

# The intergenerational transmission of wealth

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Lecture 4

Inequality, Economic Opportunity, and Public Policy  
Economics 85600

# 1. Composition of top incomes

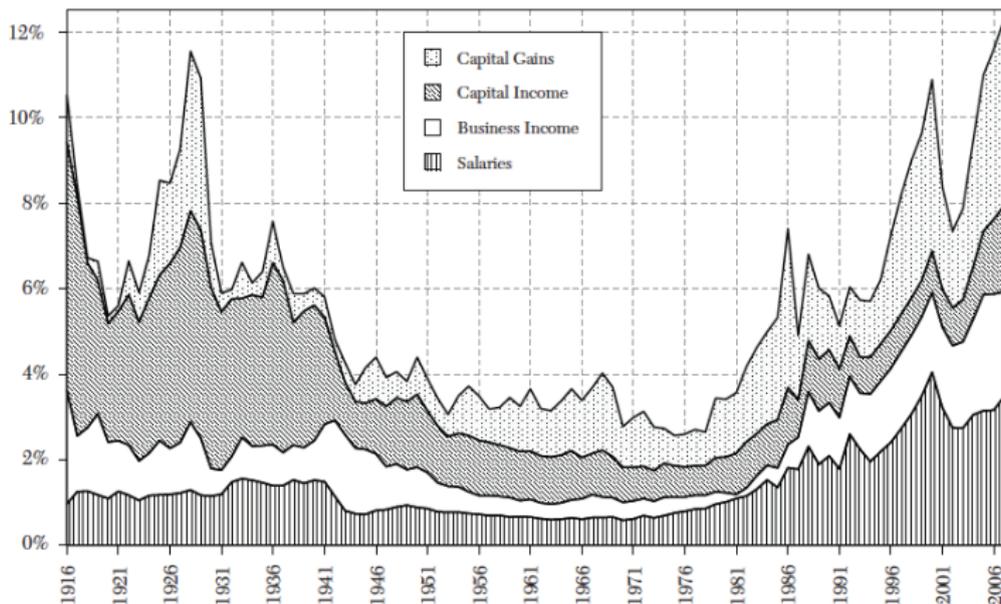
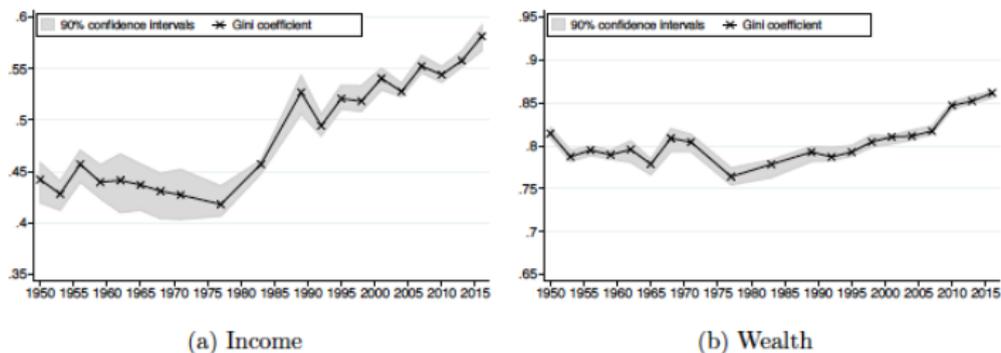


Figure 3. The Top 0.1 Percent Income Share and Composition, 1916–2007

*Notes:* The figure displays the top 0.1 percent income share and its composition. Income is defined as market income including capital gains (excludes all government transfers). Salaries include wages and salaries, bonus, exercised stock-options, and pensions. Business income includes profits from sole proprietorships, partnerships, and S-corporations. Capital income includes interest income, dividends, rents, royalties, and fiduciary income. Capital gains includes realized capital gains net of losses.

# 1. Trends in income and wealth inequality

wealth is more unequal than incomes, and though wealth inequality has risen since 1980 not as much as income inequality



Notes: Gini coefficient of income (panel (a)) and wealth (panel (b)) with 90% confidence bands. Confidence bands are shown as gray areas, and point estimates are connected by lines. Confidence bands are bootstrapped using 999 different replicate weights constructed from a geographically stratified sample of the final dataset.

Figure 2: Source: Kuhn et al 2018, Figure 5

## 2. Data for the joint distribution of income and wealth

Kuhn, Schularick, Steins (2018) "Income and Wealth Inequality in America, 1949-2016", Working Paper 9

### 1. The Survey of Consumer finances

- ▶ a “cross sectional survey”
- ▶ accessible through the Federal Reserve  
<https://www.federalreserve.gov/econres/scfindex.htm>
- ▶ conducted every three years, and available from 1983
- ▶ family incomes, net worth, financial information
- ▶ two sampling frames, one oversampling the top 10 % of wealthiest households
- ▶ some advantages over tax data, including entire population, more appropriate unit of analysis, direct measurement of wealth

## 2. Data for the joint distribution of income and wealth

Kuhn, Schularick, Steins (2018) "Income and Wealth Inequality in America, 1949-2016", Working Paper 9

1. The Survey of Consumer finances
2. Development of the "Historical Survey of Consumer Finances"
  - ▶ the SCF has actually been conducted annually between 1948 to 1971, and also in 1977 through the University of Michigan
  - ▶ the authors develop a consistent time series, appropriately coding variables and reweighting at the top
  - ▶ play to the data's strengths while minimizing the weaknesses
  - ▶ allows analyses of the joint distribution of income and wealth

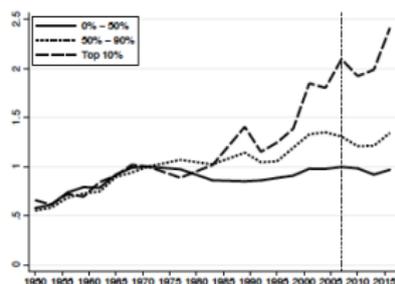
## 2. Changes in top wealth shares were modest until 2007

	Income					Wealth				
	1950	1971	1989	2007	2016	1950	1971	1989	2007	2016
bottom 50%	21.6	21.6	16.2	15.4	14.5	3.0	3.0	2.9	2.5	1.2
0%- 25%	6.1	6.2	5.0	4.5	4.5	-0.1	-0.2	-0.1	-0.1	-0.4
25%-50%	15.5	15.4	11.3	11.0	10.1	3.1	3.2	3.0	2.6	1.6
50%-90%	43.9	47.7	43.8	40.3	37.9	24.7	26.3	29.5	26.0	21.5
50%-75%	23.5	24.9	22.5	20.3	18.4	9.8	10.5	11.7	10.2	7.2
75%-90%	20.4	22.8	21.4	20.0	19.5	14.8	15.8	17.8	15.8	14.3
top 10%	34.5	30.7	39.9	44.3	47.6	72.3	70.7	67.6	71.5	77.4

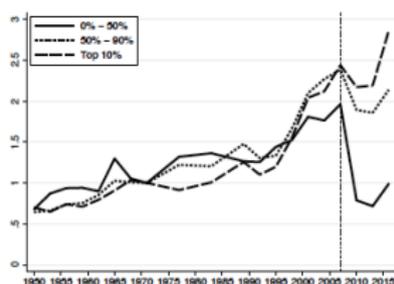
Figure 3: Source: Kuhn et al 2018, Table 4

## 2. Income and wealth growth

Income growth at the bottom stagnated, wealth increased then collapsed in the aftermath of the Great Recession



(a) Income growth



(b) Wealth growth

Notes: Growth of income and wealth for different wealth groups. All time series are indexed to 1 in 1971. The solid lines show growth rates for the bottom 50%, the short dashed lines for the middle class (50%-90%), and the long dashed lines for the top 10%. See text for further details.

Figure 4: Source: Kuhn et al 2018, Figure 11

## 2. Changes in the wealth distribution

### portfolio heterogeneity and asset returns

#### 1. changes in the wealth distribution

- ▶ can be driven by changes in the income distribution with constant savings and identical returns across asset classes
- ▶ more than the income distribution can matter if portfolios differ
  - ▶ asset prices lead to differential capital gains
  - ▶ asset prices may change wealth to income ratios which determine savings
  - ▶ high wealth to income ratios mean income and savings matter less

## 2. Changes in the wealth distribution

### portfolio heterogeneity and asset returns

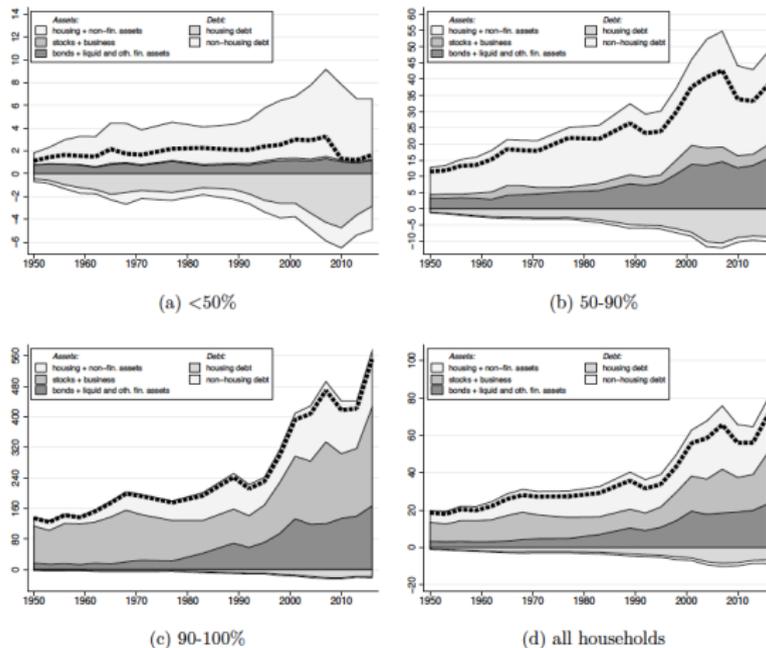
#### 1. changes in the wealth distribution

- ▶ can be driven by changes in the income distribution with constant savings and identical returns across asset classes
- ▶ more than the income distribution can matter if portfolios differ

#### 2. portfolio composition varies substantially and persistently across the wealth distribution

- ▶ bottom 90% are not diversified and highly leveraged
  - ▶ housing is the dominant asset
  - ▶ significant exposure to changes in housing prices
- ▶ top 10% are diversified and not so leveraged
  - ▶ high investment in the stock market

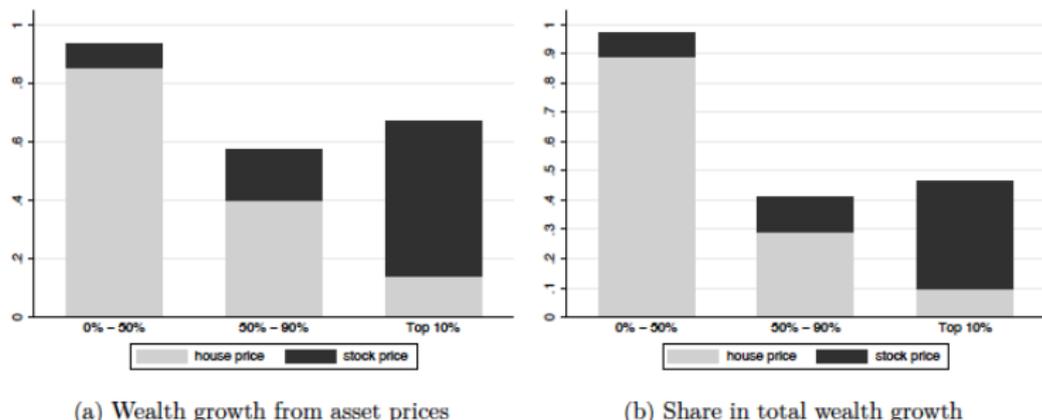
## 2. Portfolio heterogeneity and asset returns



Notes: Household portfolios for four wealth groups. Light gray areas show nonfinancial assets, dark gray areas financial assets, and negative areas housing and nonhousing debt. The dashed line indicates wealth. Panel (a) shows portfolio of the bottom 50% of the wealth distribution, panel (b) portfolio of the 50%-90%, and panel (c) portfolio of the top 10%. Panel (d) shows the portfolio of all households. Portfolio components are shown in 10,000 CPI-adjusted 2016 dollars. Wealth groups are separately defined for each survey year.

Figure 5: Source: Kuhn et al 2018 Figure 13

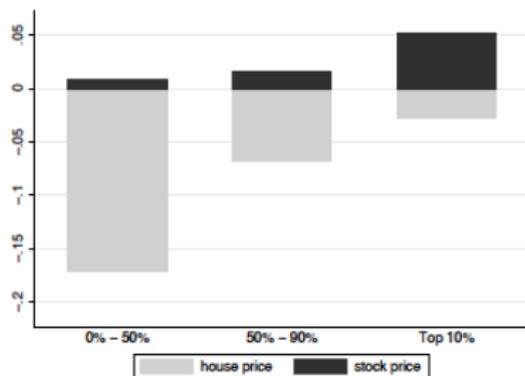
## 2. Changes in the wealth distribution



Notes: Wealth growth component from the housing market and the stock market ( $q_t^i$ ) in levels and as share of total growth for the bottom 50%, 50%-90%, and top 10% of the wealth distribution for the period from 1971 to 2007. The growth component in panel (a) is computed by fixing the housing and equity position at the beginning of the time period and then adjusting asset prices. Asset price gains or losses are expressed relative to the initial wealth level of the respective group. Panel (b) shows wealth growth component from asset prices as share of total wealth growth over the period from 1971 to 2007 for the different wealth groups.

Figure 6: Source: Kuhn et al 2018 Figure 17

## 2. Changes in the wealth distribution



Notes: Wealth growth component from the housing market and the stock market ( $q_t^i$ ) for the bottom 50%, 50%-90%, and top 10% of the wealth distribution for the period 2007 to 2016. The growth component is computed by fixing the housing and equity position at the beginning of the time period and adjusting asset prices. Asset price gains or losses are expressed as share of the initial wealth level of the respective group.

Figure 7: Source: Kuhn et al 2018 Figure 18

### 3. The intergenerational transmission of wealth

least squares coefficient and the correlation coefficient

$$\ln Y_{i,t} = \alpha + \beta \ln Y_{i,t-1} + \varepsilon_i$$

$$\begin{aligned}\hat{\beta} &= \frac{\text{cov}(\ln Y_{i,t-1}, \ln Y_{i,t})}{\text{var}(\ln Y_{i,t-1})} \\ &= \frac{\text{cov}(\ln Y_{i,t-1}, \ln Y_{i,t})}{\text{sd}(\ln Y_{i,t-1}) \times \text{sd}(\ln Y_{i,t-1})} \times \frac{\text{sd}(\ln Y_{i,t})}{\text{sd}(\ln Y_{i,t})} \\ &= \frac{\text{cov}(\ln Y_{i,t-1}, \ln Y_{i,t})}{\text{sd}(\ln Y_{i,t-1}) \times \text{sd}(\ln Y_{i,t})} \times \frac{\text{sd}(\ln Y_{i,t})}{\text{sd}(\ln Y_{i,t-1})} \\ &= \rho \times \frac{\text{sd}(\ln Y_{i,t})}{\text{sd}(\ln Y_{i,t-1})}\end{aligned}$$

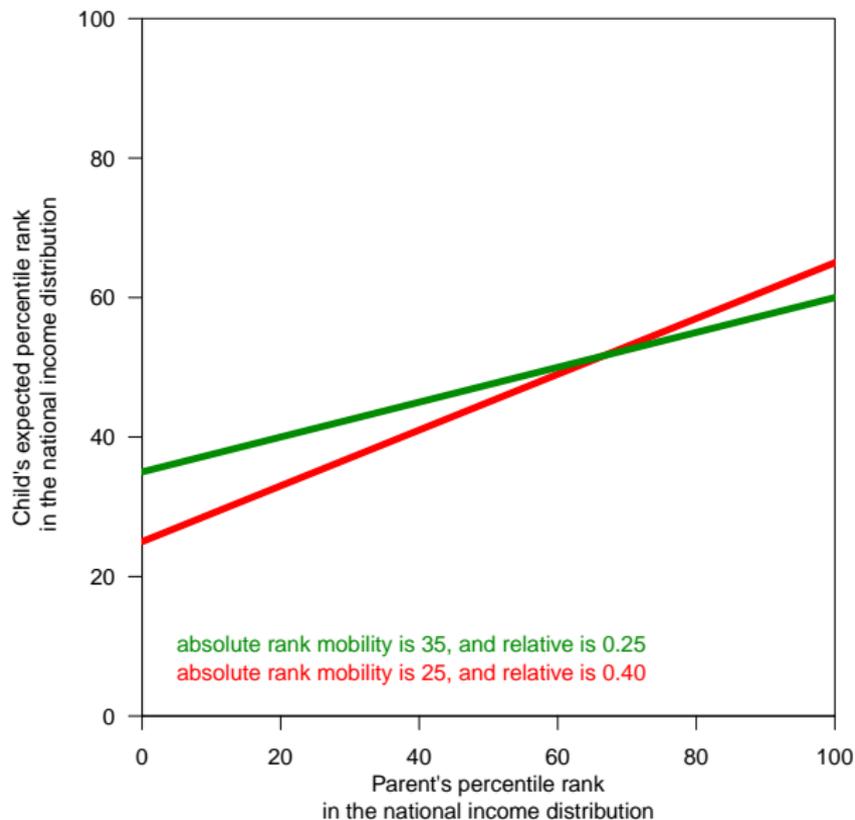
### 3. The intergenerational transmission of wealth

often measured as the correlation in parent-child ranks, the coefficient  $b$  in the following least squares regression:

$$y_{i,t} = a + by_{i,t-1} + e_i$$

where  $y$  represents the percentile rank in the respective distribution, and  $e_i$  is uniformly distributed

### 3. The intergenerational transmission of wealth



## 4. Intergenerational transmission of wealth in the US

Pfeffer and Killewald (2018), "**Generations of Advantage**", *Social Forces*, report  $b$  is about 0.4

### ▶ Panel Study of Income Dynamics

- ▶ a “longitudinal survey” began in the 1960s as part of the policy agenda around President Johnson’s “War on Poverty”, and included an oversampling of low income households
- ▶ followed the same approximately 5,000 families and family members in successive waves, including following the children once they leave home
- ▶ conducted annually since 1968 to 1997, and then biennially
- ▶ a direct match between parents and their adult children, and now between grandparents allowing for multi-generational analysis of intergenerational dynamics
  - ▶ Pfeffer et al. have a sample of about 4,600 parent-child pairs, and 2,500 grandparent-parent-child

## 4. Intergenerational transmission of wealth in the US

**Table 3. Multigenerational Correlations in Net Worth and Home Values** (Rank slopes, with Controls for Age and Squared Age in Each Generation)

	Two-gen. sample	Three-generational sample		
	(1)	(2)	(3)	(4)
<b>A: Net worth</b>				
Parental	0.390*** (0.020)	0.320*** (0.032)		0.247*** (0.036)
Grandparental (in 1984/1989)			0.230*** (0.027)	0.121*** (0.028)
R <sup>2</sup>		0.147	0.121	0.164
N	4,608	2,180	2,180	2,180
<b>B: Home value</b>				
Parental	0.371*** (0.024)	0.348*** (0.034)		0.304*** (0.037)
Grandparental (in 1968/69)			0.209*** (0.031)	0.107*** (0.031)
R <sup>2</sup>		0.146	0.097	0.160
N	4,608	2,532	2,532	2,532

Figure 8: Source: Pfeffer and Killewald 2018, Table 3

## 5. Intergenerational transmission of wealth in Denmark

Boserup, Kopczuk, and Kreiner (2018), "Intergenerational Wealth Formation over the Life Cycle", report  $b$  is about 0.25

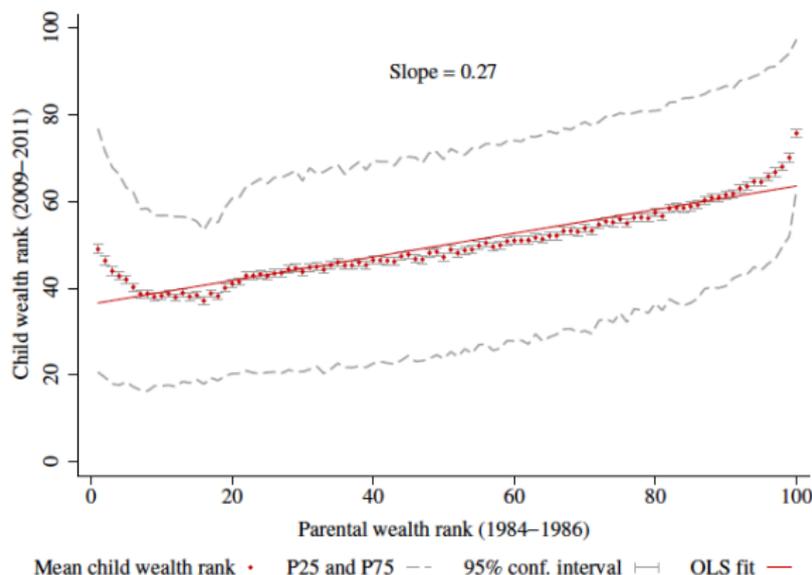
Our empirical analysis is based on data from public administrative registers gathered by Statistics Denmark and linked together using personal identification numbers. Every citizen in Denmark is assigned a unique personal identification number at birth and the identification numbers of the mother and the father are registered for all Danes born in 1960 and onwards. ... This enables us to combine different data sources at the individual level and to link data across generations.

The data on individual wealth and income is based on administrative tax return records. (page 9)

- ▶ A "panel" (longitudinal) data set on the population of children who are 45 to 50 years old in 2010
  - ▶ their wealth measured between 2009 and 2011
  - ▶ their biological parents at the same point in the life cycle, their wealth measured between 1984 and 1986
  - ▶ 364,000 adult children, with 41% having both parents still alive, and 17% having neither parent alive

## 5. Intergenerational transmission of wealth in Denmark

Figure 1: Mean child wealth percentile by parental wealth percentile: Baseline

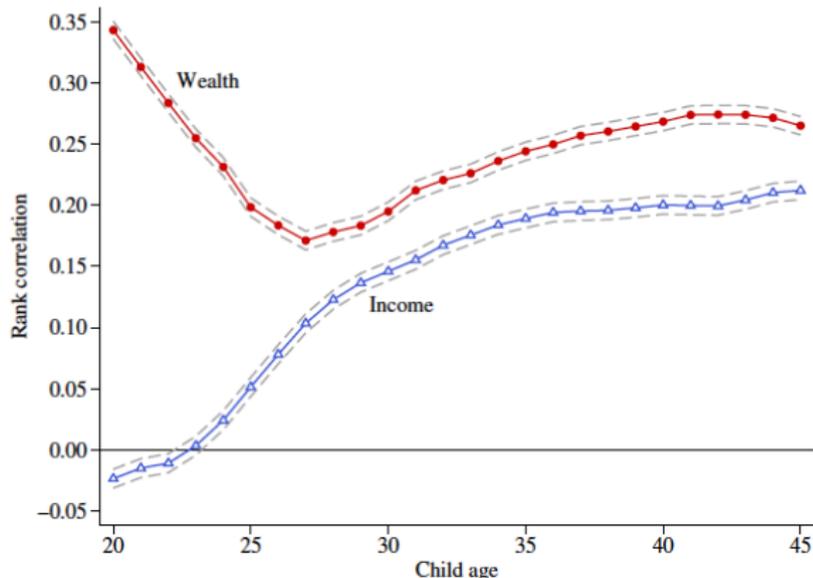


Notes: This figure shows a non-parametric binned scatter plot of the mean percentile wealth rank, including 95% CIs, of children age 45-50 in 2010 by wealth percentiles of parents. Child wealth is individual wealth averaged over the years 2009-2011, and parental wealth is the average of father's and mother's wealth averaged over the years 1984-1986. Percentile rank is computed within each child cohort. The OLS slope reported in the figure is estimated using the underlying micro data. The dashed curves are 25th and 75th percentiles of the conditional child rank distribution computed for each wealth percentile of parents.

Figure 9: Source: Boserup et al 2018, Figure 1

## 5. Intergenerational transmission of wealth in Denmark

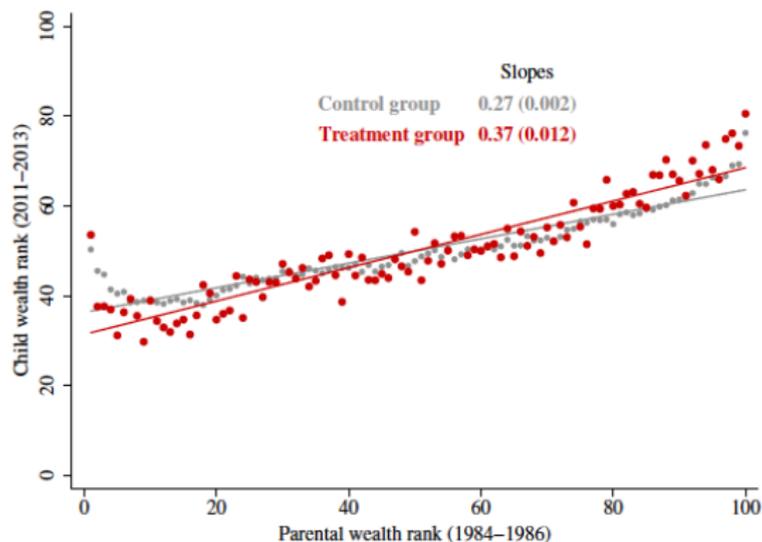
Figure 4: Intergenerational rank correlation in wealth and income over the life cycle of the child



Notes: The figure shows OLS estimates of the intergenerational rank correlation of wealth and income at each age of the child and 95% confidence intervals. Children are 45 years old in 2010 and 20 years old in 1985. Their wealth is measured as three year averages from 1984-1986 to 2009-2011. Parental wealth is the average of father's and mother's wealth averaged over the years 1984-1986. Percentile ranks are computed within each child cohort.

Figure 10: Source: Boserup et al 2018, Figure 4

## 5. Intergenerational transmission of wealth in Denmark



(b) After death of parent in T-group

*Notes:* The graphs are similar to Figure 1 but are made for different samples. The T-group is individuals who are age 45-50 in 2010, with one parent alive in 2009 and no living parents in 2010. The C-group is individuals who are age 45-50 in 2010, with one parent who is alive in 2009 and 2010. Panel A shows the mean percentile wealth rank based on average wealth of the child in 2007-2009 and by wealth percentiles of parents based on average wealth in 1984-1986. Panel B is similar to panel A, but the child rank is based on average wealth in 2011-2013. Percentile rank is computed within each child cohort. The OLS slopes, and their standard deviations in parentheses, reported in the figure are estimated using the underlying micro data.

## 6. Intergenerational transmission of wealth in Sweden

Aderman, Lindahl, and Waldenström (2018), "Intergenerational Wealth Mobility and the Role of Inheritance", report  $b$  is about 0.3 to 0.4

The data set used in this study originates from a survey of all pupils in Malmö (the third largest city in Sweden) conducted when they attended 3rd grade in 1938. The typical child in this 'index generation' was born in 1928. Data were also collected for the parents, including survey information on the father's occupation and parental earnings from tax registers for several years. Much effort was spent on collecting the parental information, resulting in near-complete coverage (page F484).

The argument is offered that this city is representative of the Swedish population

## 4. Intergenerational transmission of wealth in Sweden

Aderman, Lindahl, and Waldenström (2018), "Intergenerational Wealth Mobility and the Role of Inheritance", report  $b$  is about 0.3 to 0.4

1. The data includes “retrospective” information on the parents, and is developed into a “panel” data set on the population of these children by linking to “register” data sources
  - ▶ includes information on spouses, and continues to follow individuals who left the city
2. wealth data is added from tax-based sources for about 1,150 individuals of the 1,550 in the original survey, measured at:
  - ▶ ages 48 and 55 for the first generation in 1945 and 1952
  - ▶ 57 to 63 for the second generation in 1985, 1988, and 1991
  - ▶ 42 to 49 for the third generation in 1999 and 2006
  - ▶ around 20 years of age for the fourth generation in 2006
3. includes information on other outcomes like education and earnings

## 6. Intergenerational transmission of wealth in Sweden

### *Wealth Regressions*

	2nd generation		3rd generation	
	(1)	(2)	(3)	(4)
Panel (a): rank regressions				
Parents	0.296*** (0.033)	0.391*** (0.024)		0.382*** (0.027)
Grandparents			0.166*** (0.032)	0.041 (0.030)
R <sup>2</sup>	0.077	0.174	0.044	0.181
N	1,147	2,100	2,100	2,100
Panel (b): top decile regressions				
Parents	0.178*** (0.041)	0.340*** (0.045)		0.323*** (0.046)
Grandparents			0.153*** (0.036)	0.061* (0.034)
R <sup>2</sup>	0.052	0.135	0.044	0.145
N	1,147	2,100	2,100	2,100

*Notes.* Standard errors in parentheses are clustered on family. Dependent variable is 2nd generation tax-register wealth in column (1), and 3rd generation tax-register wealth in columns (2)–(4). Explanatory variables are tax-register wealth for parents and grandparents. In panel (a), all wealth variables have been percentile ranked within birth cohort groups. In panel (b), all wealth variables are dummy variables equal to one for individuals in the top 10% of the wealth distribution within their birth cohort group and zero otherwise. All regressions include birth cohort group dummies for all generations. \*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01.

Figure 12: Source: Aderman et al 2018, Table 3

## 6. Intergenerational transmission of wealth in Sweden

### *Inheritance Regressions*

	Ranked by inheritance year			Ranked by birth year	
	(1)	(2)	(3)	(4)	(5)
Parents' wealth	0.310*** (0.054)		0.144** (0.068)		0.149** (0.066)
Inheritance		0.379*** (0.057)	0.277*** (0.073)	0.533*** (0.073)	0.401*** (0.095)
R <sup>2</sup>	0.113	0.144	0.181	0.116	0.153
N	386	386	386	386	386

*Notes.* Standard errors in parentheses are clustered on family. Dependent variable is 2nd generation tax-register wealth in 1991. Explanatory variables are tax-register wealth for parents and total inheritance received from parents. Sample is restricted to individuals that have received bequests from both parents. Parent's and own wealth has been percentile ranked within birth cohort groups. In columns (2)–(3) inheritance has been percentile ranked within parental year of death groups, while in columns (4)–(5) inheritance has been percentile ranked within child birth cohort groups. All regressions include birth and death cohort group dummies corresponding to the included variables. \*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01.

Figure 13: Source: Aderman et al 2018, Table 7

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