Wealth Returns Dynamics and Heterogeneity

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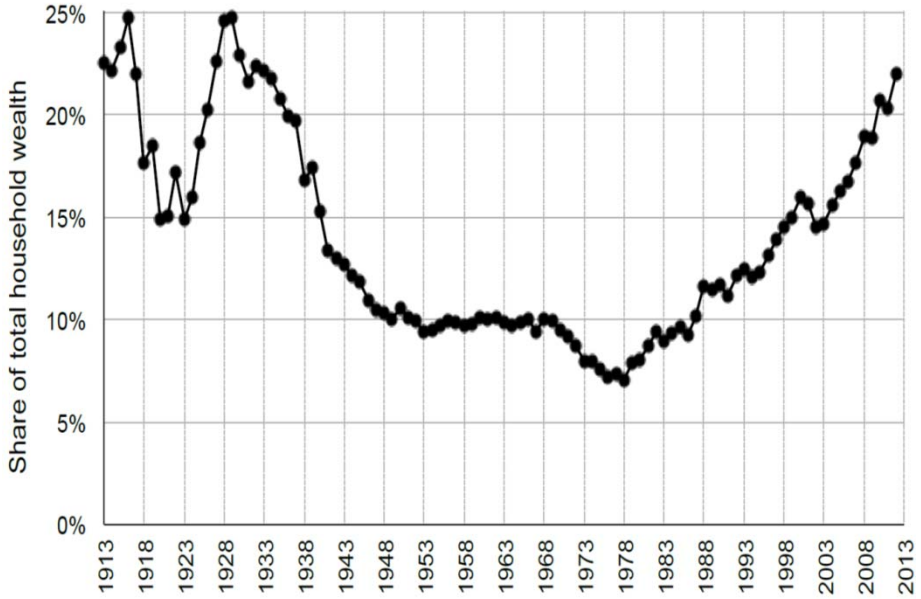
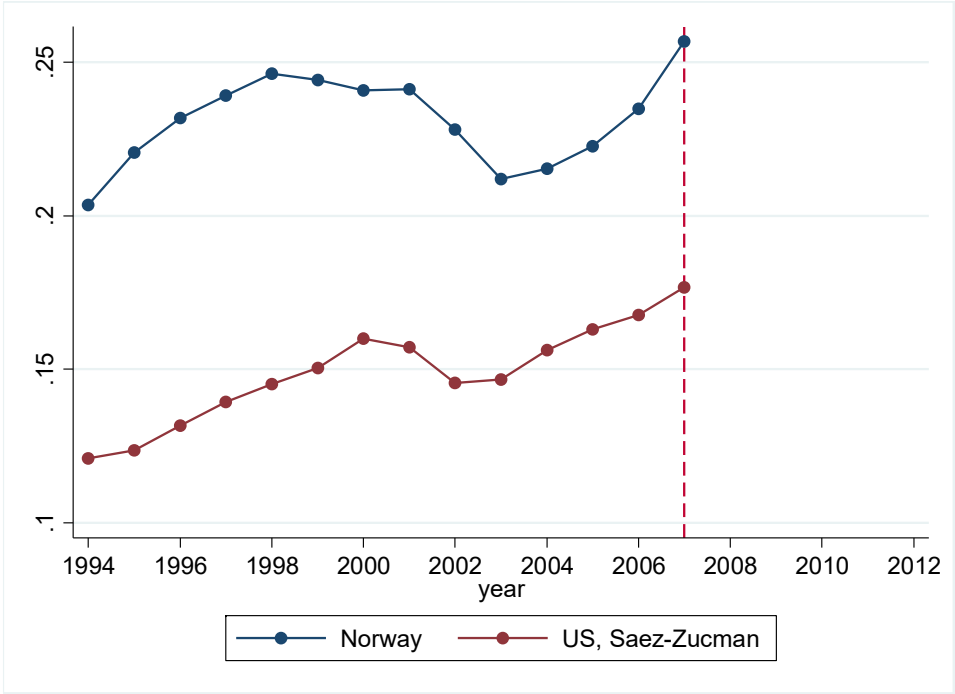
Wealth distribution

- In many countries, and over long time periods, the wealth distribution is extremely skewed and displays a long thick tail



US
(Saez and Zucman, 2015)



Norway vs. US

Wealth distribution

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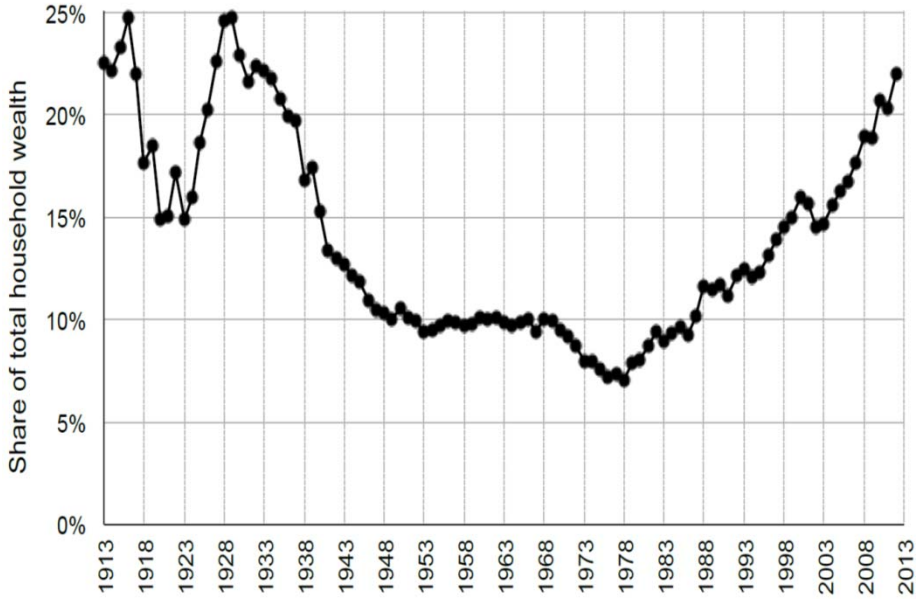

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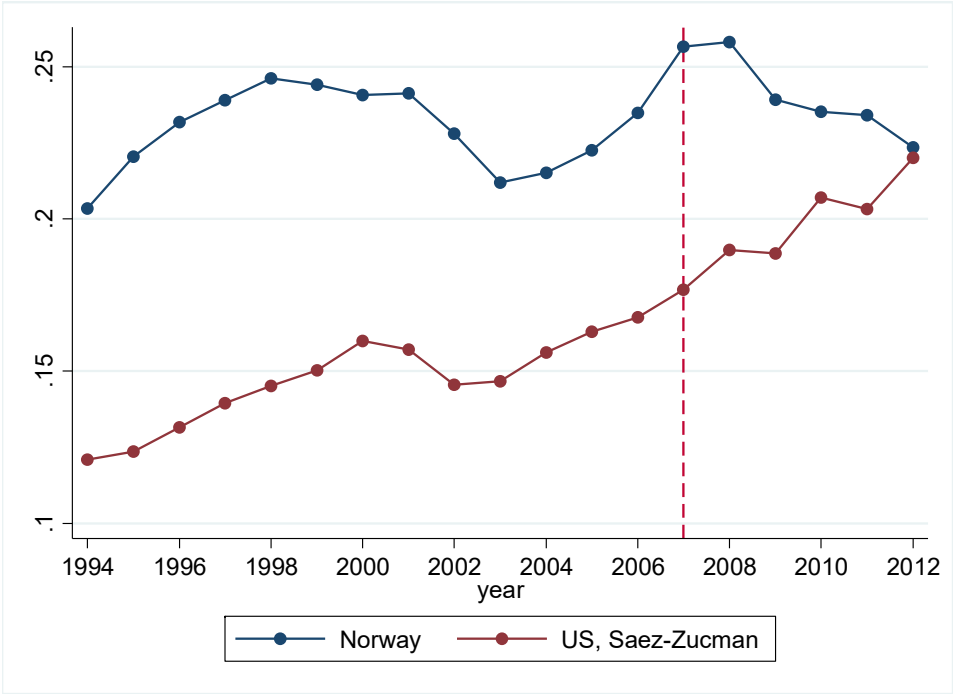


Norway vs. US

What explains the long thick tail?

- Idiosyncratic earnings risk/skewness and precautionary saving response
- “Why do the rich save so much?” narratives
- Non-homothetic bequests
- Entrepreneurship
- Heterogeneity in discount rates

- These explanations, in isolation, have trouble fitting the data
  - If they do, it is at the cost of some very strong or counterfactual assumptions

Stochastic wealth returns?

- Recent work by Benhabib, Bisin and various coauthors suggests that a possible way of reproducing the skewed long thick tail of the wealth distribution (and the extent of intergenerational correlation in wealth levels) is to allow for heterogeneous wealth returns (along with some of the features listed before)

- Important questions:
  - How much heterogeneity in wealth returns?
  - How much persistence?
  - Are wealth returns correlated with wealth itself?
  - Is there any intergenerational correlation in returns?

- Measurement and conceptual issues
  - This paper: Measurement

Our data

- We use Norwegian population tax record data from 1993 to 2013
- Norwegian residents pay a wealth tax, so tax records include:
  - Information on income earned (from labor and capital)
    - Capital income distinguished by “broad” source
  - Detailed information on asset holdings
    - Also distinguished by “broad” source
    - For most sources, tax value=market value
    - For non-listed stocks, etc., tax value≤market value
- Third-party reports
  - Scope for tax evasion limited

Advantages of data

- We have administrative longitudinal population data
  - Measurement error limited
  - No attrition (apart from death and migration)
  - Even the very top tail is in data set
  - Long panel data
  - Family id allows us to match parents with children when the latter form independent households

Wealth returns: Measurement (1)

- Tax returns include income from capital earned in calendar year t: y_{it}

- They also include the stock of wealth at the beginning of year t ("end of period t-1"): w_{it}

- If no accumulation/decumulation of wealth during the year, the return would simply be:

$$r_{it} = \frac{y_{it}}{w_{it}}$$

Wealth returns: Measurement (2)

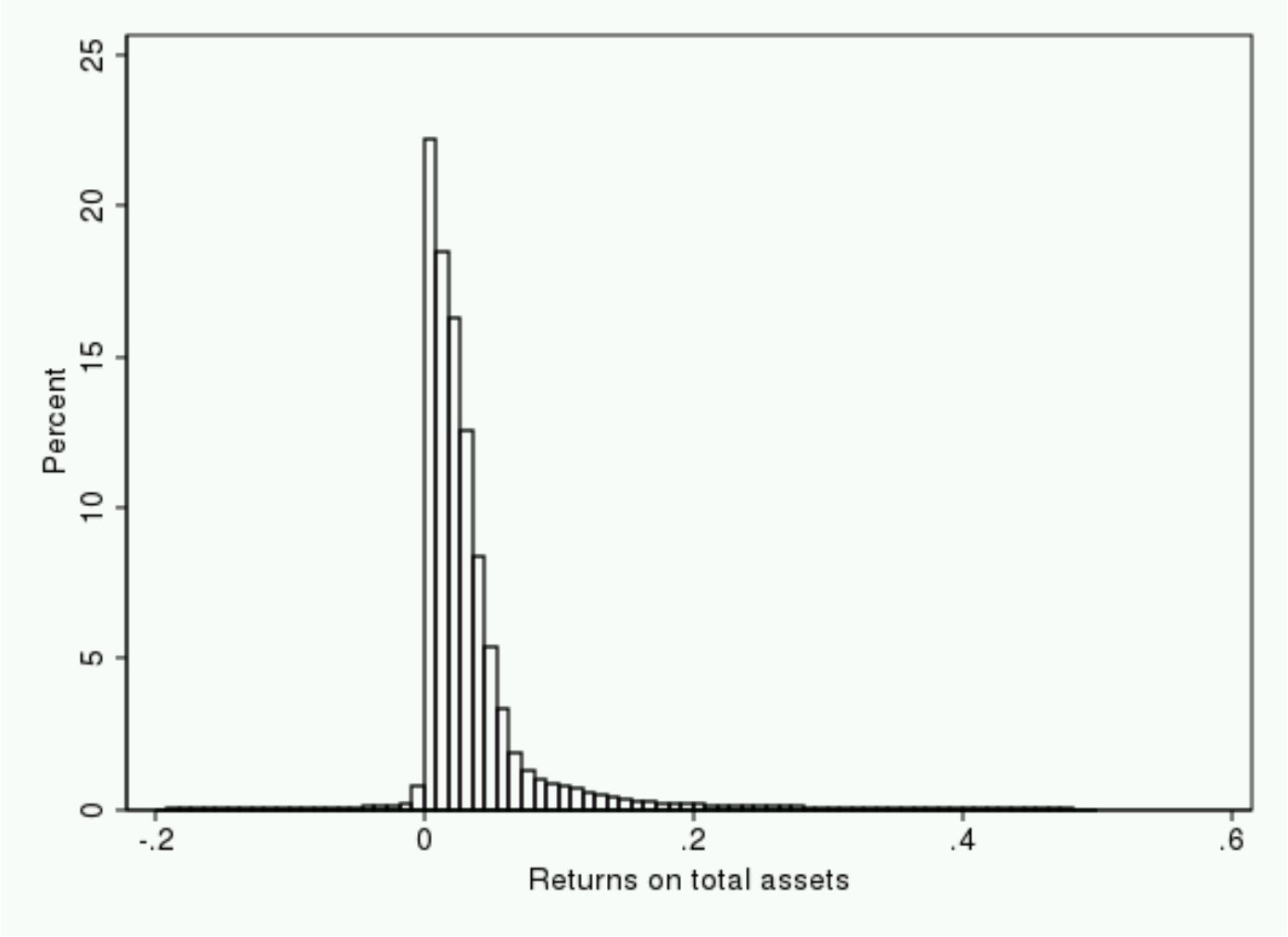
- To correct for the fact that some of the capital income may come from assets sold or purchased over the year, we define returns on capital as:

$$r_{it} = \frac{y_{it}}{(w_{it} + w_{it+1})/2}$$

- We follow the same approach to measure returns on "safe" assets and on "risky" assets
- Moreover:
  - We drop returns of households with < $350 equivalent wealth
  - We censor at the top and bottom 1% of returns distribution
- This should, if anything, *reduce* the extent of returns heterogeneity

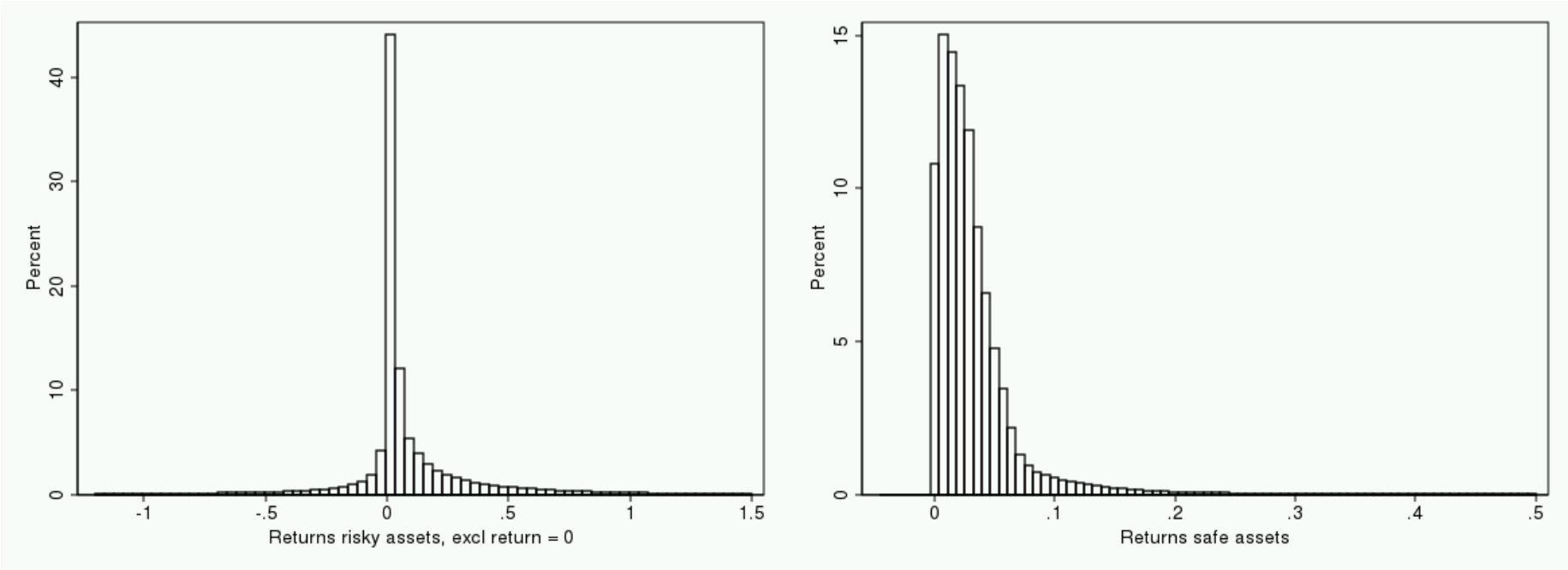
- For stocks, the "error" come from tax treatment of capital gains/losses
  - Focus on the returns fixed effect, however, should reduce the concern

The distribution of wealth returns: 2013



Mean	=0.03
Median	=0.02
s.d.	=0.04
P_{10}	=0
P_{90}	=0.05

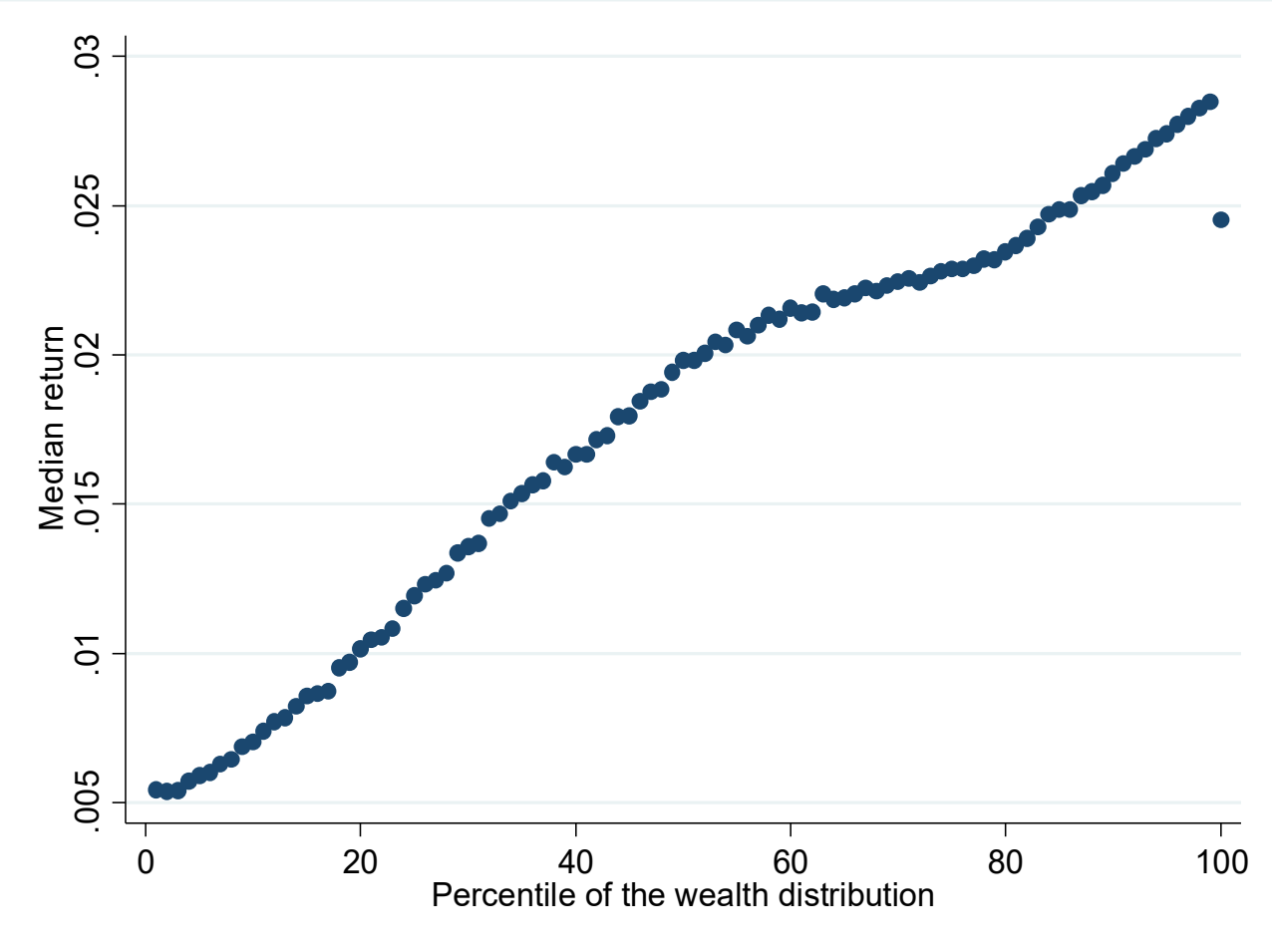
Risky vs Safe assets (2013)



Mean	=0.05
Median	=0
s.d.	=0.15
P_{10}	=0
P_{90}	=0.16

Mean	=0.02
Median	=0
s.d.	=0.02
P_{10}	=0
P_{90}	=0.04

The correlation between returns and wealth levels (2013)

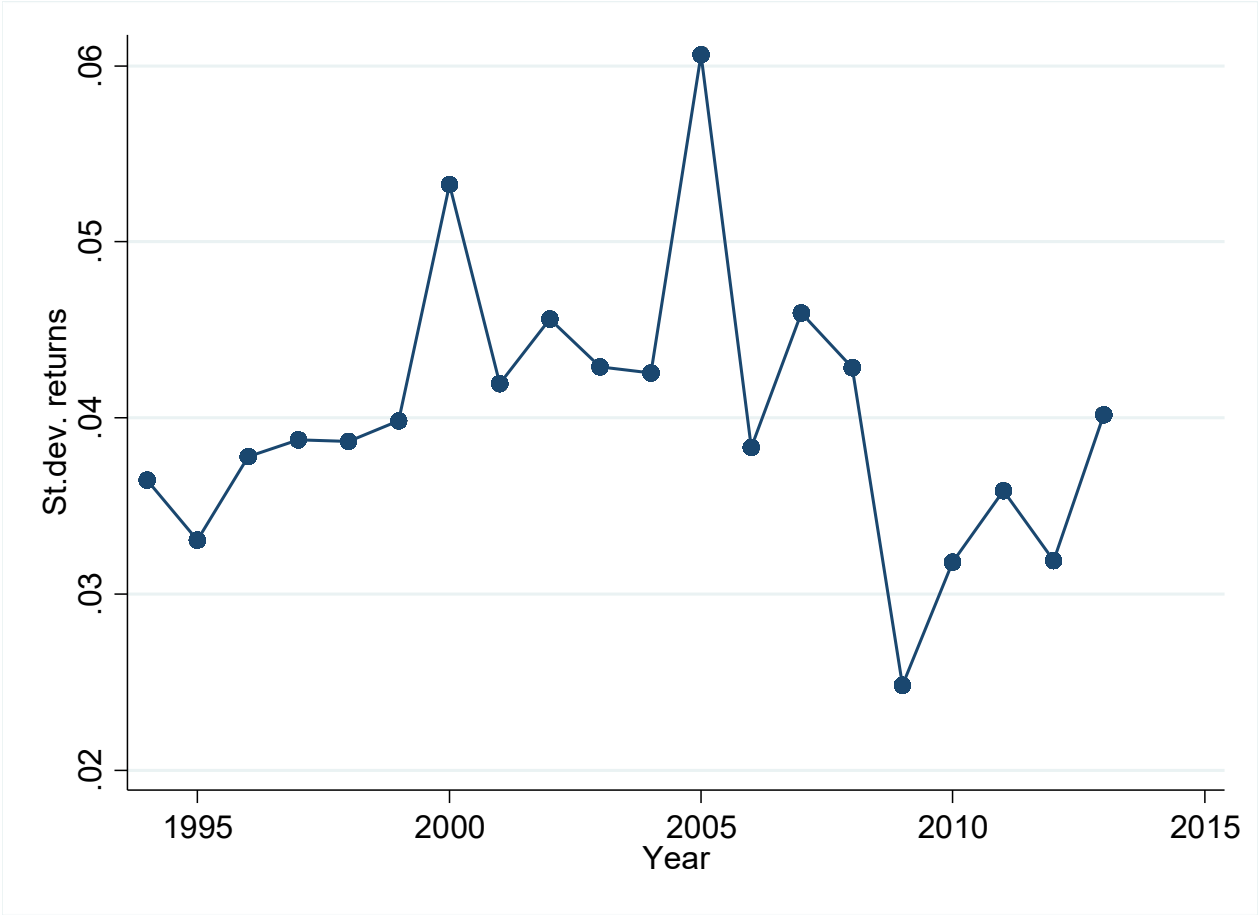


Why a correlation between returns and wealth levels?

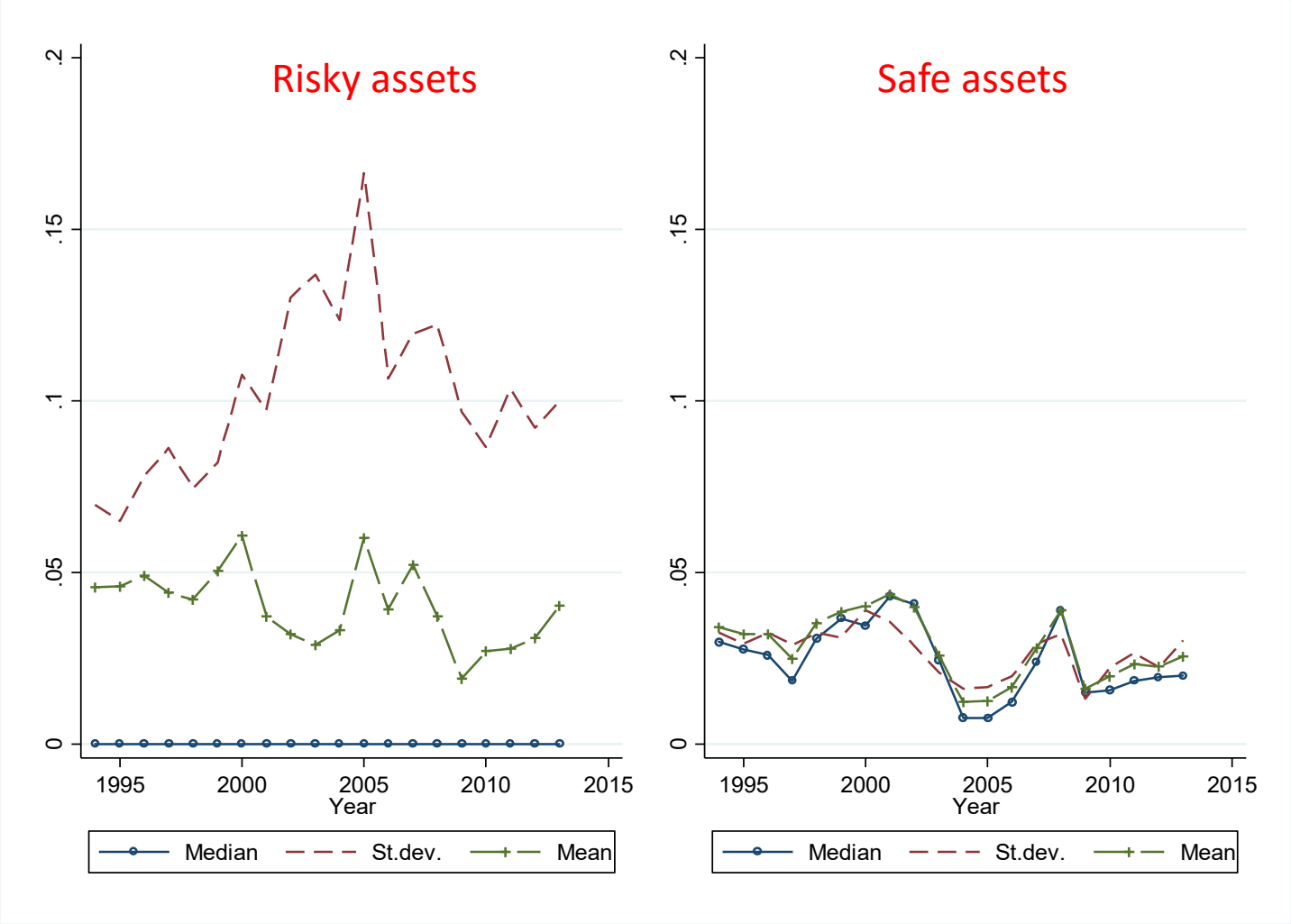
- Wealthy investors are more risk tolerant (applies to both stockholders and entrepreneurs)
- Wealthy investors have access to different (more lucrative) investment opportunities than retail investors
  - For example, return on safe assets have a premium for those depositing above a threshold
  - Some (more lucrative?) mutual funds have an entry requirement
- Wealthy investors can buy the services of “financial experts”

Time variation: Mean and median return

Time variation: s.d. of returns

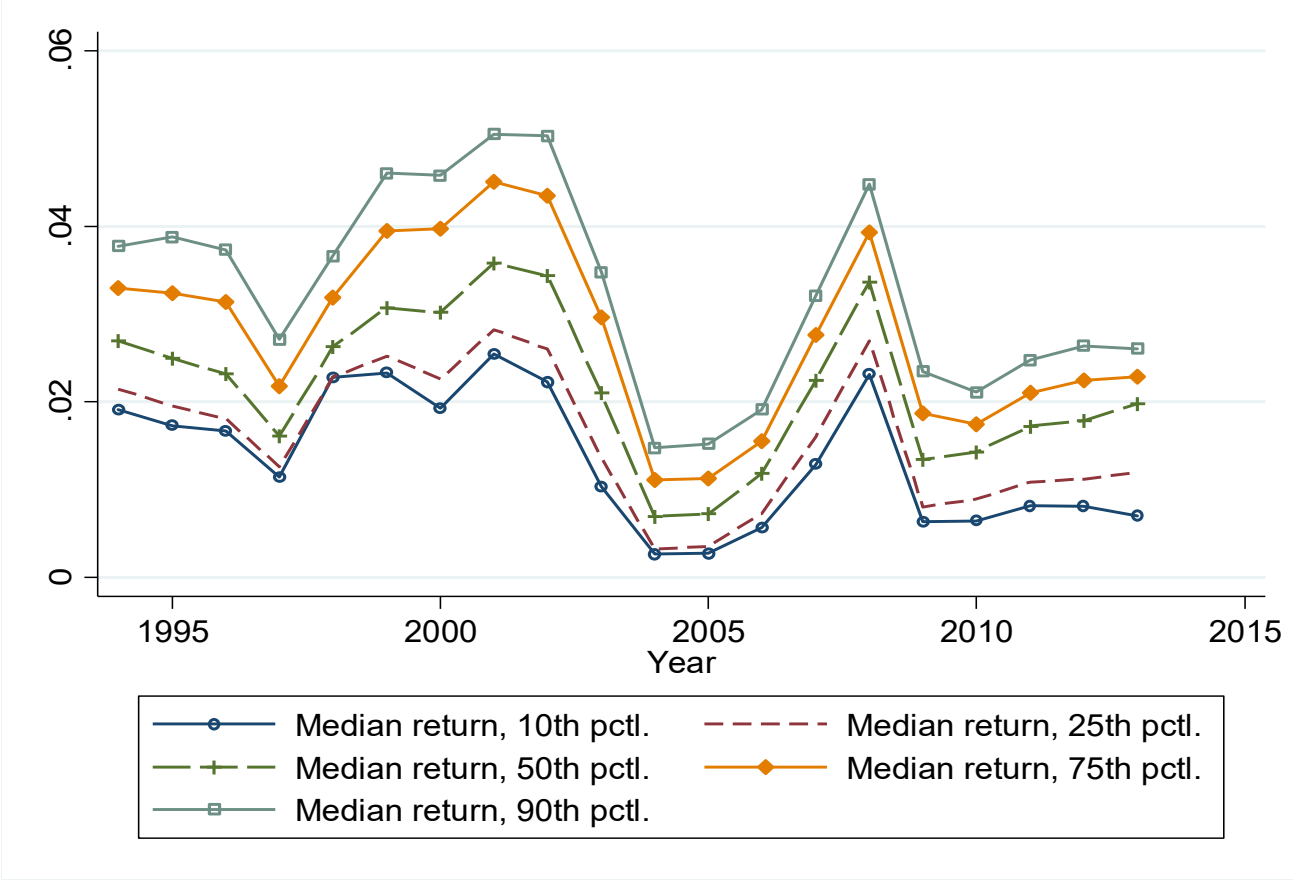


Time variation: Mean, median, s.d. of returns on risky & safe assets



Time variation: The correlation between returns and wealth levels

- Report median return for selected percentiles of the wealth distribution
- Returns are persistently higher when we move up in the wealth distribution
- Spearman rank correlation ranges between 0.162 and 0.384



Modeling returns heterogeneity

- We consider a simple statistical regression model:

$$r_{it} = X'_{it}\beta + u_{it}$$

- We break unobservables determinants of returns into a permanent component (a fixed effect) and a transitory component:

$$u_{it} = f_i + e_{it}$$

- How much returns heterogeneity is explained by observables, fixed effects, and remaining unobservables?

The contribution of observable characteristics

- We control for:
  - Demographics (age, gender, years of schooling, type of education, geographical indicators)
  - Common shocks (time effects)
  - Occupation (whether employed and whether owning some business wealth)
  - Portfolio composition at the beginning of the period

- These observables explain 7% of the total variation in wealth returns

Regression results

	(1) Portfolio return b/se	(2) Portfolio return b/se
Male	-0.000***	
	(0.000)	
Employed	0.002***	0.000
	(0.000)	(0.000)
Lagged risky share	0.022***	0.017***
	(0.000)	(0.000)
Owning private business	0.016***	0.008***
	(0.000)	(0.000)
Individual FE	no	yes
Year FE	yes	yes
County FE	yes	yes
Demographic controls	yes	yes
r2	0.073	0.251
N	49,465,306	49,465,306

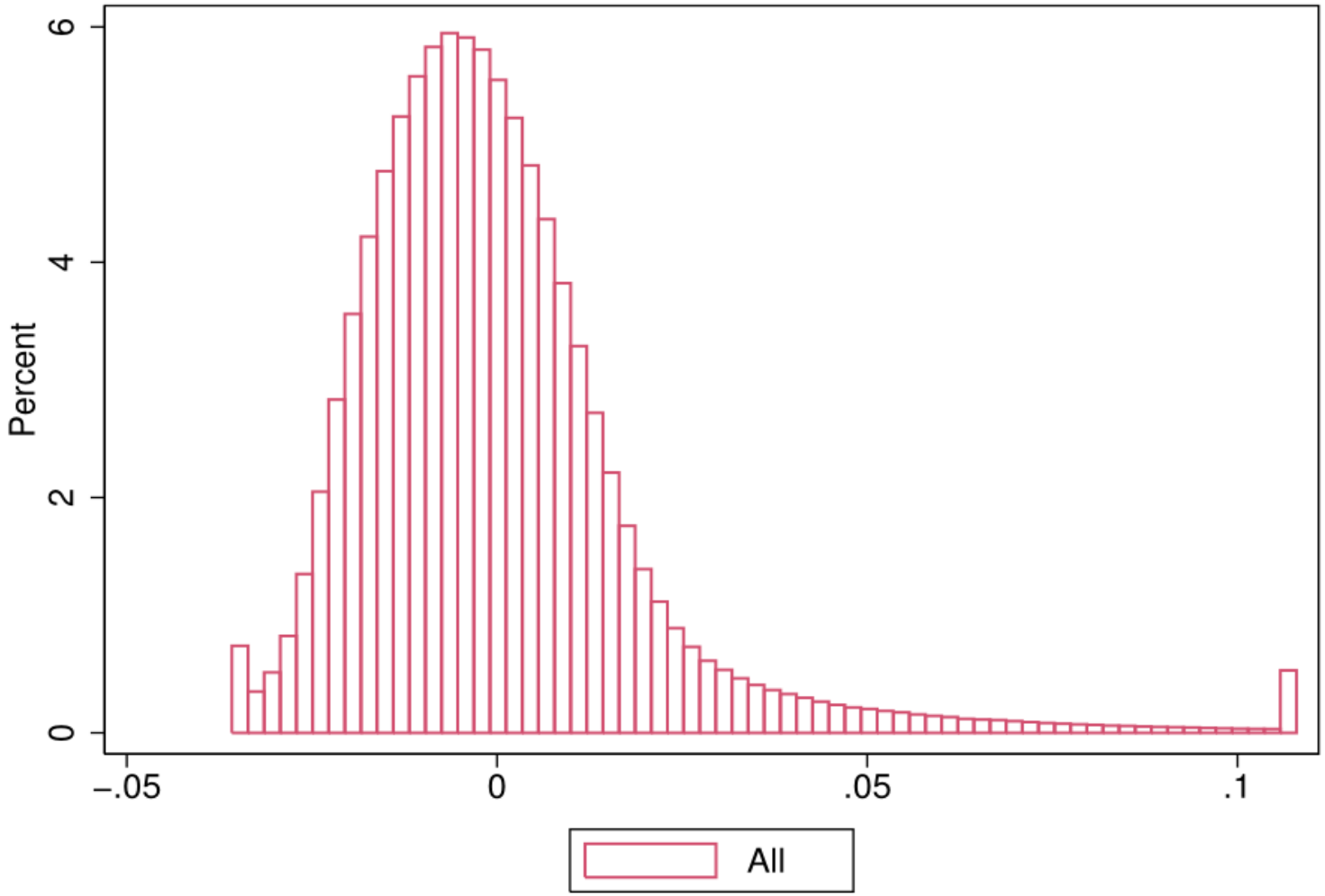
Fixed effects

- Conceptually, why fixed effects in wealth returns?
- That is: What makes certain individuals reaping persistently higher/lower returns than the average?
  - Preferences
    - High risk tolerance leading certain individuals to invest in high-risk/high-return financial instruments (and preferences for risk are very stable over time).
  - Talent
    - Better “stock-picking”
    - Better financial education
    - Business income: It’s a function of the entrepreneur’s own ability, which may have a strong persistent component

Fixed effects: Evidence

- Fixed effects are jointly statistically significant
- They explain about 18% of total variation in returns
- Their distribution differs significantly across key sub-groups
  - Business owners vs non-owners
  - Low vs. high years of schooling
  - Bottom vs. top 10% wealth distribution

Distribution of the fixed effects



Any serial correlation left?

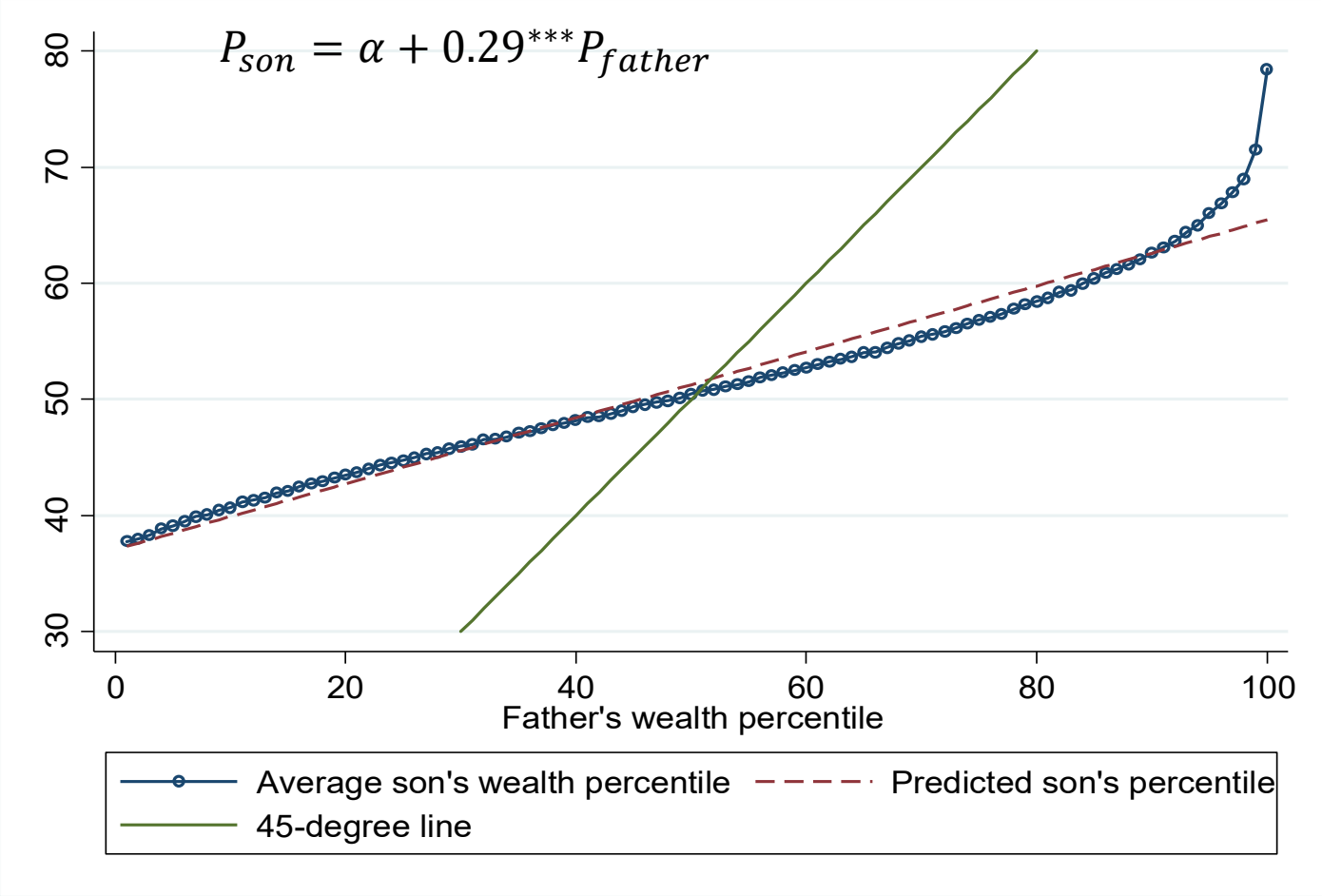
- From $u_{it} = f_i + e_{it}$, additional persistence in returns may in principle come from e_{it}
- We plot $E(\Delta u_{it} \Delta u_{it-s}) = E(\Delta e_{it} \Delta e_{it-s})$ for all $s \geq 0$
- The moments for $s \geq 2$ are all economically undistinguishable from 0
- Consistent with returns being basically unpredictable once controlling for demographics and fixed effects

Intergenerational correlations: Wealth, Returns, Fixed effects

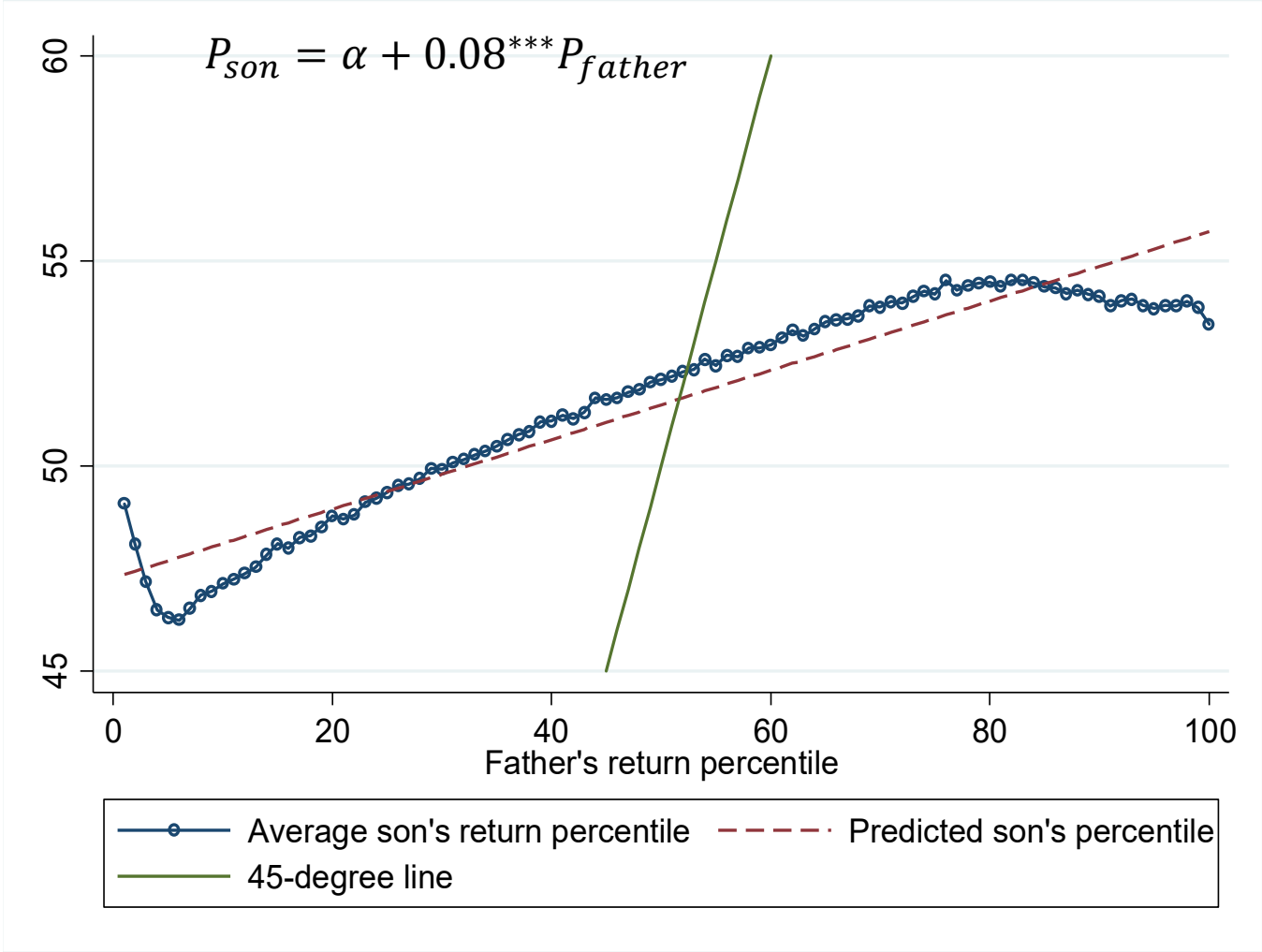
- Our data can be used to study mobility (or intergenerational correlation) in wealth-related variables

- We focus here on
  - Wealth levels
  - Overall returns on wealth
  - Persistent component of wealth returns (fixed effects)

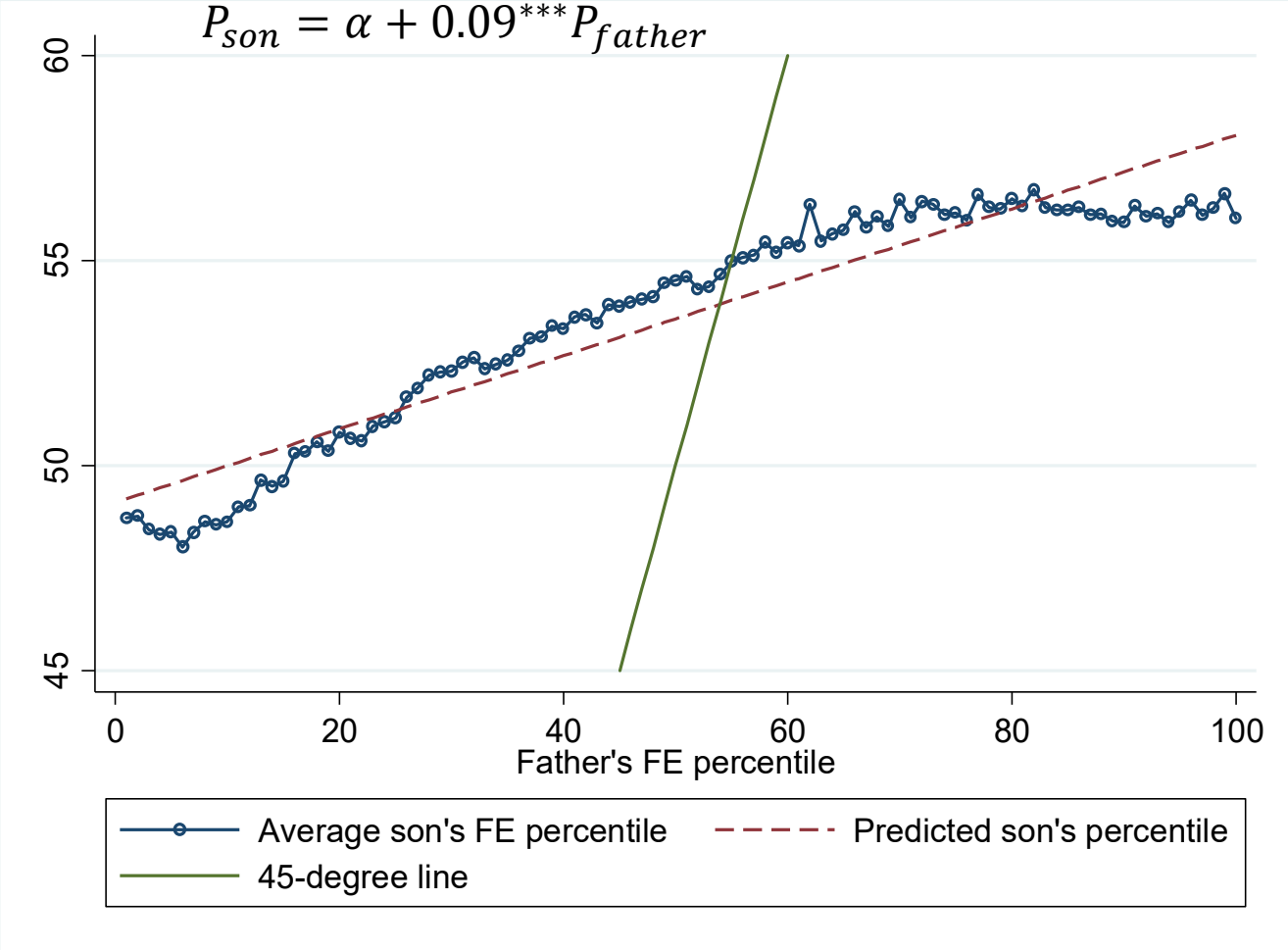
Intergenerational correlation in wealth



Intergenerational correlation in returns to wealth



Intergenerational correlation in the persistent component of the returns to wealth



Why the intergenerational correlation?

- Parents with above average returns may be more likely to own profitable private businesses that they share with (or transfer to) their kids
- Kids of successful parents (in terms of returns on wealth) may simply imitate parents' investment strategies
- Persistence may reflect correlation of returns with wealth
  - the wealthy may earn higher average returns. Since wealth persists, e.g. through inheritances, so do returns to wealth
- Intergeneration transmission of preferences for risk or talent for investment

Implications of returns heterogeneity for the debate on wealth inequality

- We consider two implications of the evidence presented so far:

1. Does it have an impact on measurement of wealth inequality based on the capitalization approach?
2. Can it explain the gap between wealth and income inequality?

Returns heterogeneity and the measurement of wealth inequality

- Saez and Zucman (2015) have access to US tax records
  - There is information on capital income, but no wealth information
  - To recover wealth they use an imputation procedure based on a capitalization approach. Since $y_{it} = r_{it} w_{it}$, they can impute wealth assuming that returns are homogenous (within broad asset classes), i.e.

$$\widehat{w}_{it} = \frac{y_{it}}{r_t}$$

- Given our evidence of substantial heterogeneity in returns to wealth and their correlation with wealth levels, how reliable is the capitalization method?
- We can compare actual wealth inequality with imputed wealth inequality

Theoretical results

- With independence between returns to wealth and wealth levels, both Gini and top wealth shares are overstated

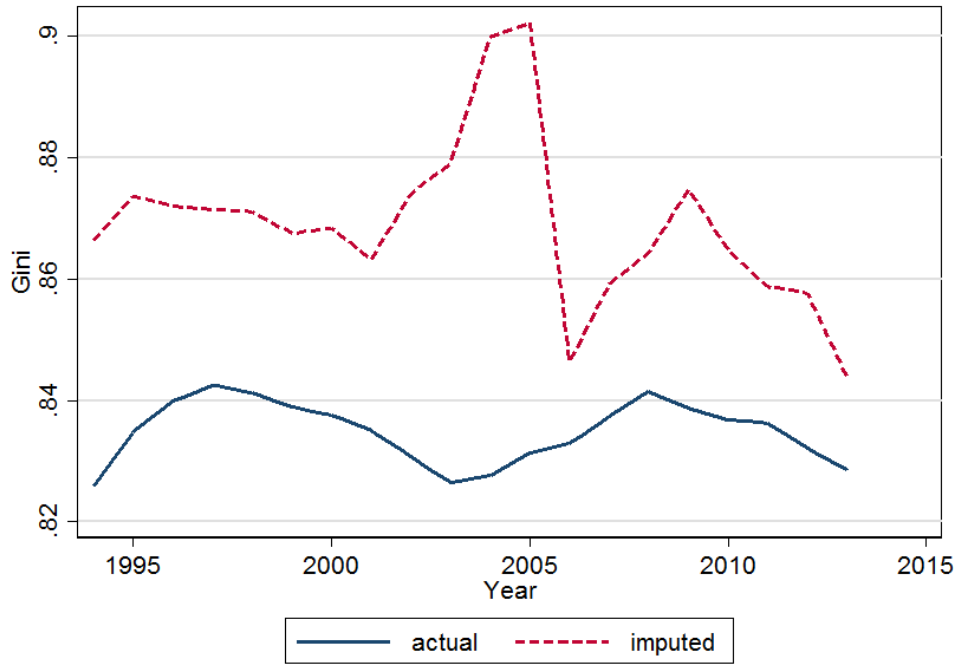
- With correlation between returns to wealth and wealth levels, Gini still overstated, but top wealth shares may be overstated or understated

How large are the biases in practice?

- We replicate Saez and Zucman's capitalization approach to impute wealth (excluding housing, which is of higher quality only after 2010) in the Norwegian case
- We then compute Gini indexes, and shares of wealth owned by the top 5%, 1%, 0.1%
- Results:
  - Gini indexes systematically overstate the degree of wealth inequality
  - For top shares, results depend on how far in the tail we go

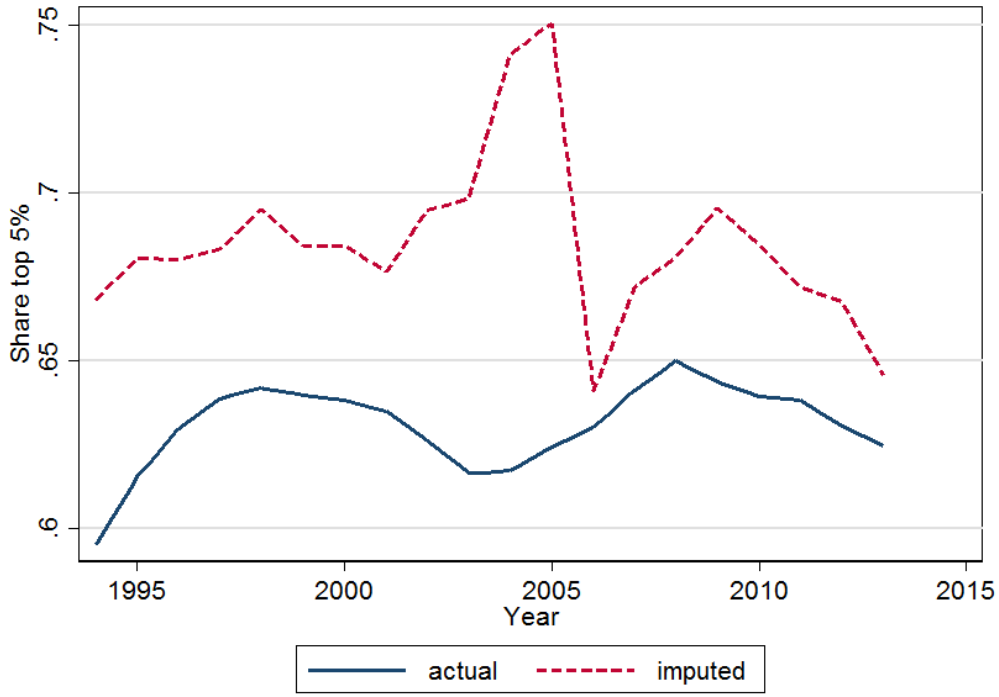
Gini

- The Gini based on imputed wealth captures sufficiently well the long-term trends in actual wealth inequality
- However, it overstates true inequality by a 1.05 factor on average
- It tends to do significantly worse in the middle of the sample period due to the introduction of a shareholder tax in 2006 (with some announcement effects at work since 2001)

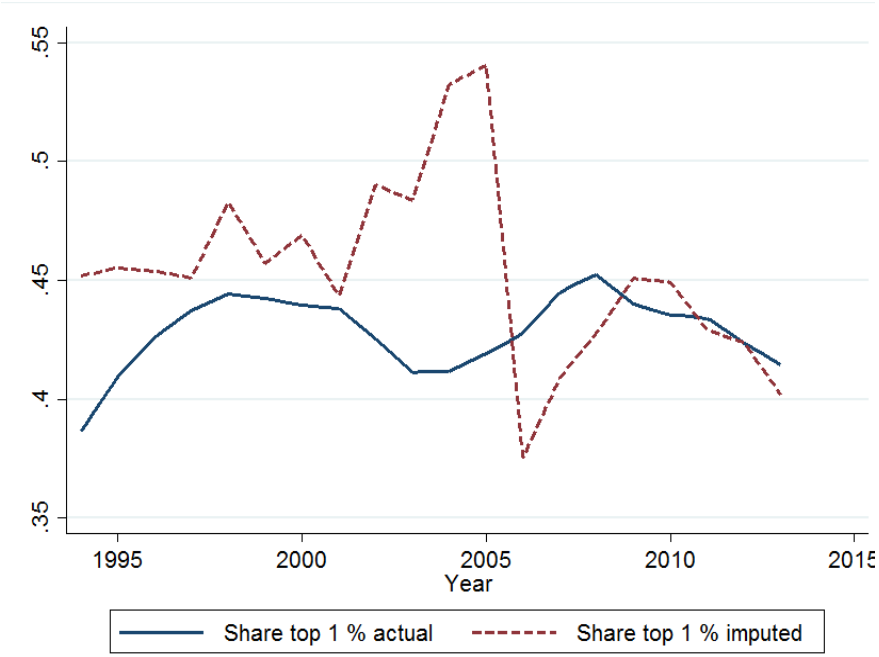


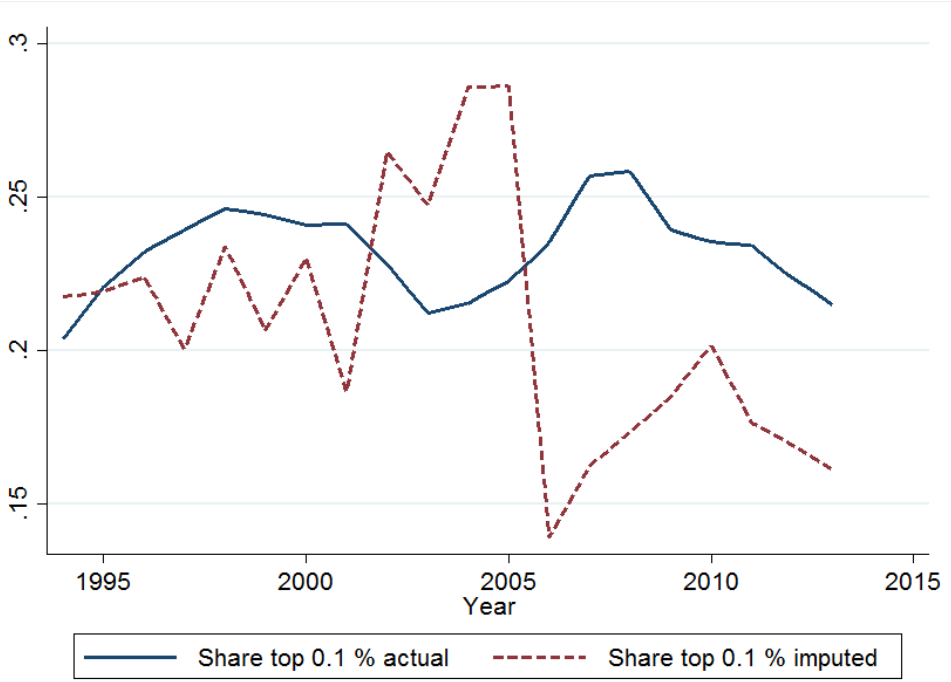
Top wealth shares

- The evidence on top shares is more nuanced
- The larger the share we consider, the larger the overestimation
- However, the degree of overestimation declines (and even becomes underestimation) if we consider smaller and smaller fractiles
- This seems to agree with the presence of correlation between returns and wealth levels



The bias for the top 1% and 0.1% shares





Regression evidence

Table 7. Explaining the gap between imputed and actual inequality

	$G(\widehat{w}) - G(w)$		$S_5(\widehat{w}) - S_5(w)$		$S_{0.1}(\widehat{w}) - S_{0.1}(w)$	
	(1)	(2)	(3)	(4)	(5)	(6)
St.dev. returns	0.81*	-0.15	1.55*	-0.24	2.45*	-0.39
	(0.44)	(0.24)	(0.83)	(0.46)	(1.37)	(0.86)
Correl. Returns/wealth		0.69***		1.29***		2.06***
		(0.09)		(0.17)		(0.31)
Obs.	20	20	20	20	20	20
R^2	0.16	0.83	0.16	0.82	0.15	0.76

- Between 1978 and 2012, the top 0.1% wealth share increases by 15 p.p. in the US (Saez and Zucman, 2015)
- *Ceteris paribus*, an increase in corr(returns,wealth) of 0.07 (say, from 0.01 to 0.08) could explain the *entire* increase in the share – assuming the top (actual) wealth share had remained constant
  - …which of course it wouldn't (at least in the long run)
- But generally: An increase in the correlation between wealth and returns may exaggerate the evidence of increase in wealth concentration at the very top
- Also: Top wealth shares vs. Gini

Conclusions

- Returns to assets vary substantially across households (even conditioning on demographics, portfolio composition, private business ownership).
- Moreover:
  a) They vary over time
  b) They have a persistent component (“fixed effect”)
  c) They are correlated with the level of wealth
  d) They are correlated intergenerationally, but mildly so

- Features b) and c) have usually being ignored

- What are the consequences of these findings for the debate on what determines the increase in wealth inequality and its extreme fat right tail?