

Intergenerational Mobility using Income, Consumption, and Wealth

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Why three resource measures?

- ❑ Friedman (1957) “It’s essential idea is to combine the relation between consumption, wealth, and income suggested by purely theoretical considerations with a way of interpreting observed income data...”
- ❑ Stiglitz, Sen, and Fitoussi (2009) “...the most pertinent measures of the distribution of material living standards are probably based on jointly considering the income, consumption, and wealth position of households or individuals.”
- ❑ Eurostat/OECD (2019) “The absence of a perfect correlation between income, consumption and wealth at the household level underscores the necessity of an integrated framework of analysis...studies of economic inequality usually examine the distribution of income, consumption, and wealth separately and, hence, miss the important synergy among the three measures.”

Intergenerational mobility by resource measure (1)

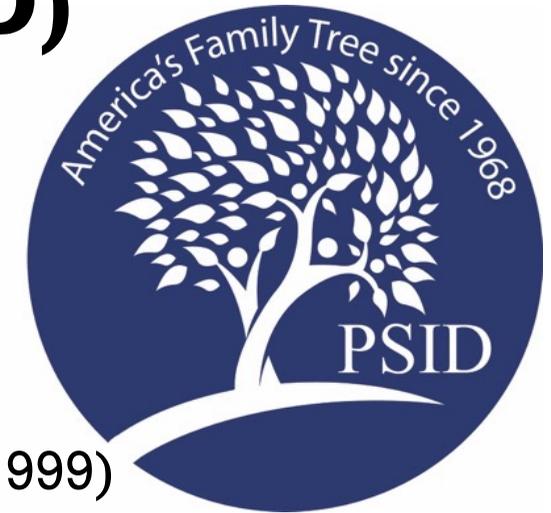
	Income	Consumption	Wealth
Rank-rank	0.32 - 0.34 Attanasio and Pistaferri (2016); Chetty, Hendren, Kline, and Saez (2014)	0.29 Charles, Danziger, Li, and Schoeni (2014); Attanasio and Pistaferri (2016)	0.3 - 0.4 Pfeffer and Killewald (2018); Mazumder (2018)
Intergenerational elasticity (IGE)	0.34 - 0.66 Aughinbaugh (2000); Charles and Hurst (2003); Chetty et al. (2014); Mazumder (2018)	0.12 - 1.09 Aughinbaugh (2000); Charles et al. (2014); Waldkirch, Ng, and Cox (2004)	0.37 Charles and Hurst (2003)

Intergenerational mobility by resource measure (2)

	Income	Consumption	Wealth
Attanasio & Pistaferri (2016) (rank-rank)*	Slope = 0.41 Intercept = 27.7	Slope = 0.29 Intercept = 35.5	-----
Aughinbaugh (2000) (IGE)	0.45	0.78 - 1.09	-----
Waldkirch, Ng, and Cox (2004) (transition matrices)	41% stay in first quintile; 35% stay in top quintile	40% stay in first quintile; 41% stay in top quintile	-----
Charles, Danziger, Li, and Schoeni (2014) (transition matrices)	46% stay in first quartile; 41% stay in top quartile	44% stay in first quartile; 41% stay in top quartile	-----
Charles and Hurst (2003) (IGE)	0.30	-----	0.37

* Based on authors' calculations using the Attanasio & Pistaferri (2016) data. Attanasio & Pistaferri only produced a figure using lowess smoothing and did not provide intercept and slope.

Panel Study of Income Dynamics (PSID)



- 1968-2017
 - Follows 1968 respondents and their descendants
 - Measures and frequency
 - Before-tax income every wave
 - Consumption every wave since 1999 (food and housing before 1999)
 - Net wealth 1984, 1989, 1994, and every wave since 1999

- We supplement the PSID
 - By imputing total consumption for all waves
 - Imputed consumption matches level, Gini, and trends from the Consumer Expenditure Survey
 - Intragenerational mobility using reported consumption matches intragenerational mobility using imputed consumption (Fisher and Johnson 2021)
 - By imputing net wealth for all waves

Resource measures

Parental resources

- Five years from ages 14-18 of the offspring
- Offspring born from 1954-1983

Offspring resources

- Five years from ages 31-35 (n=3,626)
- Five years from ages 41-45 (n=1,282)

We average three values over five calendar years

- For example, we use the average of 1978, 1980, and 1982 income for children born in 1964 to represent parental income from ages 14-18
- Why? PSID surveys every other year starting in 1997
- Create rank using deciles in the national distribution in the year observed

Life-cycle bias correction (Solon 1999) does not affect conclusions

Mobility measures

$$\text{Rank - rank slope} = \frac{\text{cov}(F(Y_P), F(Y_C))}{\text{var}(F(Y_P))}$$

$$\text{Intergenerational elasticity (IGE)} = \frac{\text{cov}(\ln Y_P, \ln Y_C)}{\text{var}(\ln Y_P)}$$

$$\text{Gini mobility} = \frac{G_P \left(\frac{\text{cov}(Y_P, F(Y_C))}{\text{cov}(Y_P, F(Y_P))} \right) + G_C \left(\frac{\text{cov}(Y_C, F(Y_P))}{\text{cov}(Y_C, F(Y_C))} \right)}{G_P + G_C}$$

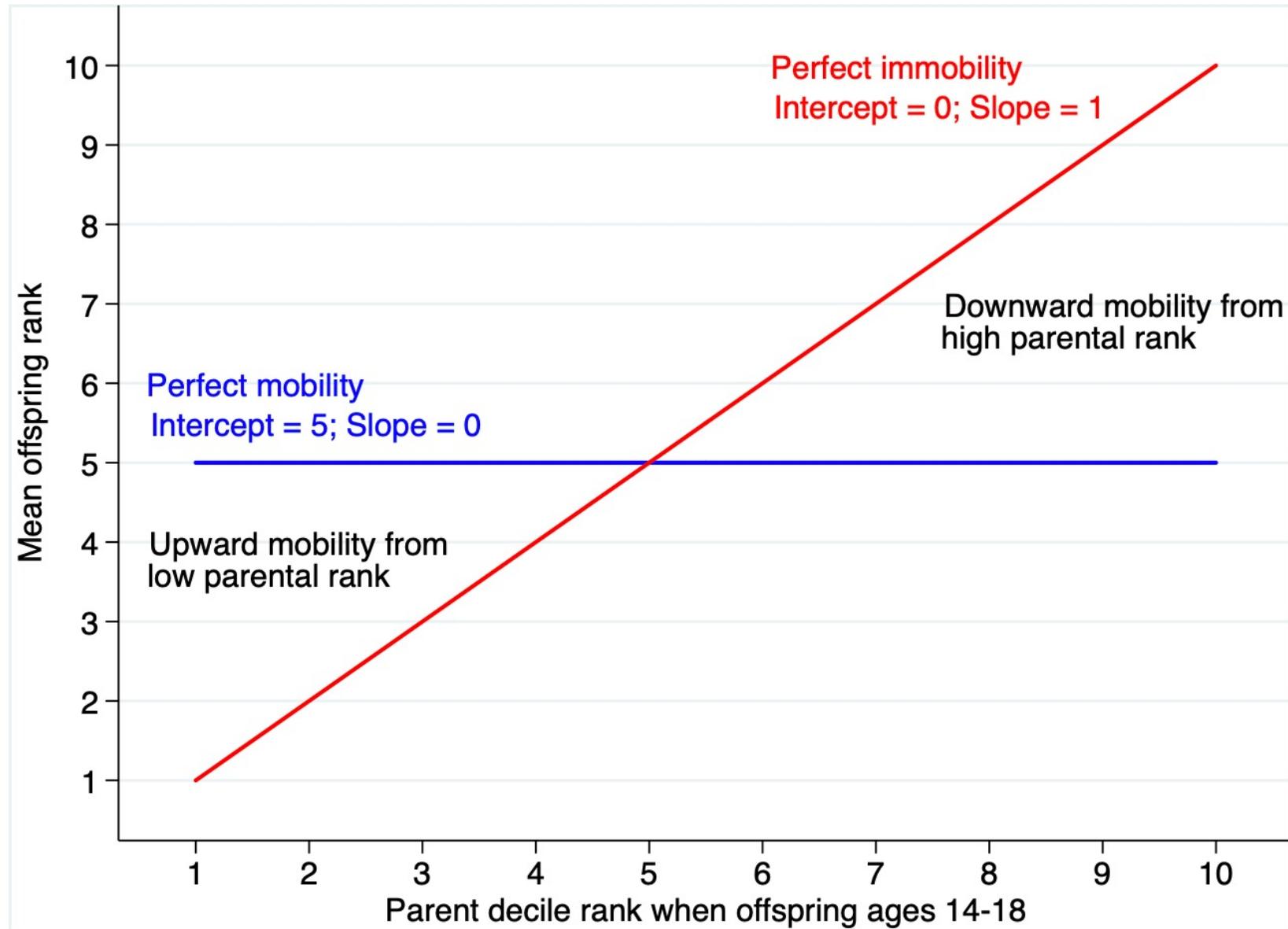
Y_i = level of resource (i is P = parent; C = child)

$F(Y_i)$ = rank in resource distribution

G_i = Gini (inequality) coefficient

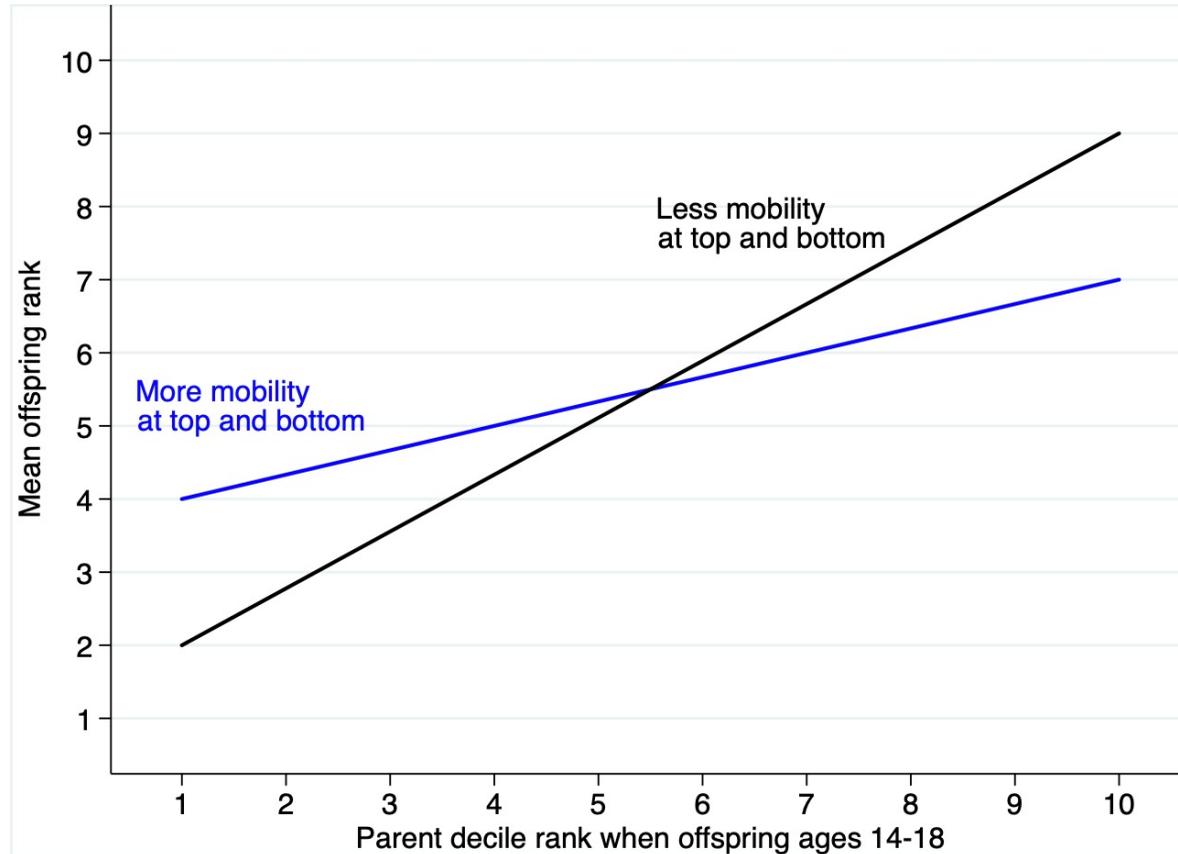
- IGE for income and wealth uses inverse hyperbolic sine transformation to allow for negative values.
- Gini mobility derived in Yitzhaki and Wodon (2002). We trivially altered the Gini mobility formula so that higher values of the Gini mobility mean less mobility, to match the rank-rank slope and IGE.

Understanding the rank-rank correlation (1)

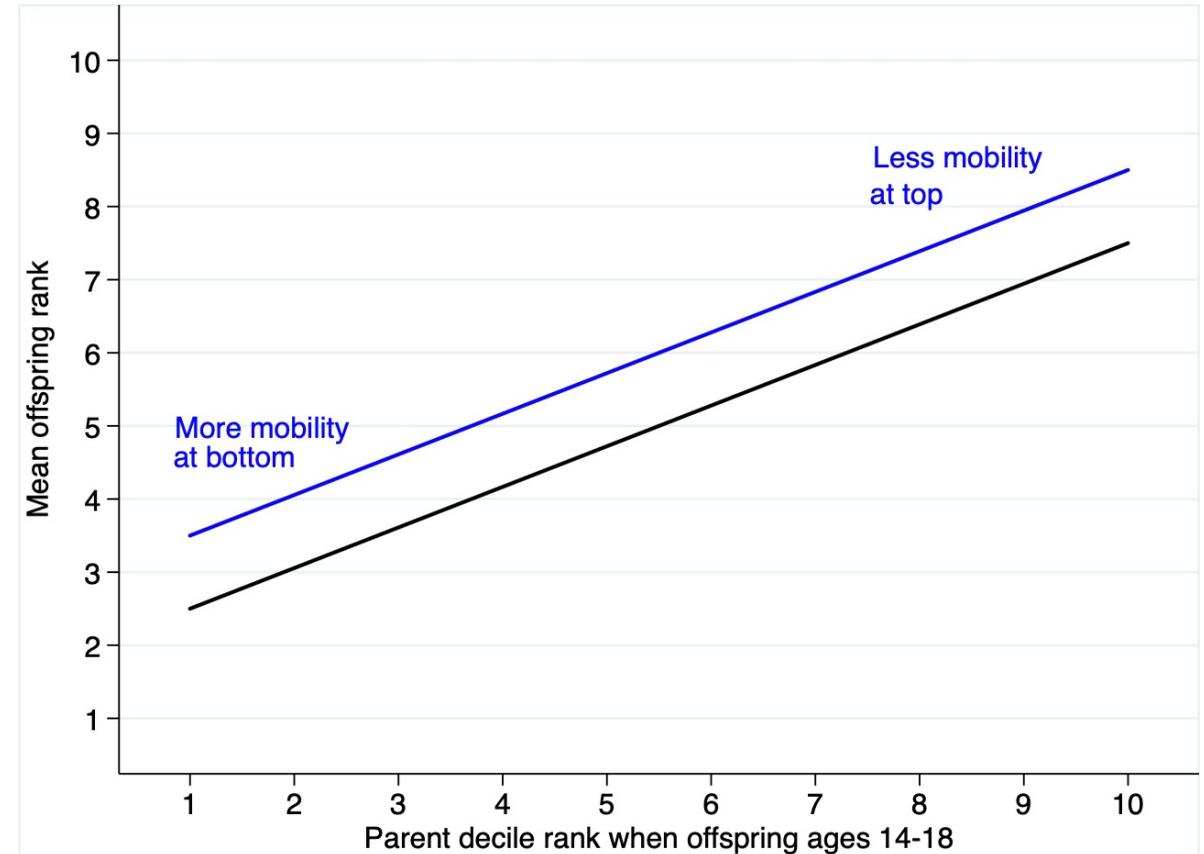


Understanding the rank-rank correlation (2): Comparing two scenarios

Lines that cross



Lines that don't cross



Results

- Rank-rank

 - Ages 31-35

 - Ages 41-45

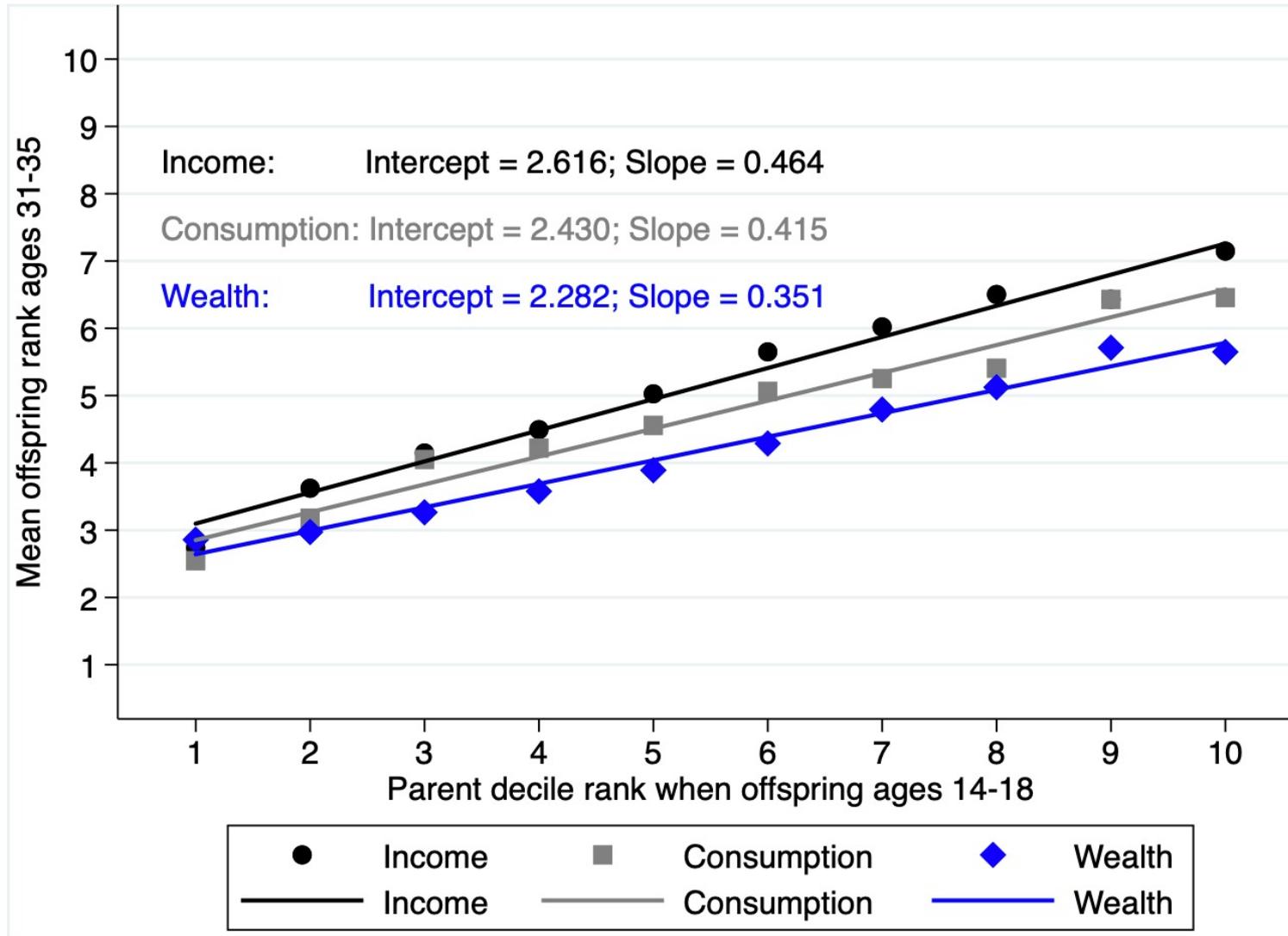
- Show these patterns continue with other mobility measures

- Dig into where the differences occur

 - Where in the distribution is consumption mobility different from income mobility?

 - Where in the distribution is wealth mobility different between ages 31-35 and ages 41-45?

Rank-rank coefficient: Ages 31-35



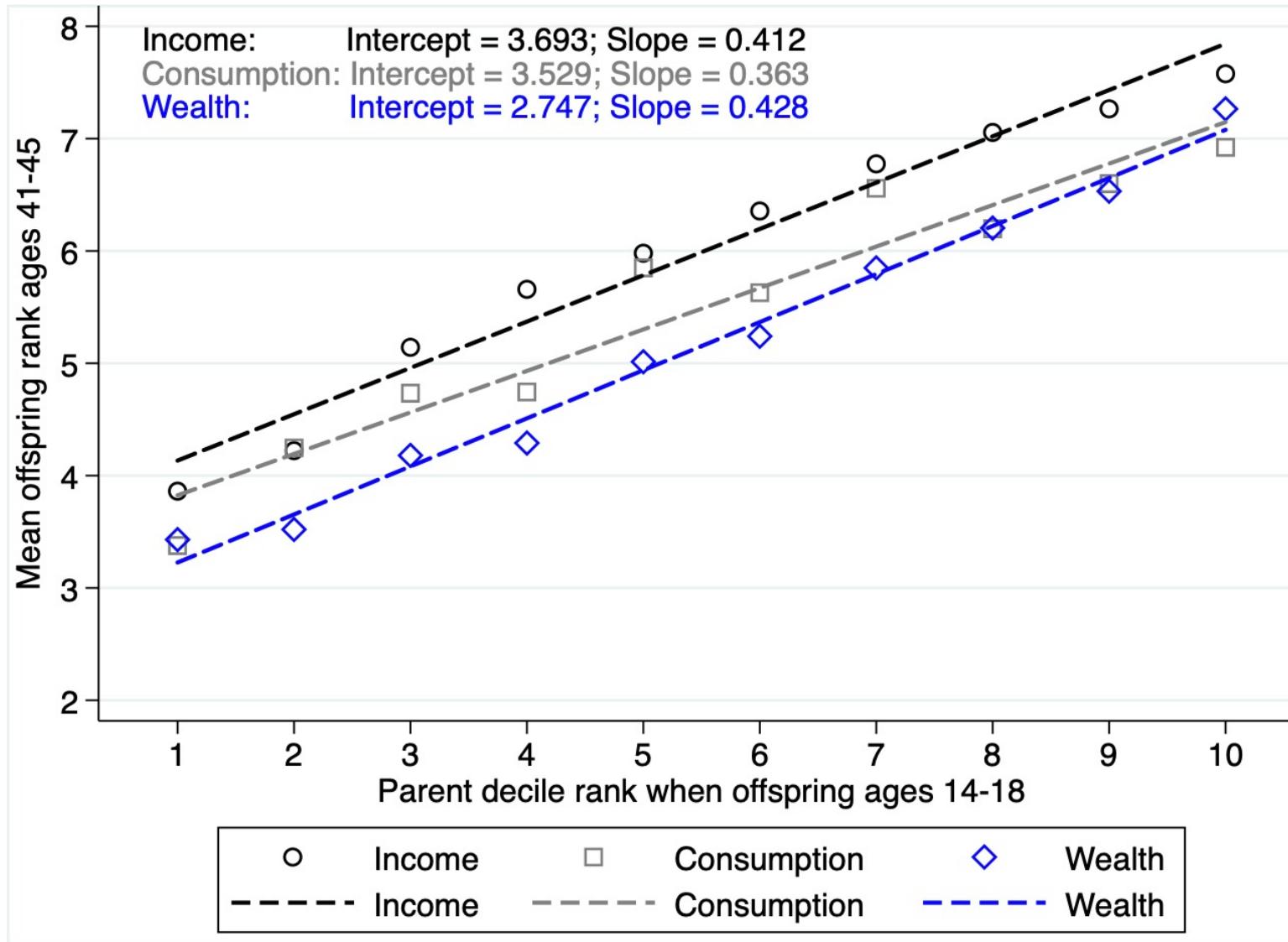
Takeaway #1:

Y mobility > C & W mobility
at bottom of distribution
at ages 31-35

Takeaway #2:

Y mobility < C & W mobility
at top of distribution
at ages 31-35

Rank-rank coefficient: Ages 41-45



Takeaway #1:

Y mobility > C & W mobility
at bottom of distribution
at ages 41-45

Takeaway #2:

Y mobility < C & W mobility
at top of distribution
at ages 41-45

Takeaway #3:

Wealth slope is very different at
ages 31-35 than ages 41-45.
Wealth slope increases from 0.351
to 0.428 (while income and
consumption slopes both fall
between ages 31-35 and 41-45).

Table 2: Alternative measures of the intergenerational correlation by resource measure

	Income	Consumption	Wealth
Ages 31-35			
Rank-rank slope	0.464 (0.013)	0.419 (0.014)	0.351 (0.014)
Intergenerational Elasticity	0.553 (0.016)	0.425 (0.014)	0.259 (0.020)
Gini mobility	0.546	0.472	0.407
Ages 41-45			
Rank-rank slope	0.412 (0.023)	0.363 (0.024)	0.428 (0.024)
Intergenerational Elasticity	0.485 (0.032)	0.351 (0.025)	0.291 (0.031)
Gini mobility	0.489	0.443	0.466

At ages 31-35:
Y mobility < C mobility < W mobility
across all three measures

At ages 41-45:
W mobility < Y mobility < C mobility
for rank-rank but not IGE or Gini mobility

Notes: Parental resources are measured when the offspring is 14-18-years old. Offspring resources are measured when the child is 31-35-years old or 41-45-years old. Standard errors in parentheses.

Consumption mobility is not higher than income mobility because of measurement error from imputation. Food mobility also exceeds income mobility.

Table 2: Intergenerational mobility adding food			
	Income	Consumption	Food
	Ages 31-35		
Rank-rank slope	0.464 (0.013)	0.419 (0.014)	0.346 (0.015)
Intergenerational Elasticity	0.553 (0.016)	0.425 (0.014)	0.352 (0.018)
Gini mobility	0.546	0.472	0.389

Notes: Parental resources are measured when the offspring is 14-18-years old. Offspring resources are measured when the child is 31-35-years old. Standard errors in parentheses.

Is higher consumption mobility uniform across the distribution at ages 31-35?

Income transition matrix

		Offspring				
		1st quintile	2nd quintile	3rd quintile	4th quintile	5th quintile
Parents	1st quintile	48.8%	24.2%	19.7%	6.1%	1.3%
	2nd quintile	24.0%	33.4%	21.3%	16.6%	4.7%
	3rd quintile	13.4%	26.8%	27.1%	20.2%	12.4%
	4th quintile	8.2%	18.6%	23.6%	25.7%	23.9%
	5th quintile	7.0%	13.2%	22.5%	26.1%	31.2%

Consumption transition matrix

		Offspring				
		1st quintile	2nd quintile	3rd quintile	4th quintile	5th quintile
Parents	1st quintile	53.9%	25.3%	12.8%	6.1%	1.8%
	2nd quintile	32.0%	29.9%	19.5%	11.9%	6.6%
	3rd quintile	22.3%	27.3%	23.9%	16.3%	10.1%
	4th quintile	15.7%	23.7%	23.5%	22.2%	14.9%
	5th quintile	9.4%	15.2%	22.2%	26.6%	26.5%

Why is consumption mobility higher than income mobility?

- ❑ Other studies find consumption mobility greater than income mobility.
 - ❑ Intragenerational mobility: Japelli & Pistaferri (2006); Fisher & Johnson (2006); Fisher & Johnson (2021)
 - ❑ Intergenerational mobility: Charles, Danziger, Li, and Schoeni (2014); Attanasio & Pistaferri (2016)

- ❑ Attanasio and Pistaferri (2016) hypothesize that intergenerational consumption mobility is higher because of a transfer of preferences across generations, and that credit and insurance market frictions faced by the two generations may be different.

Where does wealth mobility differ between ages 31-35 and ages 41-45?

Wealth transition matrix – ages 31-35

		Offspring				
		1st quintile	2nd quintile	3rd quintile	4th quintile	5th quintile
Parents	1st quintile	52.9%	27.6%	13.2%	4.7%	1.6%
	2nd quintile	37.6%	36.2%	18.7%	4.9%	2.7%
	3rd quintile	30.5%	28.6%	23.7%	12.3%	4.9%
	4th quintile	20.2%	23.1%	27.5%	21.2%	8.0%
	5th quintile	17.2%	17.3%	24.3%	22.8%	18.4%

Wealth transition matrix – ages 41-45

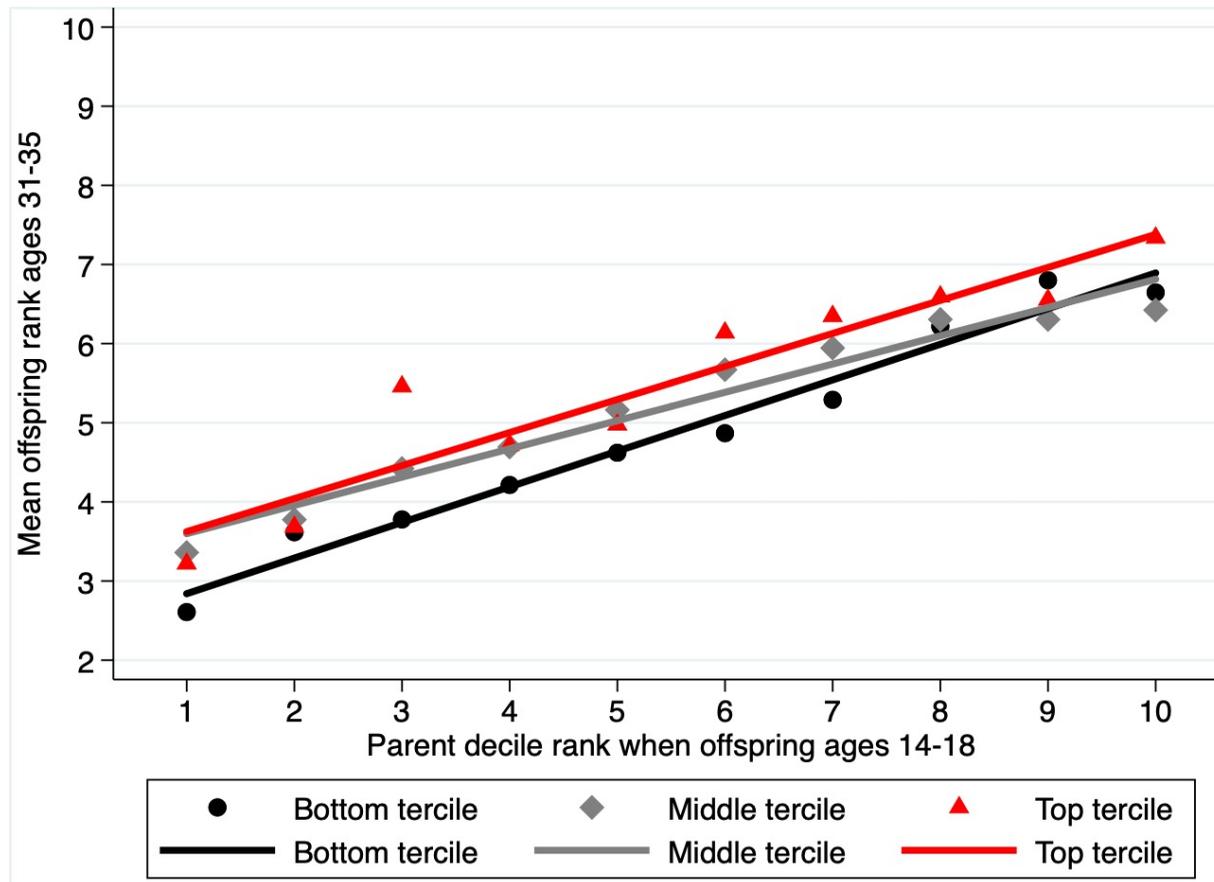
		Offspring				
		1st quintile	2nd quintile	3rd quintile	4th quintile	5th quintile
Parents	1st quintile	45.4%	25.8%	13.1%	9.8%	5.9%
	2nd quintile	27.0%	30.7%	28.2%	12.0%	2.1%
	3rd quintile	16.5%	23.7%	30.6%	16.6%	12.6%
	4th quintile	8.6%	16.9%	30.9%	28.8%	14.8%
	5th quintile	7.5%	11.7%	21.2%	29.4%	30.3%

Additional results

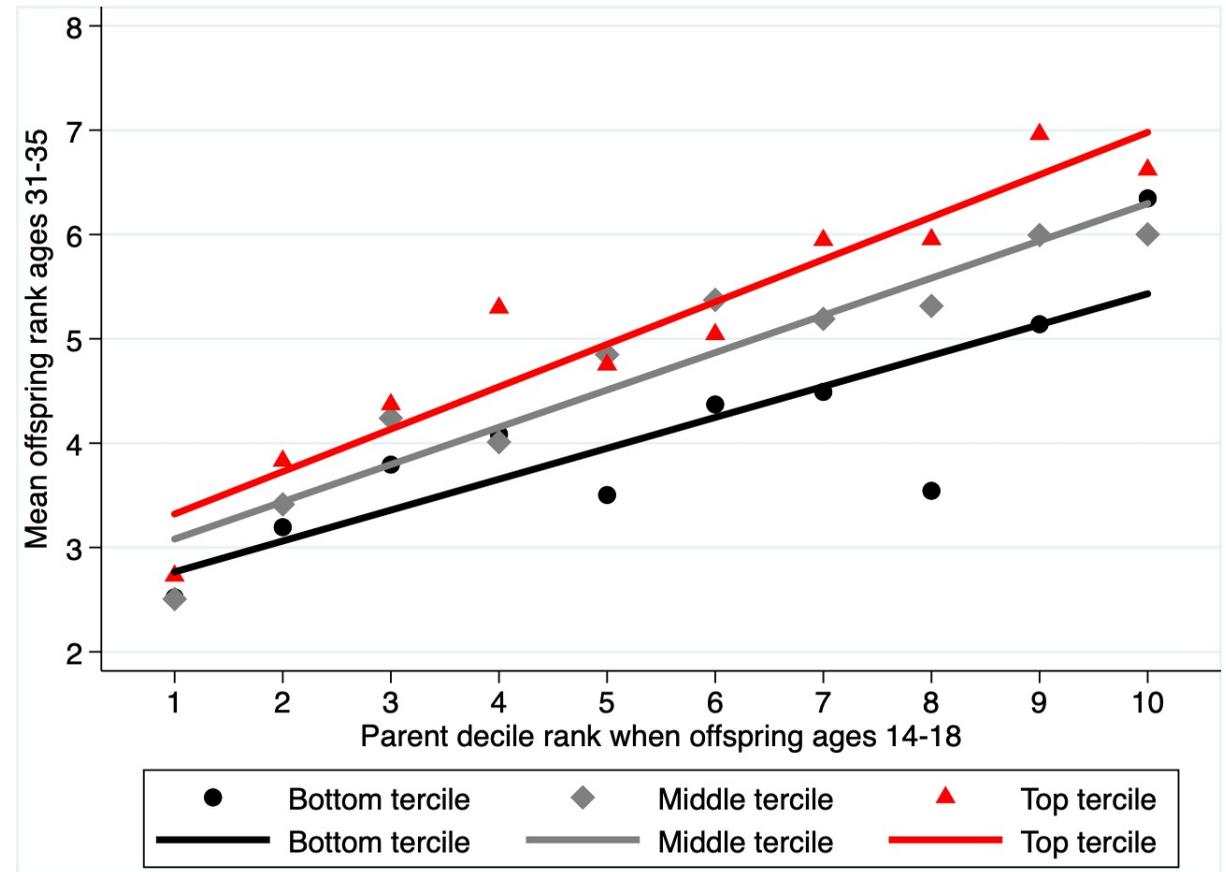
- ❑ Results by parental wealth
- ❑ The Chetty et al. replication section
 - ❑ Rank-rank by race (Chetty, Hendren, Jones, and Porter 2020)
 - ❑ Absolute mobility by birth year (Chetty, Grusky, Hell, Hendren, Manduca, and Narang 2017)

Rank-rank results by parental wealth tercile*

Income

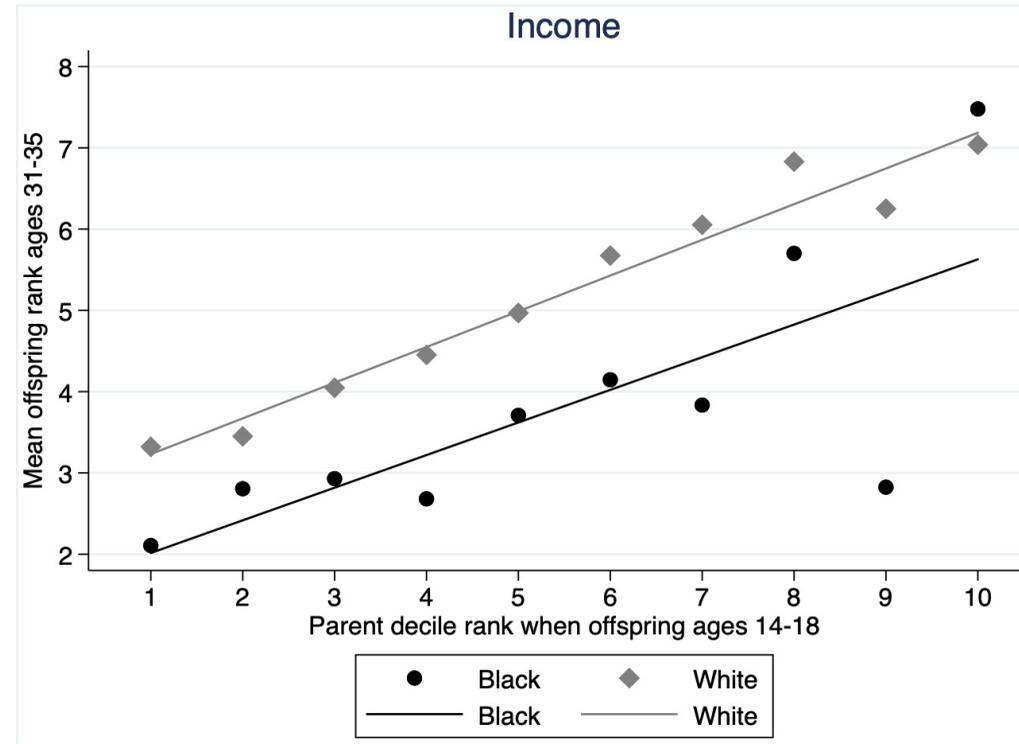


Consumption

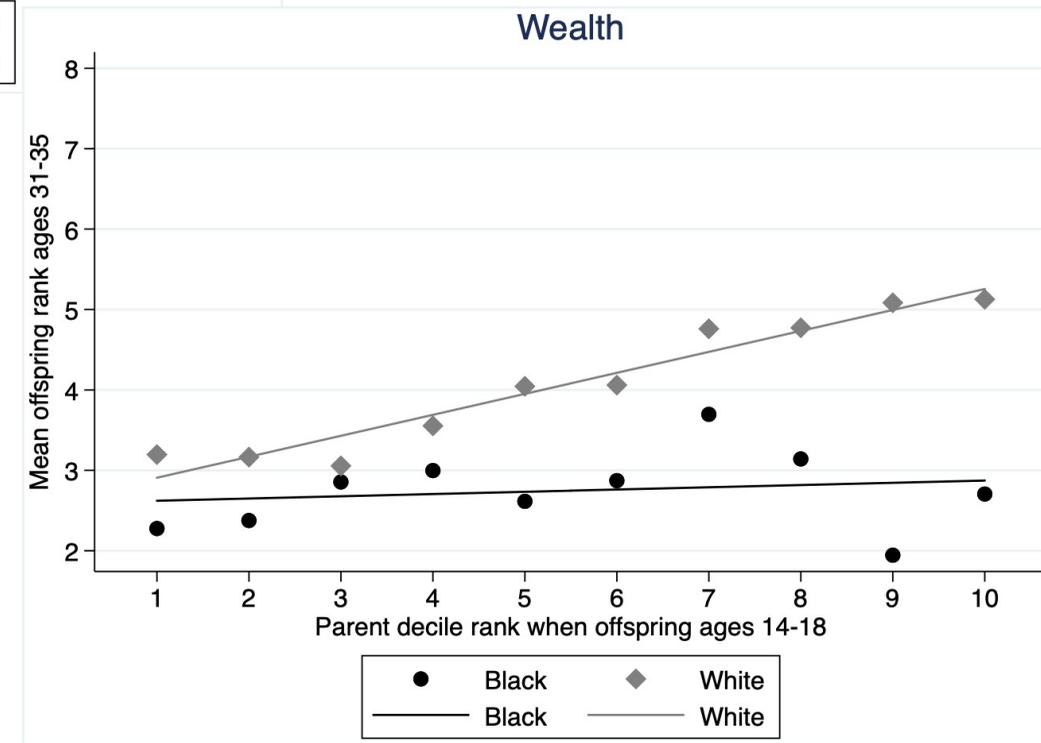
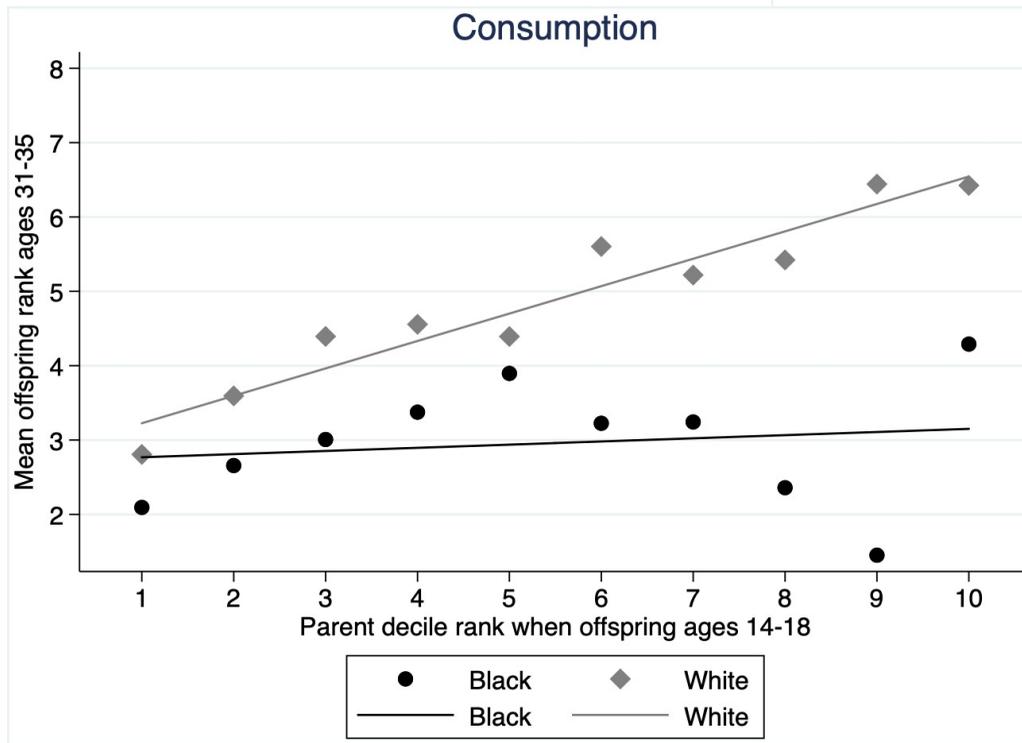
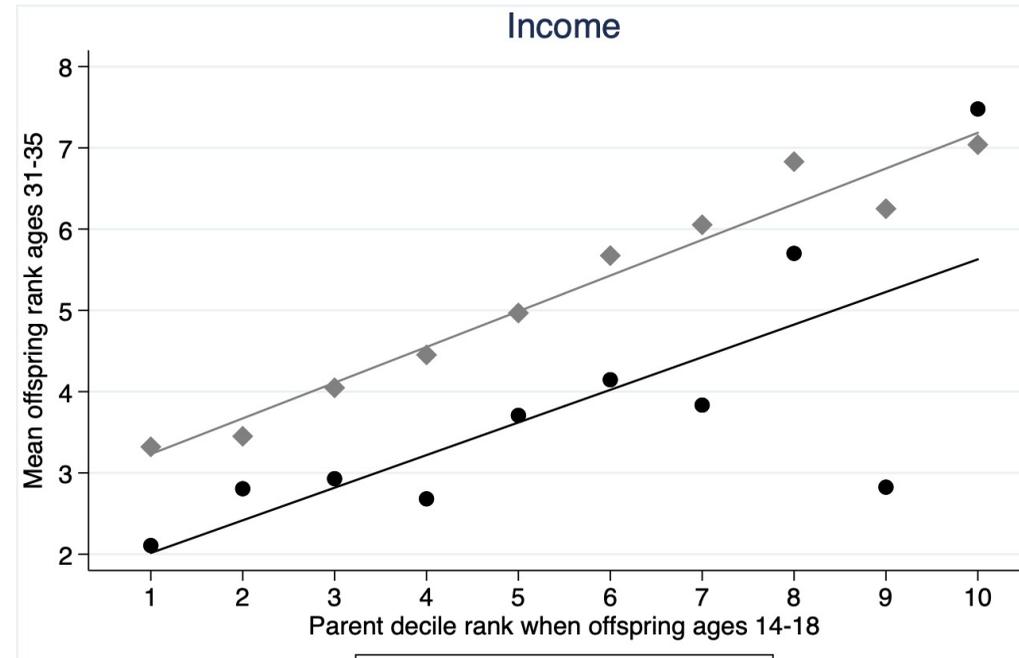


* Uses residualized parental wealth to account for life-cycle bias.

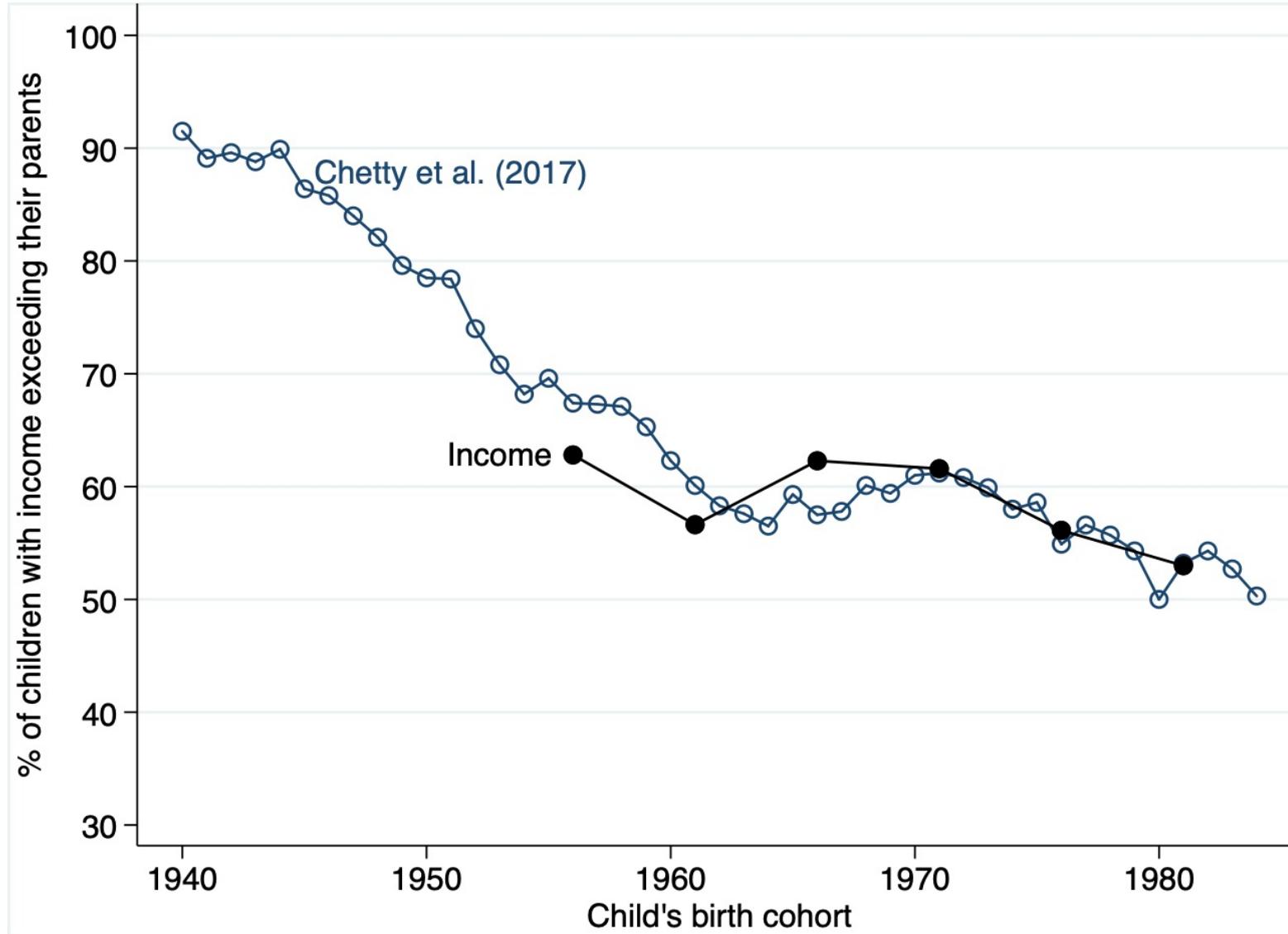
Rank-rank by race



Rank-rank by race

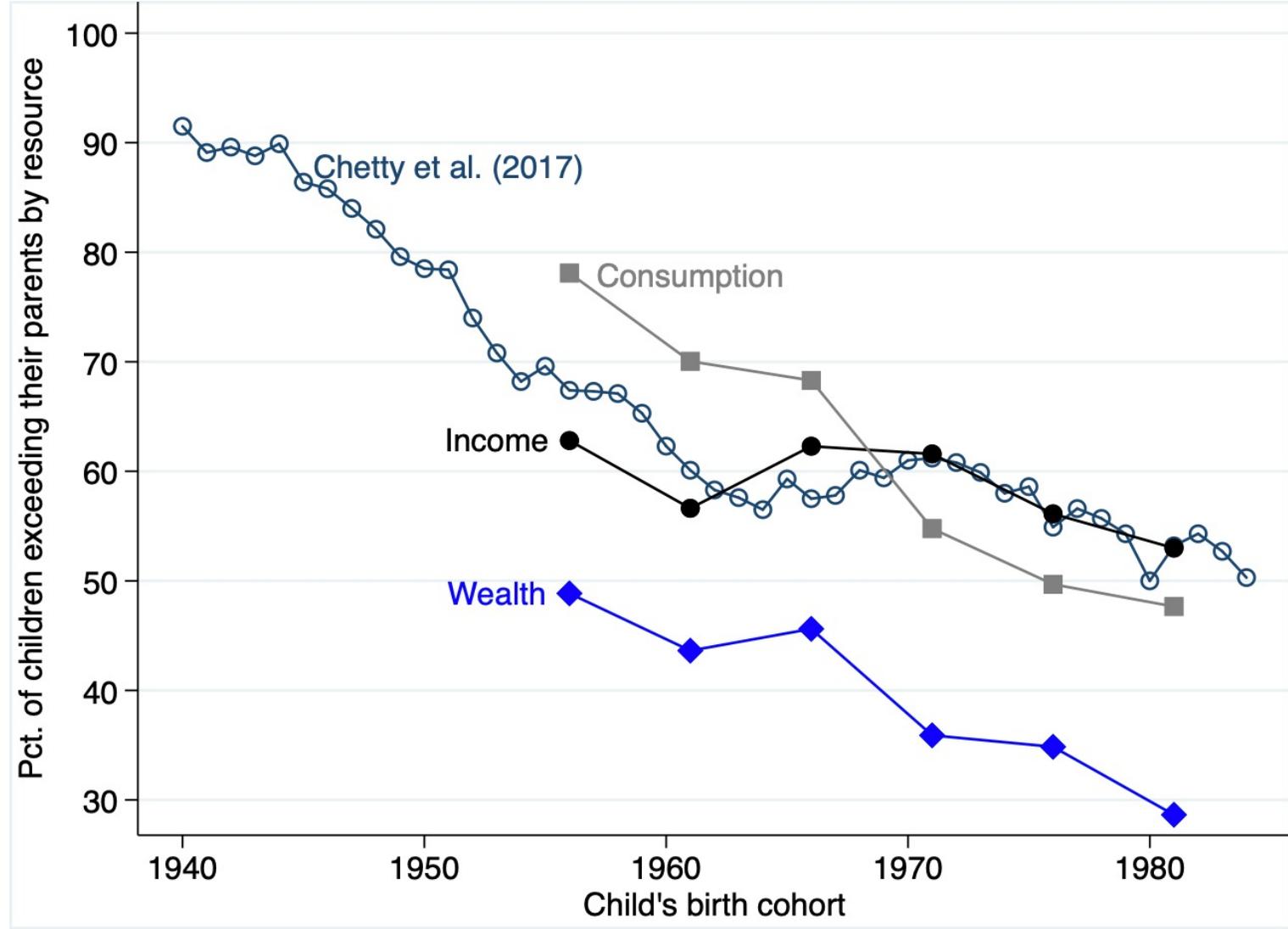


Percent of children with income greater than their parents by birth year (ages 31-35)



Chetty, Grusky, Hell, Hendren, Manduca, and Narang, "The Fading American Dream: Trends in Absolute Income Mobility since 1940," *Science* 2017.

Percent of children with Y, C, or W greater than their parents by birth year (ages 31-35)



Chetty, Grusky, Hell, Hendren, Manduca, and Narang, "The Fading American Dream: Trends in Absolute Income Mobility since 1940," *Science* 2017.

Conclusions

- More consumption mobility than income mobility (using typical measures that summarize mobility with one parameter)
 - Higher consumption mobility comes from the top 80% of the distribution. Less consumption mobility in the bottom 20%
- Wealth mobility falls between ages 31-35 and ages 41-45
 - Less mobility in the top 60% of the wealth distribution at ages 41-45
- Higher parental wealth is correlated with:
 - More income and more consumption mobility at the bottom
 - Less income and less consumption mobility at the top