Wealth Distribution

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Contents

Introduction

We study research on the wealth distribution (and later the earnings distribution)

1. The facts to be explained
   main fact: the top 1% hold 1/3 of all wealth
2. Basic models
3. Recent research
4. Possible projects

Data Sources

What is Wealth?

Financial:

- stocks, bonds, mutual funds
- net of debt

Non-financial:

- homes, cars, furnishings

Retirement wealth:

- present value of defined benefit pensions
- present value of social security claims

SCF: Survey of consumer finances.

- Detailed wealth data.
- Oversamples the rich.
- One cross-section every 3 years.
- Covers about 3,500 households.

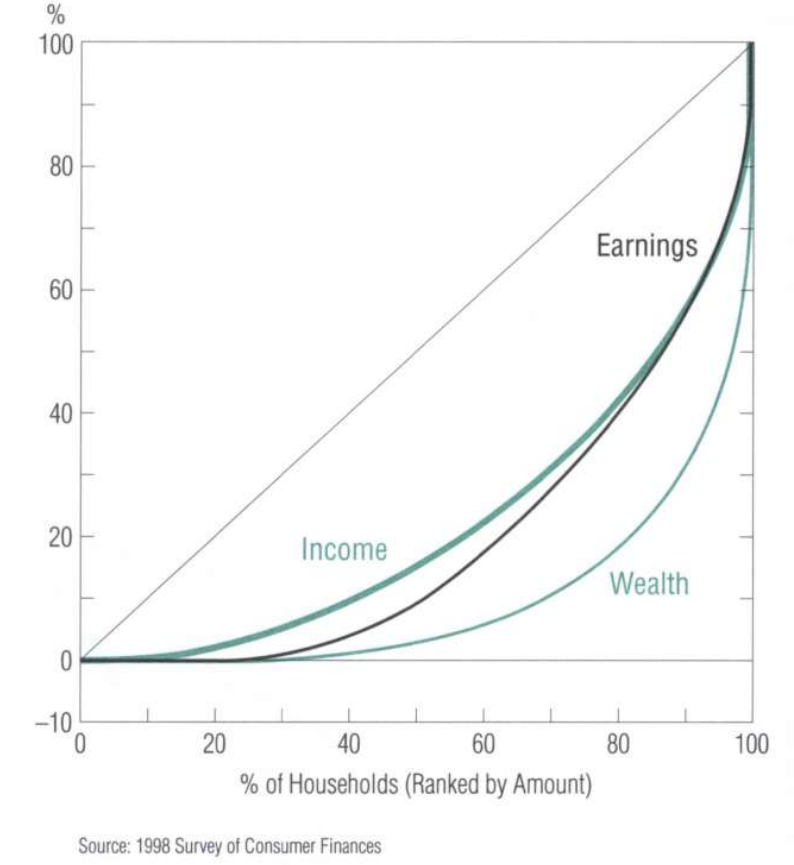
PSID: Panel Study of Income Dynamics

- Panel starting in 1968.
- 50,000 individuals.
- Wealth data since 1984 at 5 year intervals.
- Fails to oversample the rich.
- Painful to work with (very poorly organized dataset)

Popular measures of inequality

Lorenz curve:

- shows the fraction of y held by the poorest $x\%$ of households.
- straight line represents completely equal distribution.
- the more "bowed" the Lorenz curve, the higher inequality.



Source: Rodríguez et al. (2002)

Gini coefficient

- Definition: $\frac{\text{Area between 45-degree line and Lorenz curve}}{\text{Area below the 45-degree line}}$.
- Gini is between 0 and 1 for variables that are positive.
- Equal distribution has Gini of 0.

Key features of the data

Wealth is more concentrated than earnings and income.

Wealth Gini: **0.8**.

Top 1% hold **35%** of wealth

Bottom 10% hold negative wealth

Bottom **40%** hold negligible wealth.

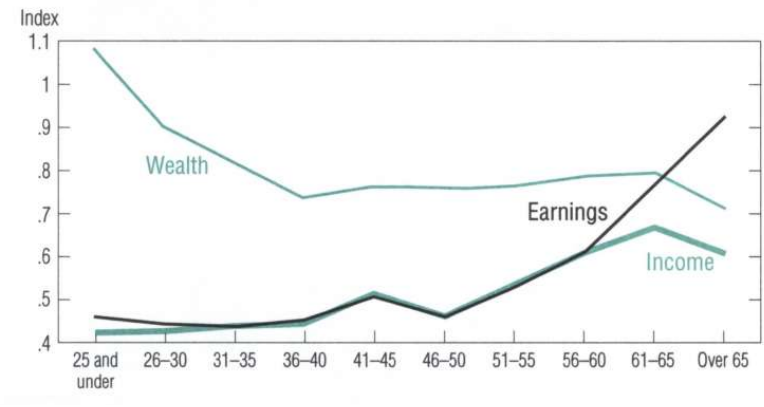
Partitioning the Sample by Age

Does age account for a large part of inequality?

Gini coefficients within age classes are not much lower that Gini coefficients for all ages combined.

	Full sample	Within age classes
Earnings:	0.61	ca. 0.5
Income:	0.55	ca. 0.5
Wealth:	0.80	ca. 0.8

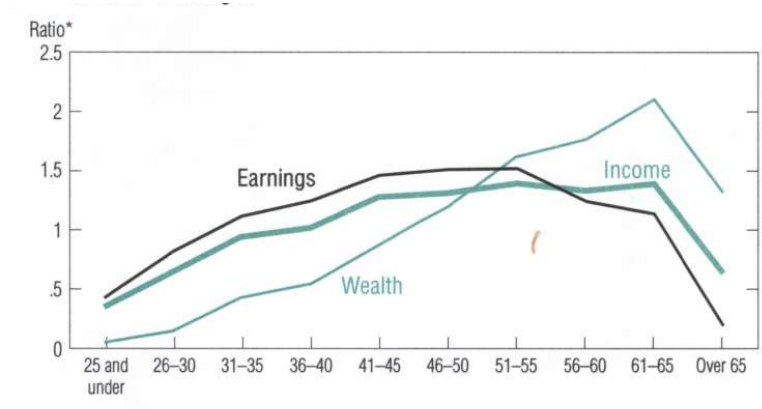
Gini Coefficients Within Age Classes



Source: Rodríguez et al. (2002)

Wealth is more unequally distributed that income in all age classes.

Age Profiles



Source: Rodríguez et al. (2002)

The figure shows mean wealth / income / earnings by age.

Wealth peaks much later than earnings.

Quantitative Theory

Can the standard life-cycle model account for wealth concentration?

Starting point: Huggett (1996)

This is the same as our model, except for uncertain lifespans.

Wealth Distribution in the Model Economy

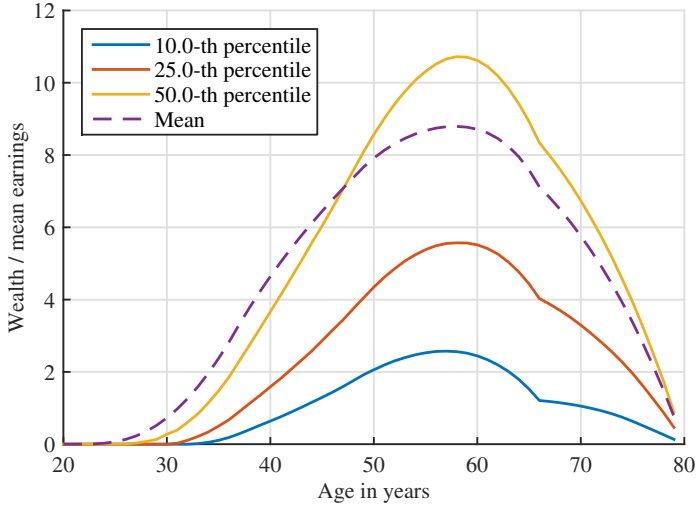
Fraction held by top	1%	5%	20%	Gini	Fraction neg. wealth
Model	9.9	31.0	73.2	0.67	17%
Huggett (1996)	10.8	32.4	68.9	0.70	19%
U.S. data	**34.7**	57.8	81.7	0.80	11%

The model has too many households without wealth.

Still, wealth inequality is lower than in the data.

Excercise: compute these stats from our model.

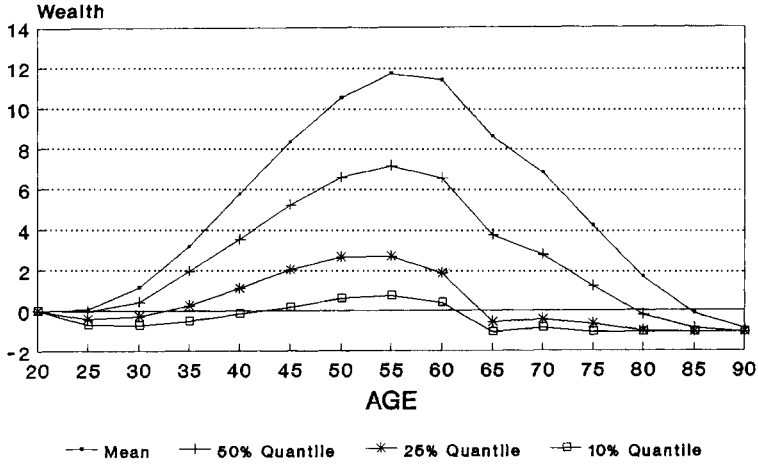
Wealth Distribution By Age



Almost no model households enter into retirement without assets.

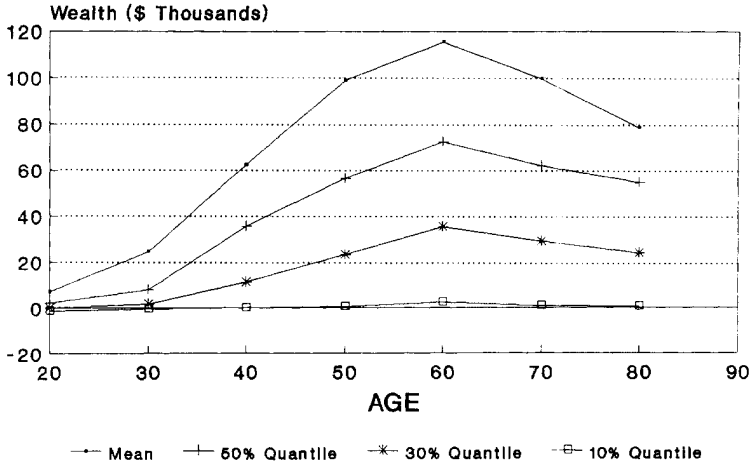
Most young households have very little wealth.

Huggett (1996)



The fraction of households without retirement assets is much larger with uncertain lifetimes.

U.S. Data



US Economy

Households decumulate wealth more slowly.

Almost 10% enter into retirement without wealth.

10% of households hold no wealth at all ages.

Young households hold much more wealth than in the data.

Wealth Ginis by Age: Data

Wealth inequality is declining with age in the data.

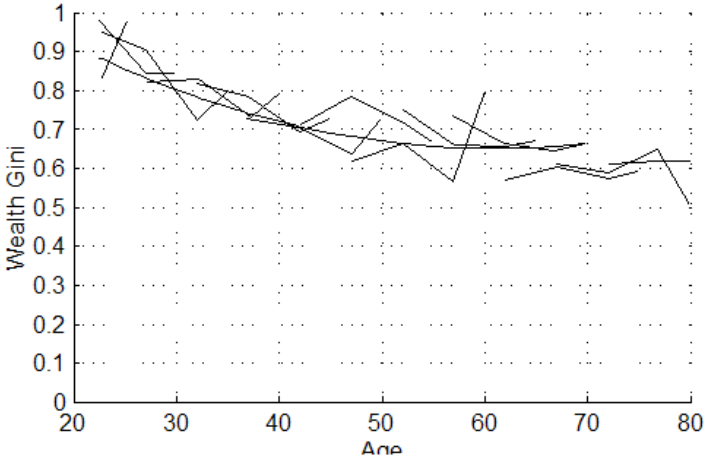
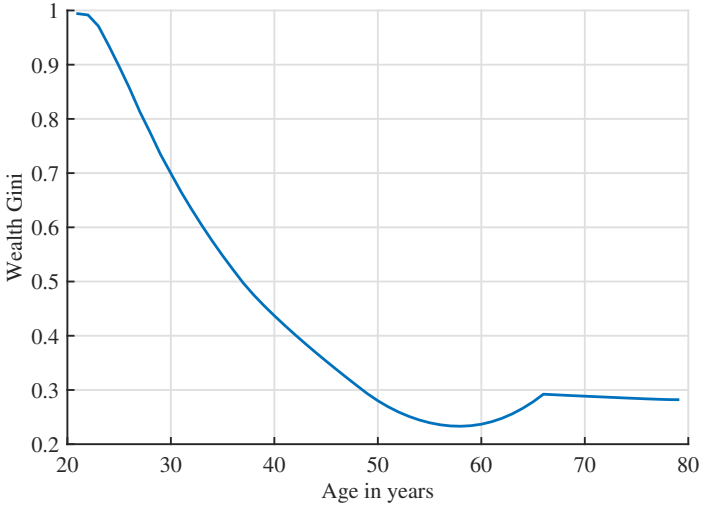


Figure 1: Gini coefficients of wealth by age. PSID data.

Source: Hendricks (2007)

Wealth Ginis by Age: Model



Wealth inequality declines far too much in the model.

An Accounting Problem

Given the estimated earnings process, it is not feasible for Huggett's households to accumulate the highest SCF wealth observations.

- The earnings process is estimated from the PSID.
- Wealth is estimated from the SCF.
- The SCF over-samples the rich; the PSID does not.

The model cannot account for the highest wealth observations *by construction*.

- The highest PSID incomes are simply not large enough.

Problem: There is no publicly available U.S. dataset from which an untruncated earnings process could be estimated.

- Tax data would solve the problem, but are not publicly available.

One solution: Castaneda et al. (2003)

- Invent an earnings process that is consistent with the cross-sectional distribution of earnings from the SCF

Project: How could one combine the cross-sectional information from SCF and tax data with the longitudinal information from the PSID to estimate the earnings process?

Who Holds the Wealth?

Which other observations can be used to "test" the model?
Do the "right agents" hold the "right amounts" of wealth?

Two potential challenges for life-cycle theory:

Wealth inequality among households with similar lifetime incomes.
Intergenerational persistence of wealth.

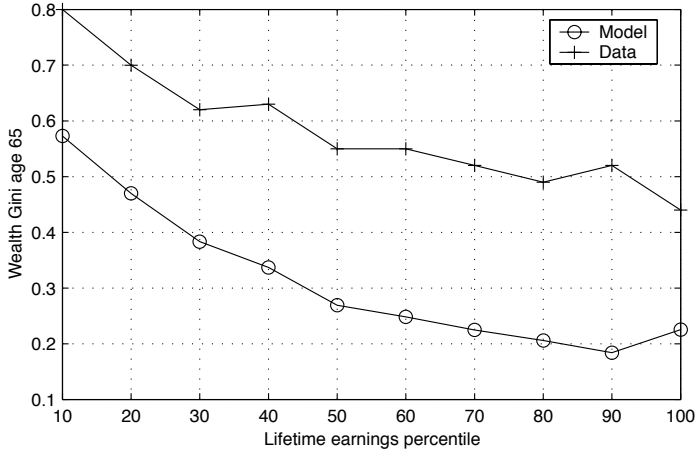
Wealth Inequality and Lifetime Incomes

Life-cycle intuition: Differences in wealth are due to:

- differences in lifetime incomes
- differences in age
- differences in timing of earnings over the life-cycle

Therefore: Models "should" imply little wealth inequality among households of similar lifetime incomes near retirement.

Evidence



Data:

Wealth Ginis within lifetime income deciles average 0.55 (Venti and Wise, 2000)

Life-cycle model implies Gini coefficients around 0.35.

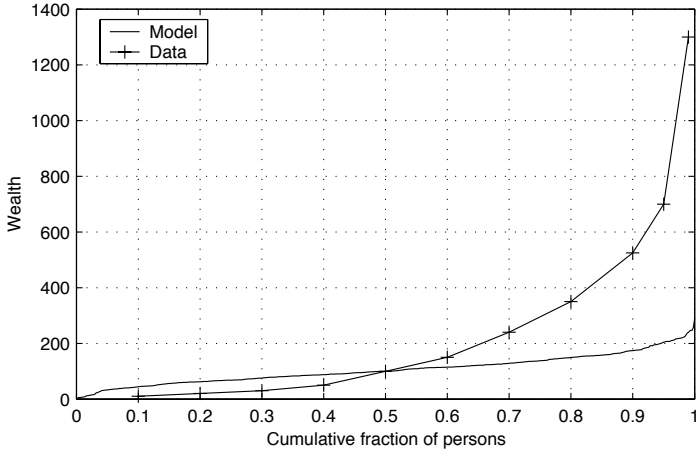
Wealth Distribution Within Lifetime Income Deciles

Data:

- Each lifetime income decile contains households with "high" and "low" wealth.

Life-cycle model:

- Most households hold similar amounts of wealth.
- There are no wealth poor households with high incomes.



Life-cycle model versus Venti and Wise (2000) data (5th lifetime income decile)

Why is this important?

This observation directly "tests" the basic life-cycle intuition that differences in income and age drive differences in wealth.

Suggests that a large source of wealth inequality has not been identified.

Conclusion

Huggett's model goes a long way towards accounting for wealth inequality.
Main discrepancies:

- Model misses the very top of the distribution.
  This may be due to the truncated earnings process.
- Wealth is decumulated too slowly at old age.
- The model only accounts for the cross-sectional distribution
  How does it do with respect to other moments?

Papers for Student Presentations

- Rate of return heterogeneity: CAMPANALE (2007)
- Preference heterogeneity: Cozzi (2014)
- Hyperbolic discounting: Tobacman (2009)
- Entrepreneurship: Cagetti and De Nardi (2009), Hurst and Lusardi (2004)
- Alternative earnings processes: Nardi et al. (2016)
- Evolution of the wealth distribution over time: I don't see any references with structural models.

If you find other interesting papers, feel free to present those.

A recent survey is Nardi (2015).

References

Cagetti, M. and M. De Nardi (2009): "Estate Taxation, Entrepreneurship, and Wealth," *The American Economic Review*, 99, 85–111.

CAMPANALE, C. (2007): "Increasing returns to savings and wealth inequality," *Review of Economic Dynamics*, 10, 646–675.

Castaneda, A., J. Diaz-Gimenez, and J. V. Rios-Rull (2003): "Accounting for the US earnings and wealth inequality," *Journal of political economy*, 111, 818–857.

Cozzi, M. (2014): "Risk Aversion Heterogeneity and Wealth Inequality," .

Hendricks, L. (2007): "How important is discount rate heterogeneity for wealth inequality?" *Journal of Economic Dynamics and Control*, 31, 3042 – 3068.

Huggett, M. (1996): "Wealth distribution in life-cycle economies," *Journal of Monetary Economics*, 38, 469–494.

Hurst, E. and A. Lusardi (2004): "Liquidity Constraints, Household Wealth, and Entrepreneurship," *Journal of Political Economy*, 112, 319–347.

Nardi, M. D. (2015): "Quantitative Models of Wealth Inequality: A Survey," Working Paper 21106, National Bureau of Economic Research.

Nardi, M. D., G. Fella, and G. P. Pardo (2016): "The Implications of Richer Earnings Dynamics for Consumption, Wealth, and Welfare," Working Paper 21917, National Bureau of Economic Research.

Rodríguez, S. B., J. Díaz-Giménez, V. Quadrini, and J.-V. Ríos-Rull (2002): "Updated Facts on the US Distributions of Earnings, Income, and Wealth," *Federal Reserve Bank of Minneapolis Quarterly Review*, 26, 2–35.

Tobacman, J. (2009): "Endogenous Effective Discounting, Credit Constraints, and Wealth Inequality," *The American Economic Review*, 99, 369–373.

Venti, S. F. and D. A. Wise (2000): "Choice, Chance, and Wealth Dispersion at Retirement," Working Paper 7521, National Bureau of Economic Research.