing on midlife wealth (α_4)
- Use **exogenous variation in age of entry** into the housing market caused by the timing of grandparent death
  - sample: exactly one observed grandparent death
- Can control for any effect on the timing of *financial* investments

Intra-family death instrument: housing $\rightarrow$ midlife wealth

- Entering the housing market one year later reduces midlife wealth
  - probability of having above median wealth down 1.1 pp
  - wealth rank down 1.4
  - wealth down $\approx$ \$10,000

- IV-effects *not* significantly different from OLS-effects

	$\bar{w} = \{0, 1\}$		$\bar{w}$-rank		$\bar{w}$ in USD	
Net wealth	IV	OLS	IV	OLS	IV	OLS
Age of entry	-0.011*	-0.012***	-1.42***	-1.44***	-15,507**	-6,557***
	(0.0064)	(0.0013)	(0.489)	(0.100)	(6,111)	(1,246)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	7,609	7,609	7,069	7,069	7,069	7,069

Outline

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Mechanisms

Parental wealth itself matters. **How?**

1. **Transfers**

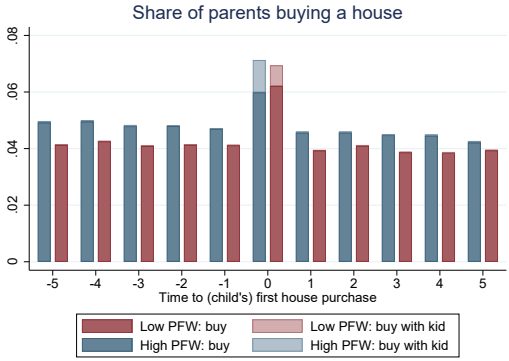
2. **Dynastic home equity**
   - Parents extract home equity to help kids (Benetton, Kudlyak, Mondragon 2022)
   - More prevalent for richer parents

3. **Intra-family transactions**
   - Co-purchasing
   - Intra-family sales – at sizable discount

survey results

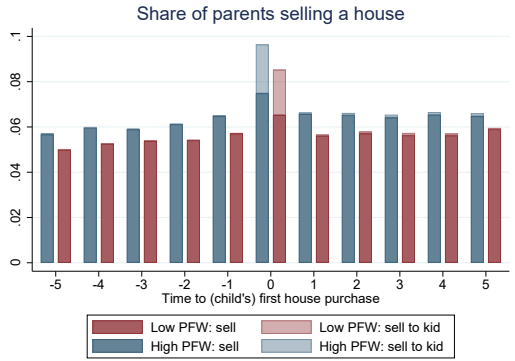
Mechanism: Parent-child co-purchasing

Co-purchasing explains 2/3 of excess propensity to buy when child enters the housing market - richer parents are 60% more likely to co-purchase



Mechanism: Intra-family sales

Richer parents are 13% more likely to sell a house at the time of entry than poorer parents, and 8% more likely to sell a house *directly* to offspring



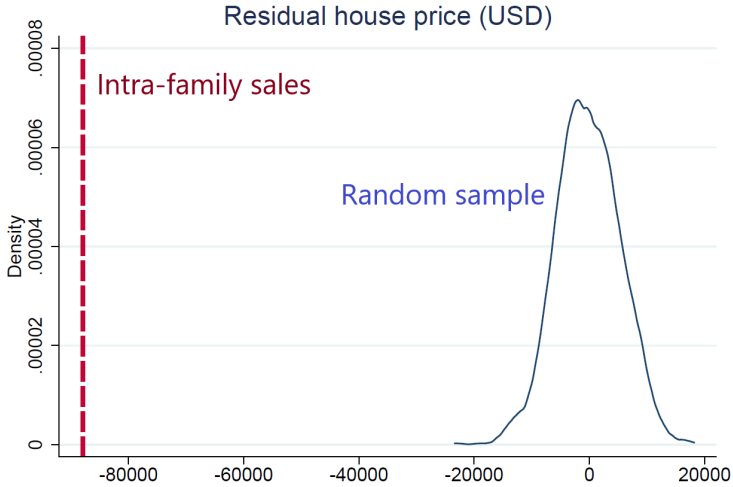
Mechanism: Intra-family sales

Are parents selling housing to their kids at a discount?

- Predict house price based on housing characteristics as in equation (3)
  - excluding *n* intra-family sales
- Compute average estimated discount for intra-family sales
  - **parents sell housing to their child at a $85,000 (=25%) discount**
- Repeat 1,000 times for random sample of *n* transactions

$$hprice_{i,t} = \alpha + \beta_1 sqm_{i,t} + \beta_2 rooms + \beta_3 bathrooms + \delta_k municipality_k + \delta_t year_t + \epsilon_{i,t} \quad (3)$$

Mechanism: Intra-family sales



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Model setup

- Life-cycle model with housing
  - agents receive utility from consumption, housing and ownership status
  - can save in a risk-free bond
  - face persistent and transitory income shocks

- Calibrate model to match housing and financial wealth over the life cycle

- Half the agents receive exogenous parental support
  - model parental support as initial or annual transfer
  - **set transfer size to match empirical "housing channel"**

Model exercises

- **Exercise I**: lowering *realized* house price growth house prices
  - modest decline in "housing channel"
  - driven by smaller impact of housing on later-in-life wealth

- **Exercise II**: lowering realized *and* expected house price growth
  - larger decline in "housing channel"
  - driven both by smaller impact of housing on later-in-life wealth *and* by smaller impact of parent support on housing

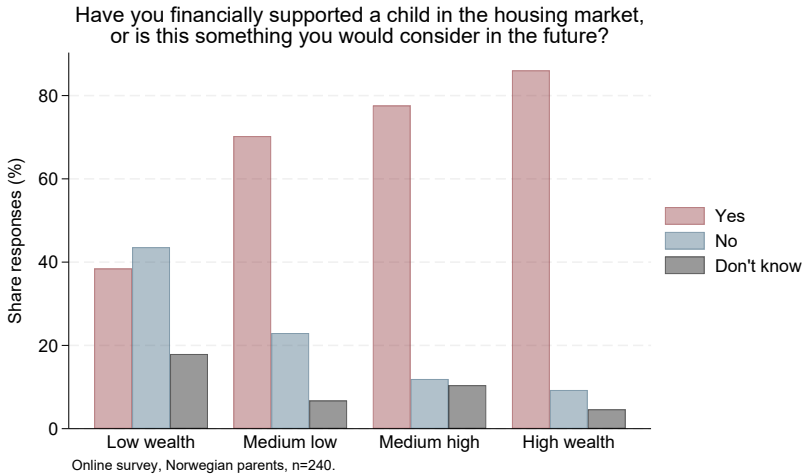
- **Exercise III**: changing LTV-cap
  - "housing channel" hump-shaped in LTV-cap
  - Cap initially makes parental support more important, until it becomes "prohibitively strict"

Summary

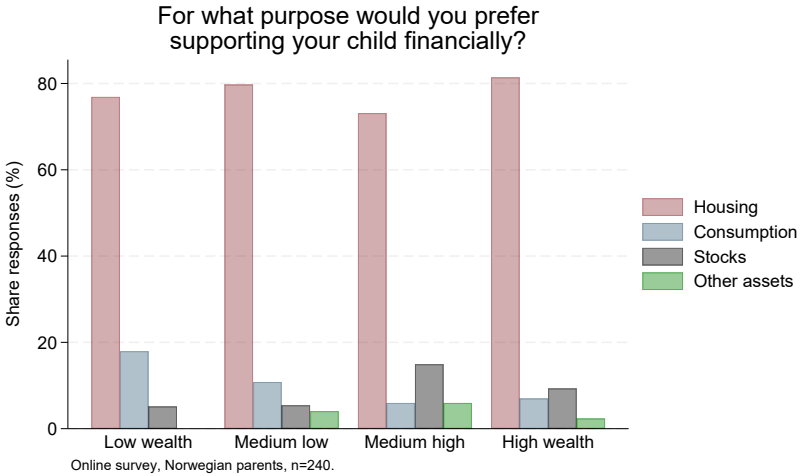
- Having parents in the upper half of the wealth distribution makes you 8 pp (=15%) more likely to be a homeowner at age 30
  - transfers, equity extraction, co-purchasing, discounted sales
- Having parents in the upper half of the wealth distribution makes you 15 pp (=35%) more likely to be rich yourself at midlife
- The direct impact of parental wealth on homeownership can explain 12% of intergenerational wealth persistence
  - same size as direct impact of parental wealth on income, education, location and household members!

Thank you!

Survey: 70% have or would consider supporting their child in the housing market



Survey: housing is the preferred support form



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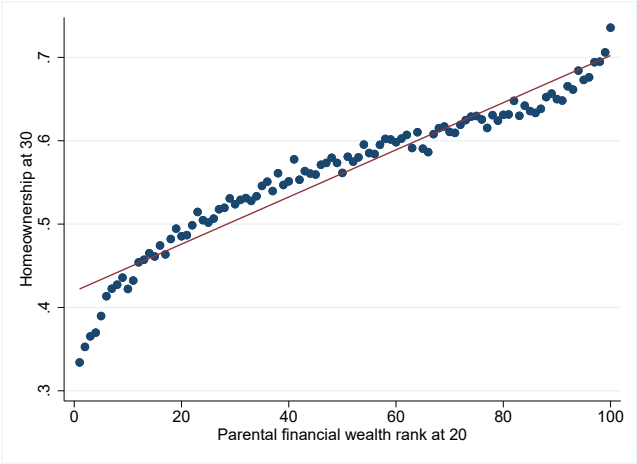
Homeownership at 30 by parental wealth rank



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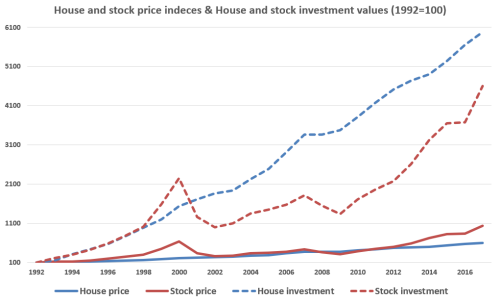
House and stock prices

1. Invest $100 in housing at 90% leverage in 1992 – pay down mortgage over 25 years
   - average leverage 23%, **value after 25 years: $6,000** [Sharpe=0.8]
2. Invest $100 in stocks in 1992 – reinvest interest cost from 1. every year
   - **value after 25 years: $4,500** [Sharpe=0.4]



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Summary statistics

	Full sample	Low parental wealth	High parental wealth
p^{w20}	0.5	0	1
Parent financial wealth^{20} (USD)	32,000	6,000	60,000
Financial wealth$_t$ (USD)	21,000	14,000	27,000
Homeowner$_t$ (%)	47	41	52
Total income$_t$ (USD)	45,000	42,000	47,000
Max education	4.6	4.3	4.9
Age	30	30	29
Household members	1.3	1.2	1.4
Siblings	1.7	1.7	1.7
N	837,260	474,564	481,399

Table 1: Summary statistics 2017. Average (per capita) values.

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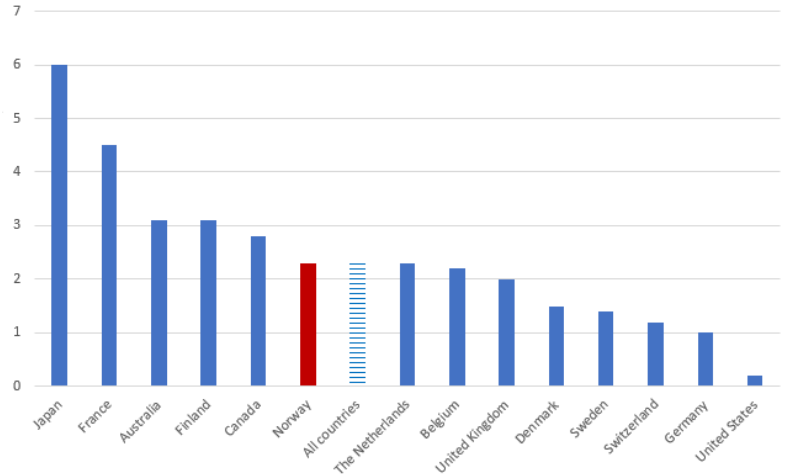
Real house price growth post-WW2 (Knoll, Schularick and Steger 2017)



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Controlling for financial wealth effects: impact for age of entry on midlife wealth

- No significant increase in financial assets at time of grandparent death
- Results robust to controlling for financial asset dynamics and to removing anyone with increase in financial assets at time of grandparent death

	$\bar{w} = \{0, 1\}$		$\bar{w}$-rank		$\bar{w}$ in USD	
	IV	OLS	IV	OLS	IV	OLS
Excluding those with increase in financial wealth at time $t = 0$						
Age of entry	-0.015	-0.013***	-1.94***	-1.23***	-19,614**	-6,086***
	(0.0095)	(0.0022)	(0.702)	(0.164)	(8,471)	(1,964)
N	2,580	2,580	2,580	2,580	2,580	2,580
Controlling for financial wealth at 30, 35 and 40						
Age of entry	-0.047*	-0.010***	-4.46***	-1.37***	-26,895**	-6,593***
	(0.0248)	(0.0018)	(1.95)	(0.142)	(11,016)	(785)
N	4,113	4,113	4,113	4,113	4,113	4,113
Controls	Yes	Yes	Yes	Yes	Yes	Yes

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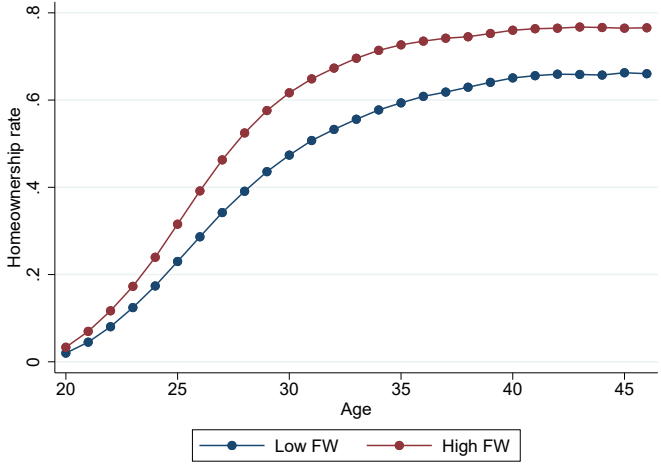
Homeownership over the life cycle



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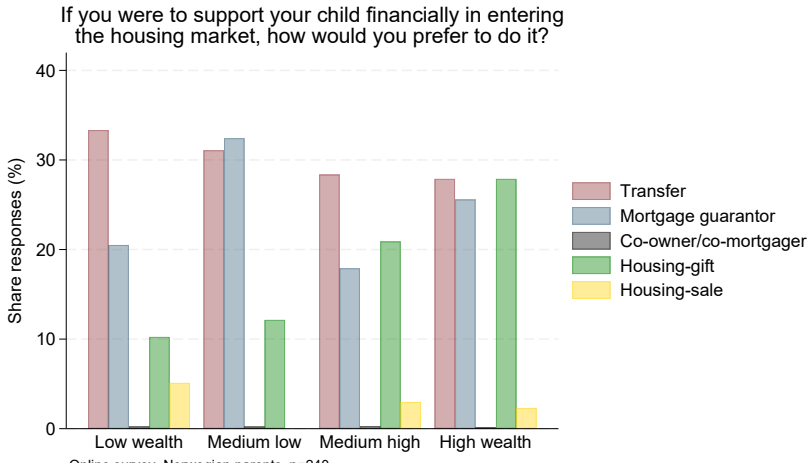
Survey: no single support mechanism stands out



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