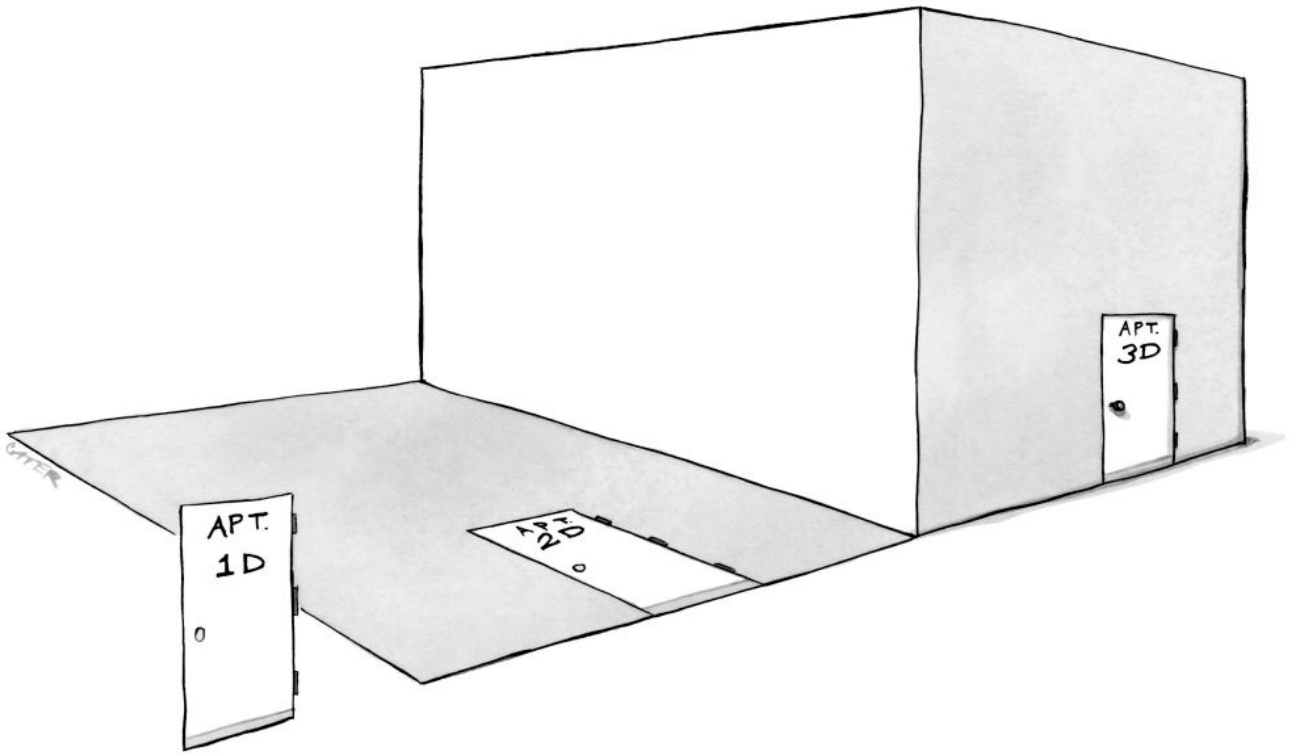


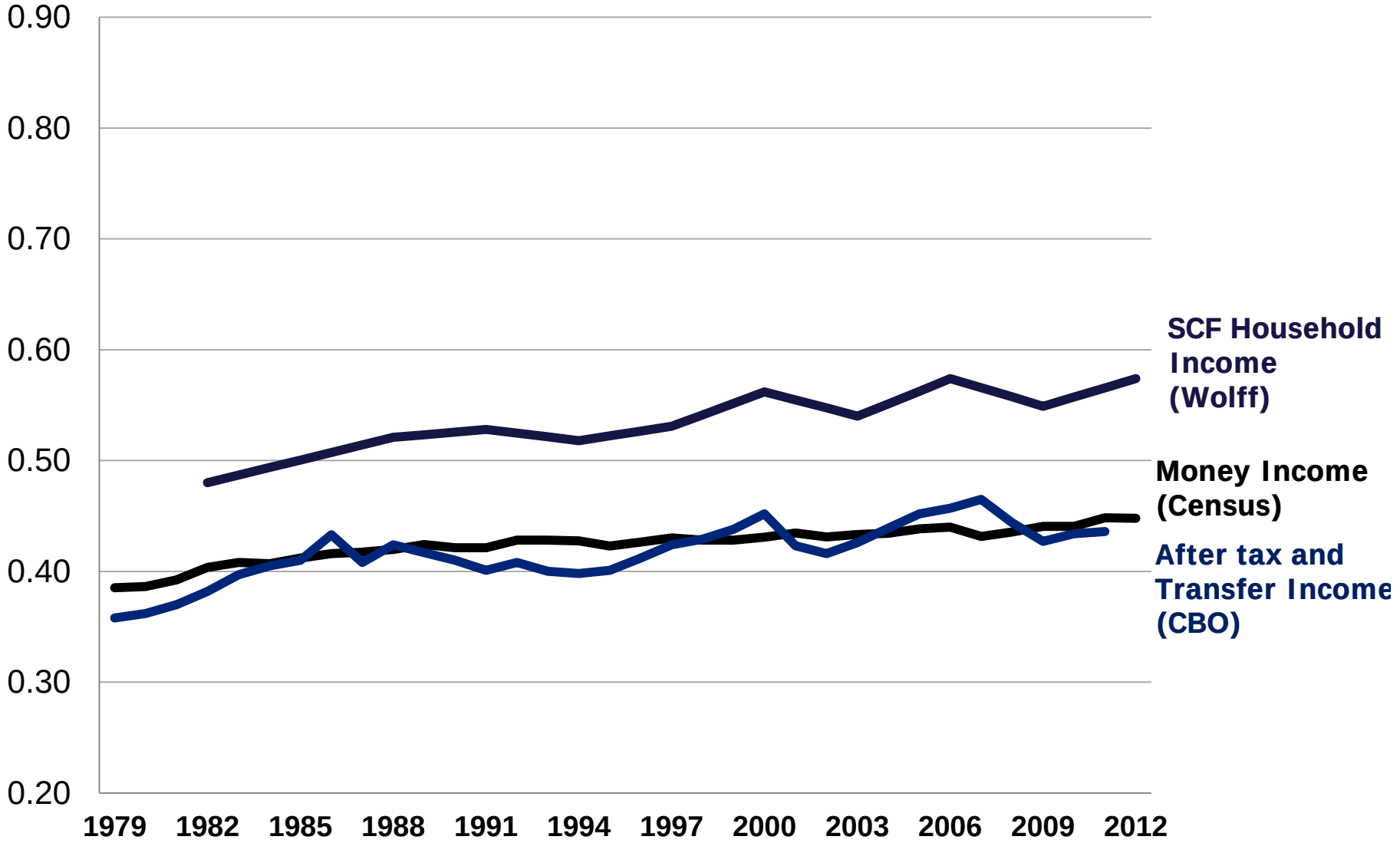
Inequality in 3D: Income, Consumption, and Wealth

David Johnson
Jonathan Fisher
Tim Smeeding
Jeff Thompson

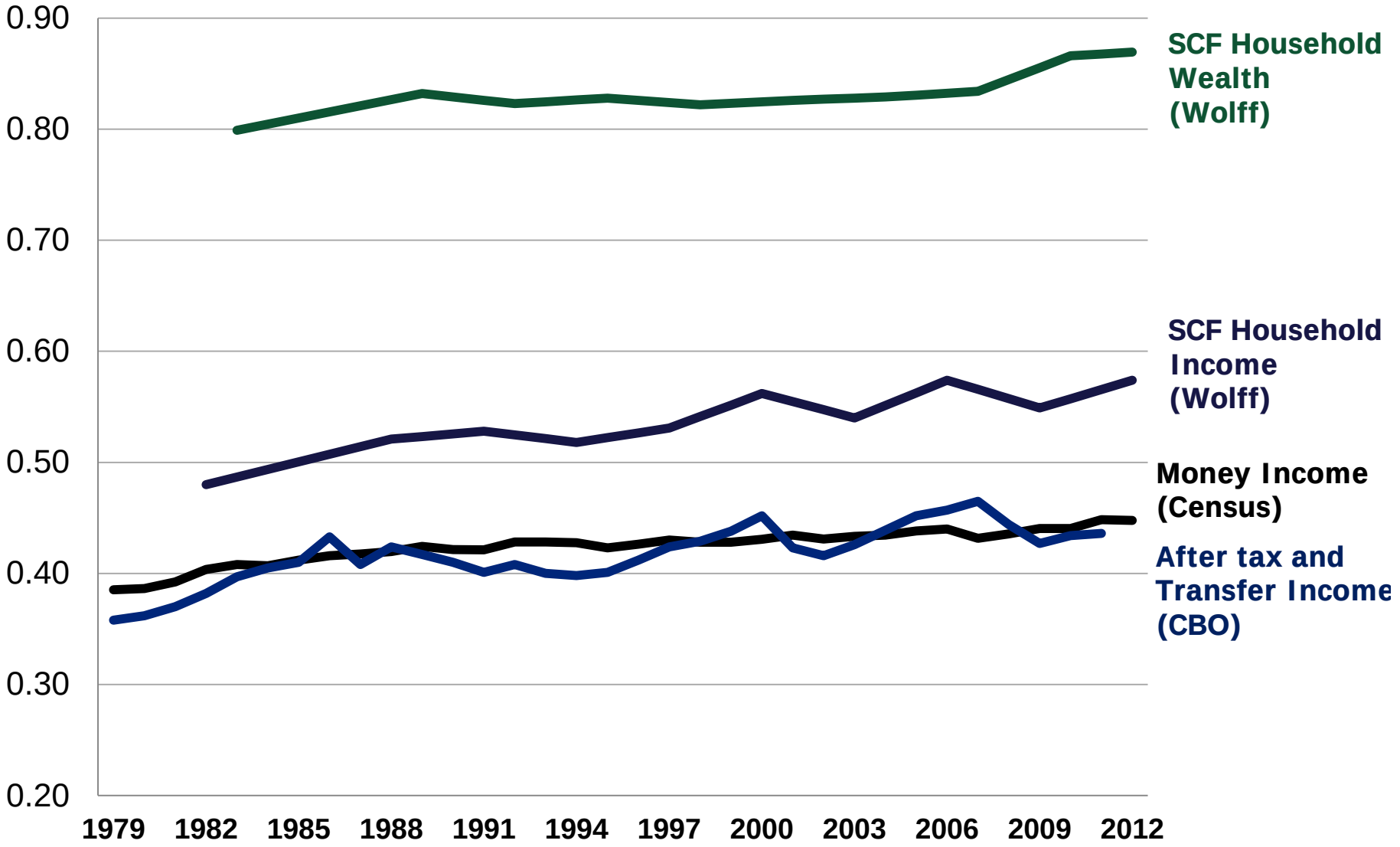
WID.world conference Dec 14-15, 2017

Thanks to Russell Sage Foundation and Washington Center for Equitable Growth

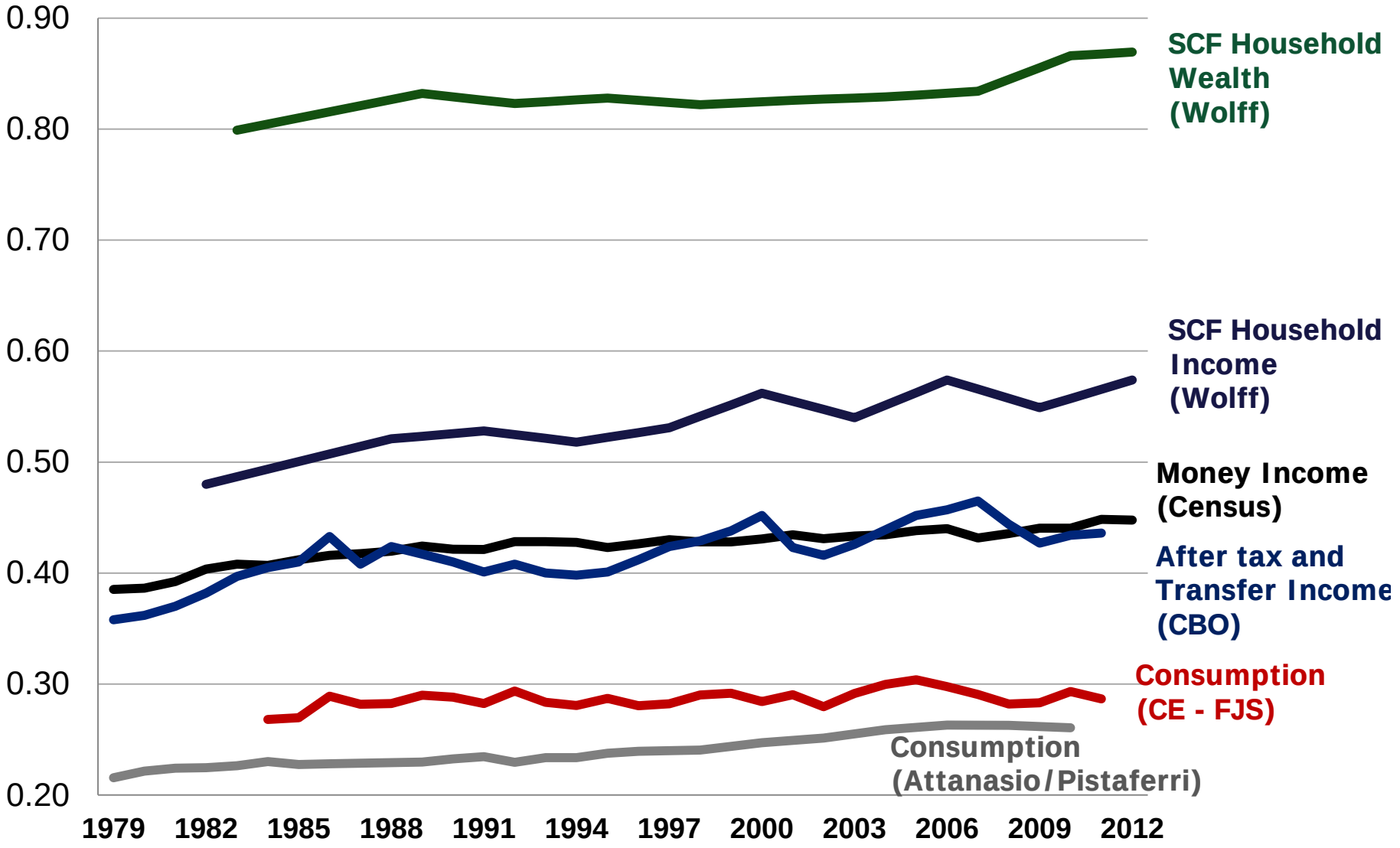
Various Ginis for income show increasing inequality



Wealth inequality is higher and has increased more than income in recent years



Consumption inequality is lower and has increased at rates similar to income



Why three dimensions?

- *Report by the Commission on the Measurement of Economic Performance and Social Progress* (Stiglitz et al., 2009) wrote
  - "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."
- Income, consumption, and wealth are not perfectly correlated, and there are life-cycle patterns in all three
- Need to account for budget constraint

$$c_t = y_t - a_{t+1} + a_t(1 + r_t)$$

The need for using one data set

“The conclusion we draw is that one should be very cautious when combining data on inequality in wages and earnings from the CPS or PSID, and data on inequality in net worth from the SCF.”

- Heathcote, Perri, Violante (2010)

Data landscape in the United States

Survey of Consumer Finances (SCF)

- Dual-Frame Sample
  - National Area Probability Sample
  - List Sample – High wealth households
- Triennial: 1989-2016
- Unit of observation is the primary economic unit
- **Income, wealth, and some consumption**
  - Consumption for food, housing, and vehicles

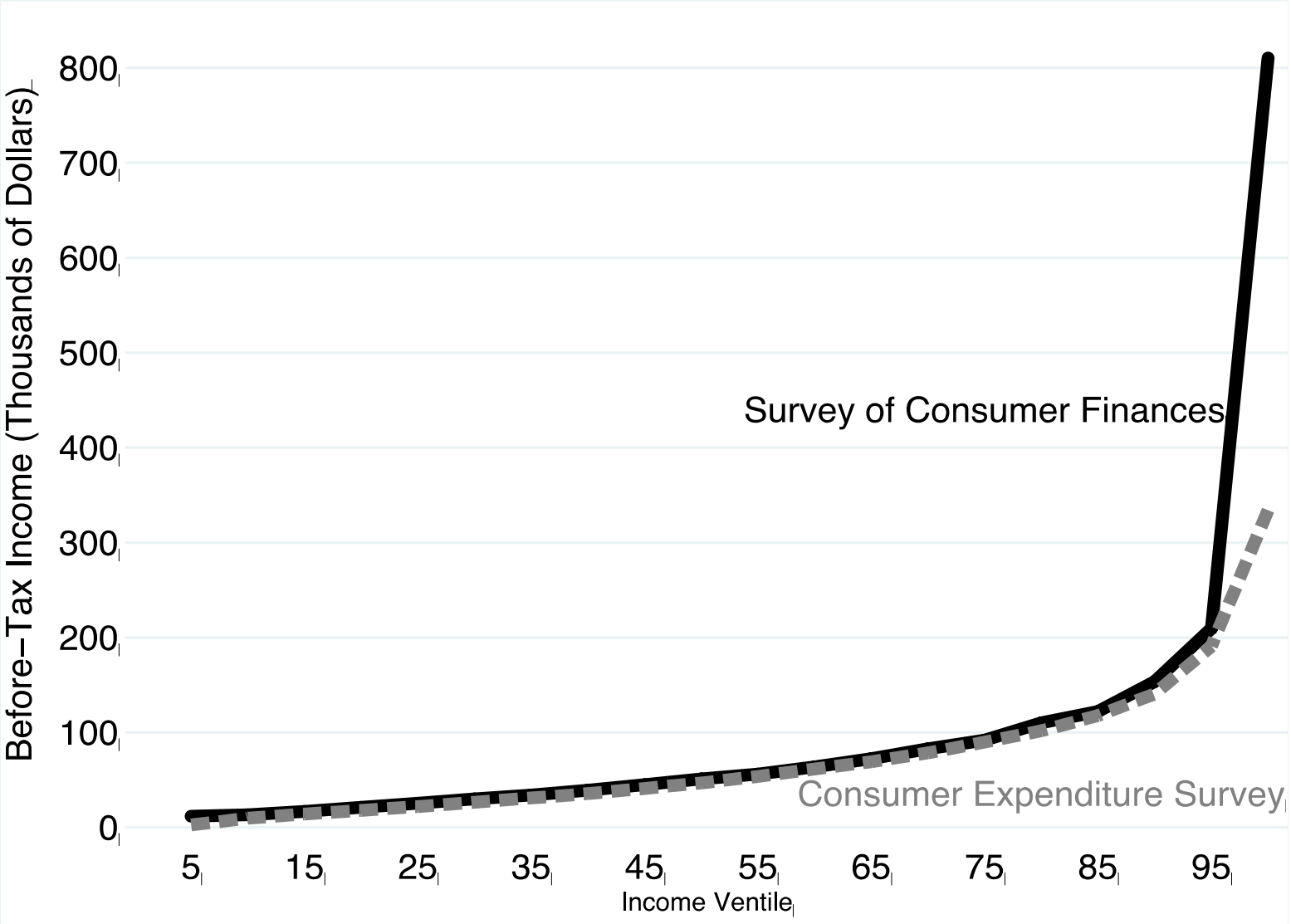
Consumer Expenditure (CE) Survey

- National Area Probability Sample
- Annual: 1980-2017
- Used for weights for Consumer Price Index
- Unit of observation is the consumer unit
- **Income, consumption, and some wealth**
  - Wealth includes owned home, vehicles, and some assets

Panel Study of Income Dynamics (PSID)

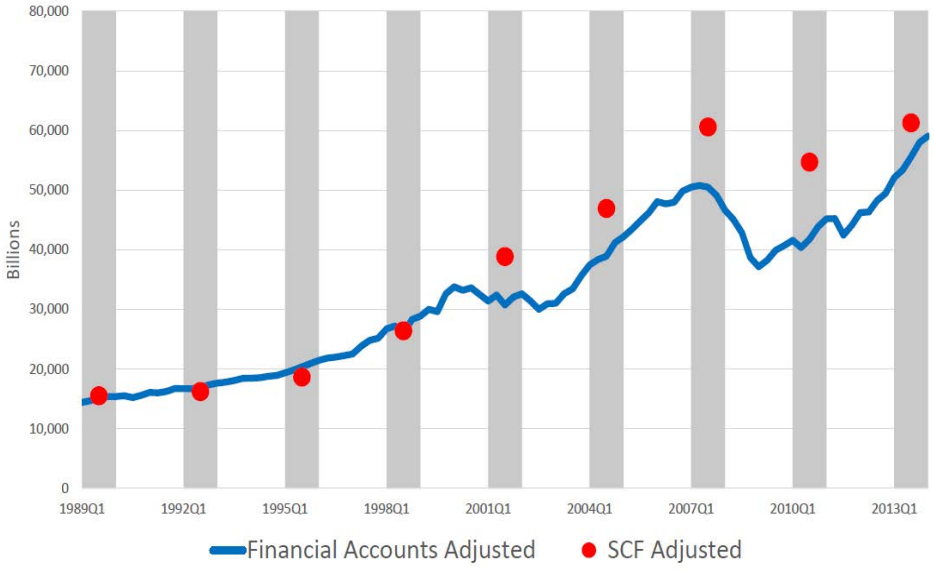
- Nationally representative data beginning in 1968
- Biennial survey since 1997
- Unit of observation is the family
- **Income** every wave
- **Wealth and consumption** every wave since 1999

SCF captures more income at the top
Ratio of SCF to CE income

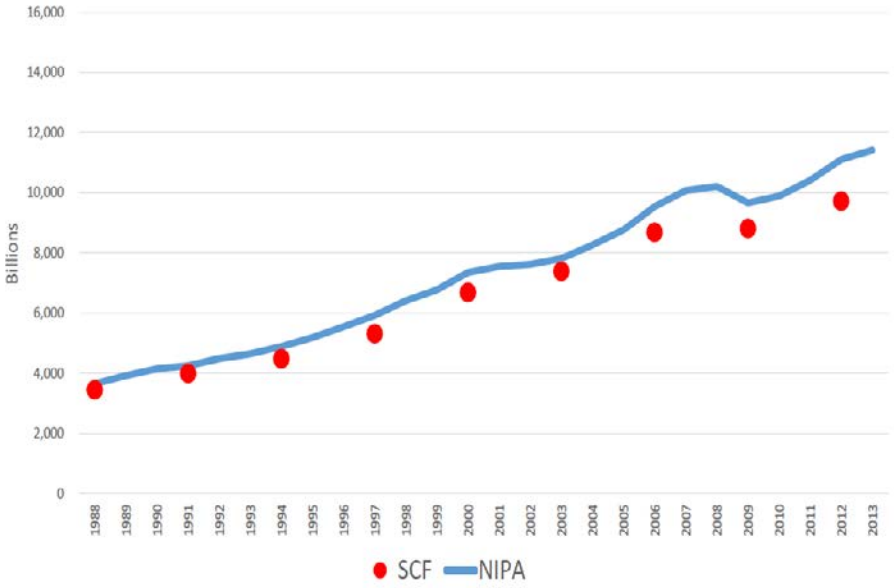


Wealth and Income in SCF closely match national aggregates

SCF Wealth and Financial Accounts



SCF Income and National Accounts



Definitions of income, consumption, and wealth

Disposable Income (similar to Luxembourg Income Study + CG)

- Money income: income from employment, investment, government cash transfers, and inter-household transfers of money
- Plus in-kind transfers
- Plus realized capital gains
- Less net taxes (using NBER TAXSIM)

Consumption

- Total spending on food, housing, non-durables, transportation, other durables, education, health, and child care.
- Imputed service flow for homeowners.
- Imputed service flow from vehicles.
- Imputed rent for those living in subsidized housing

Wealth (similar to Luxembourg Wealth Study)

- Assets including stocks, bonds, mutual funds, home-equity, residential real estate, and business assets
- Less all debt including mortgage, credit cards, student debt, and business debt

Imputing consumption to the Survey of Consumer Finances

Skinner (1987) and Fisher and Johnson (2006)

- $ln(\text{Total Consumption}) = \alpha_0 + \alpha_1 * \text{food home} + \alpha_2 * \text{food away} + X' \gamma + v$

Blundell, Pistaferri, and Preston (2008)

- $ln(\text{food at home}) = M' \mu + \beta * ln(\text{Total Consumption}) + e$

Imputing unreported consumption

Follow Skinner (1987) and Fisher and Johnson (2006) with some modifications:

- Minimize the prediction error by only imputing unreported consumption
- Use predictive mean matching across the CE and SCF
  - Impute ratio of reported to total
  - separate regressions by year
  - impute five times
- Separate regression by spending-to-income groups

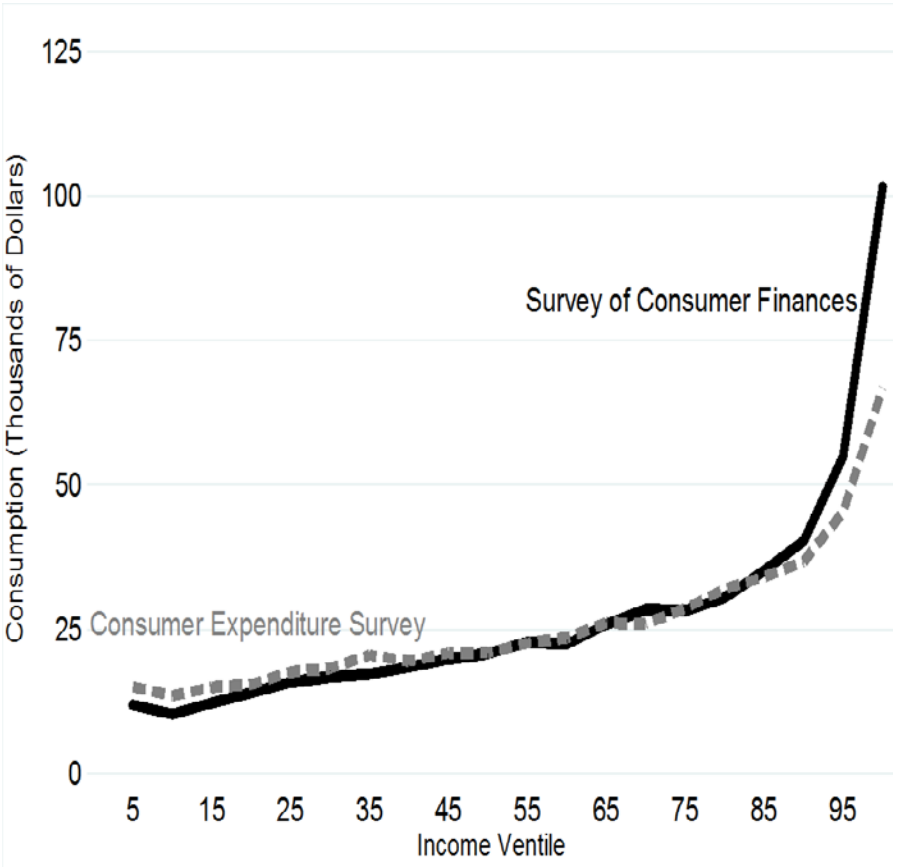
Over the past year, would you say that your spending:

- exceeded your income

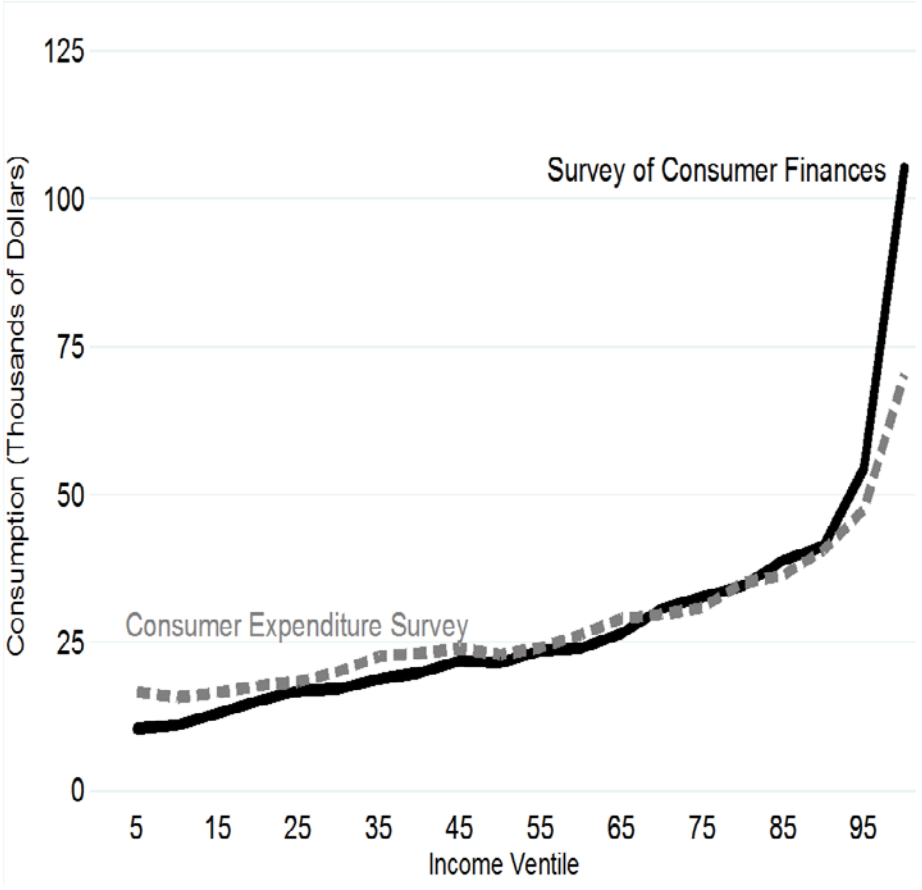
- that it was about the same as your income

- that you spent less than your income?

SCF has higher reported and imputed consumption than CE at the higher ventiles

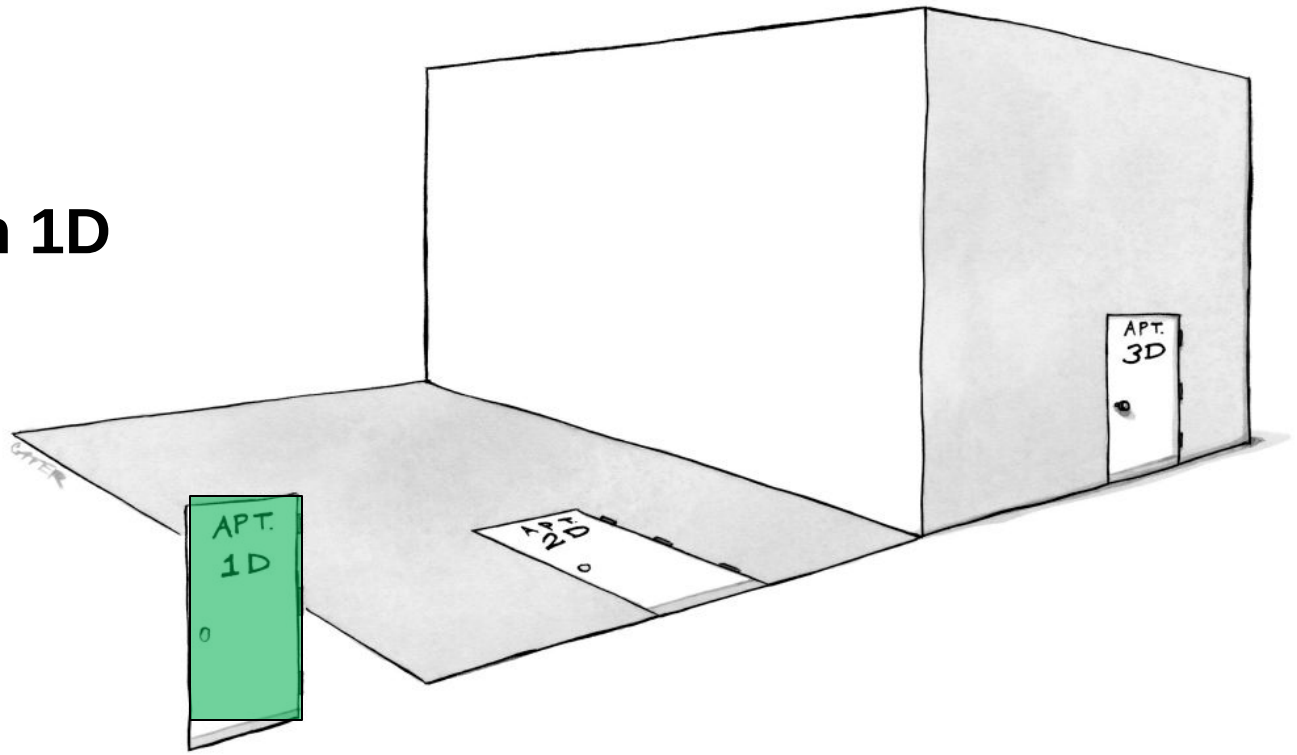


Reported consumption

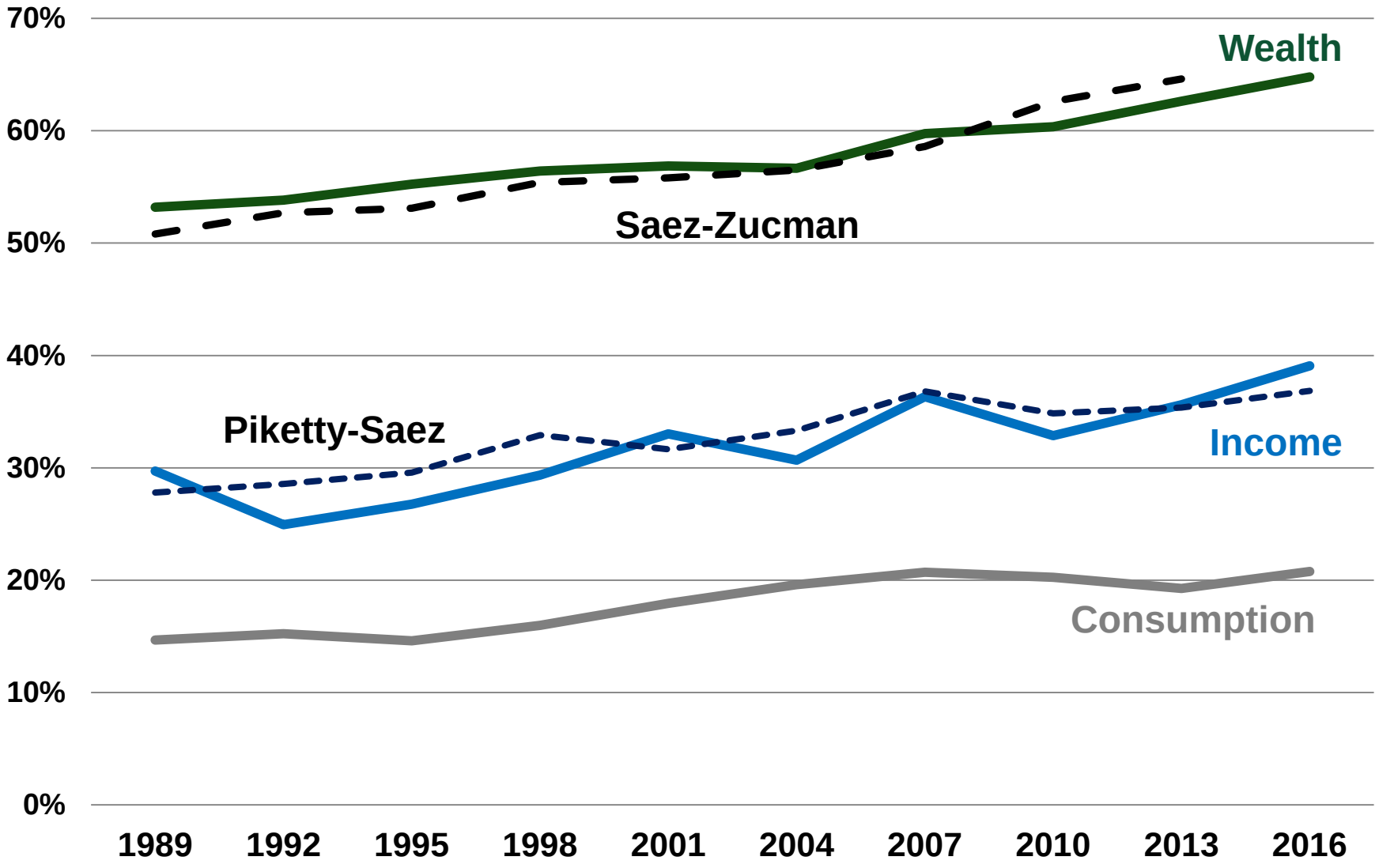


Imputed consumption

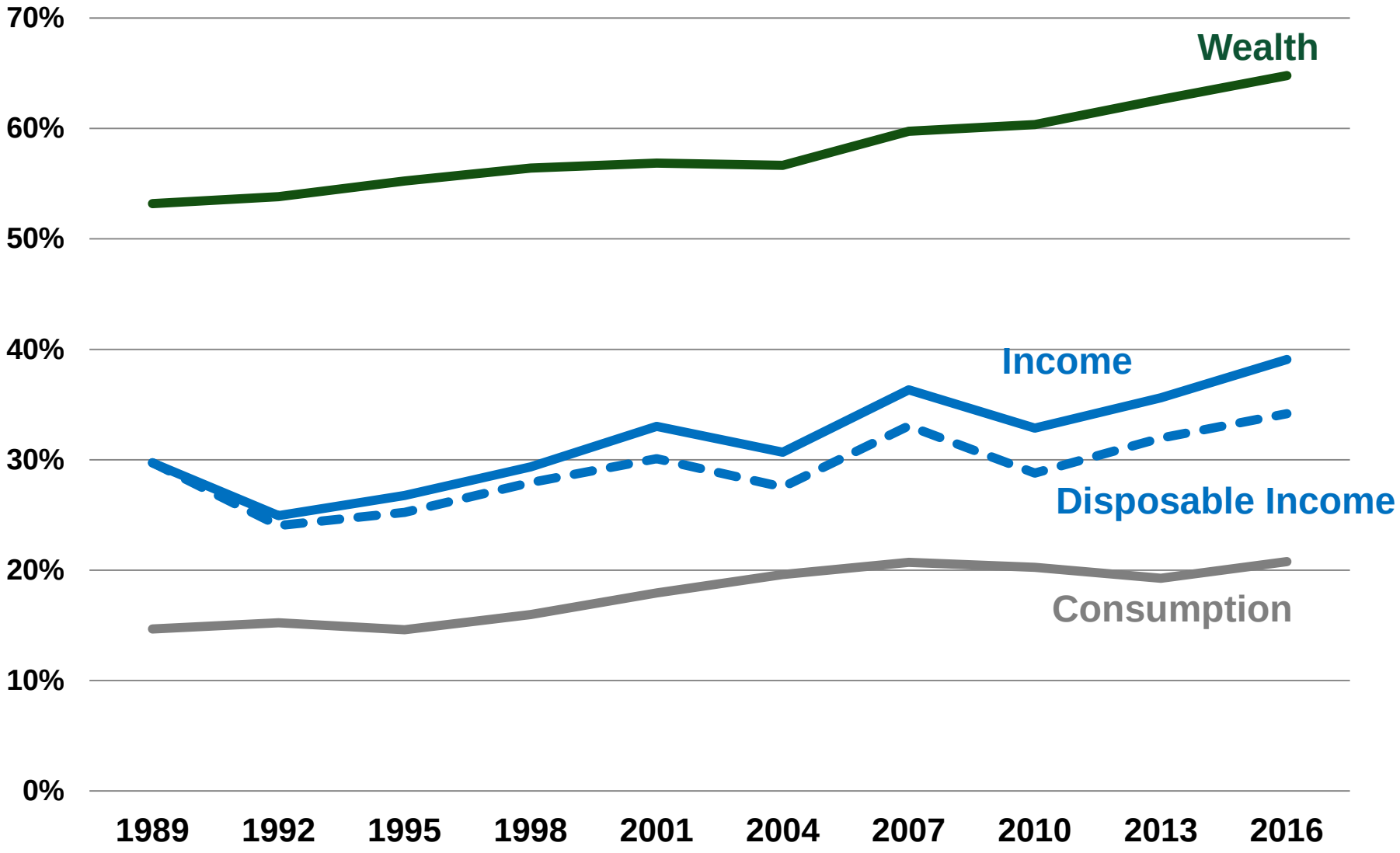
Inequality in 1D



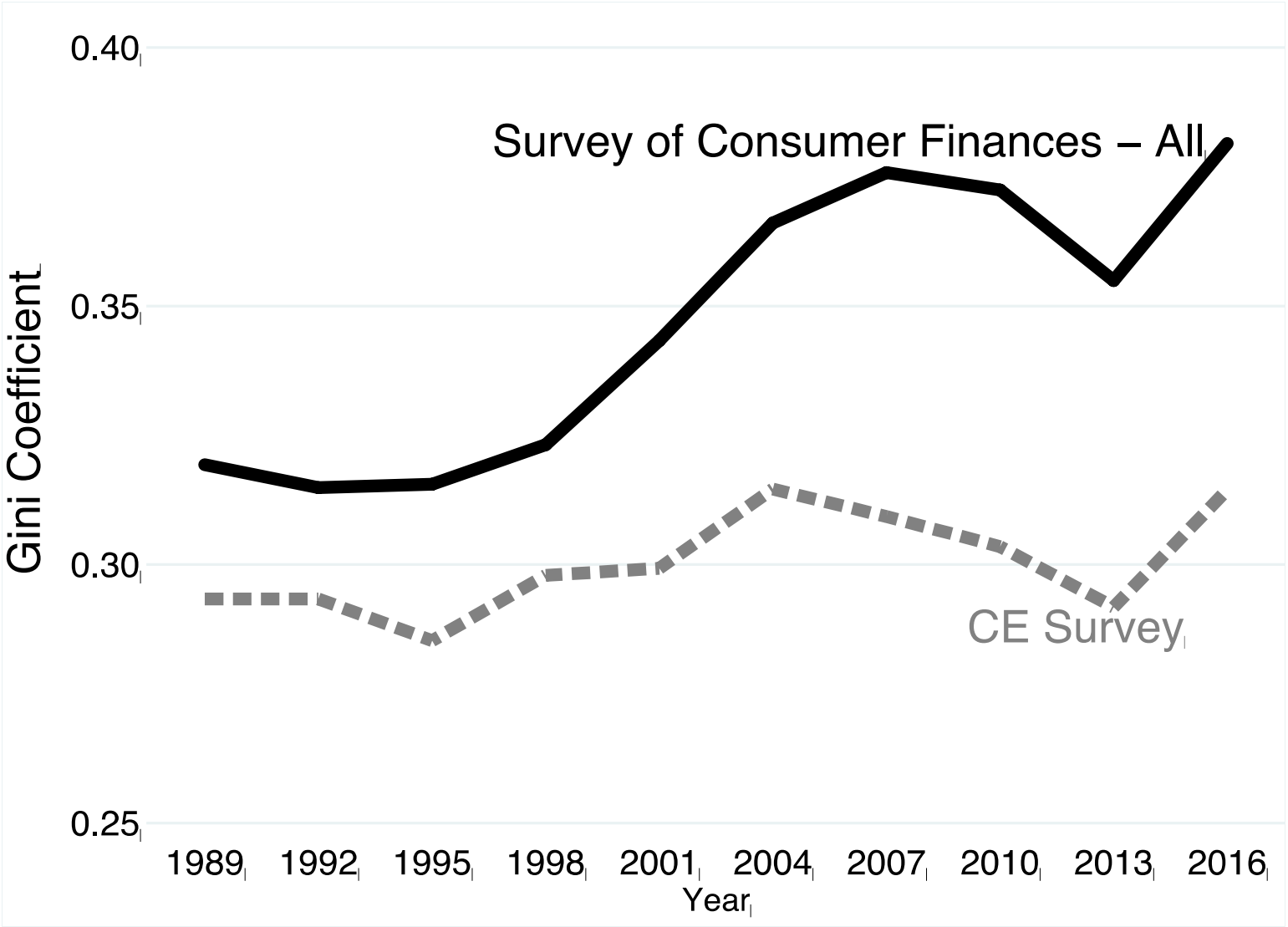
Own Shares for top 5% of Wealth, Income, and Consumption



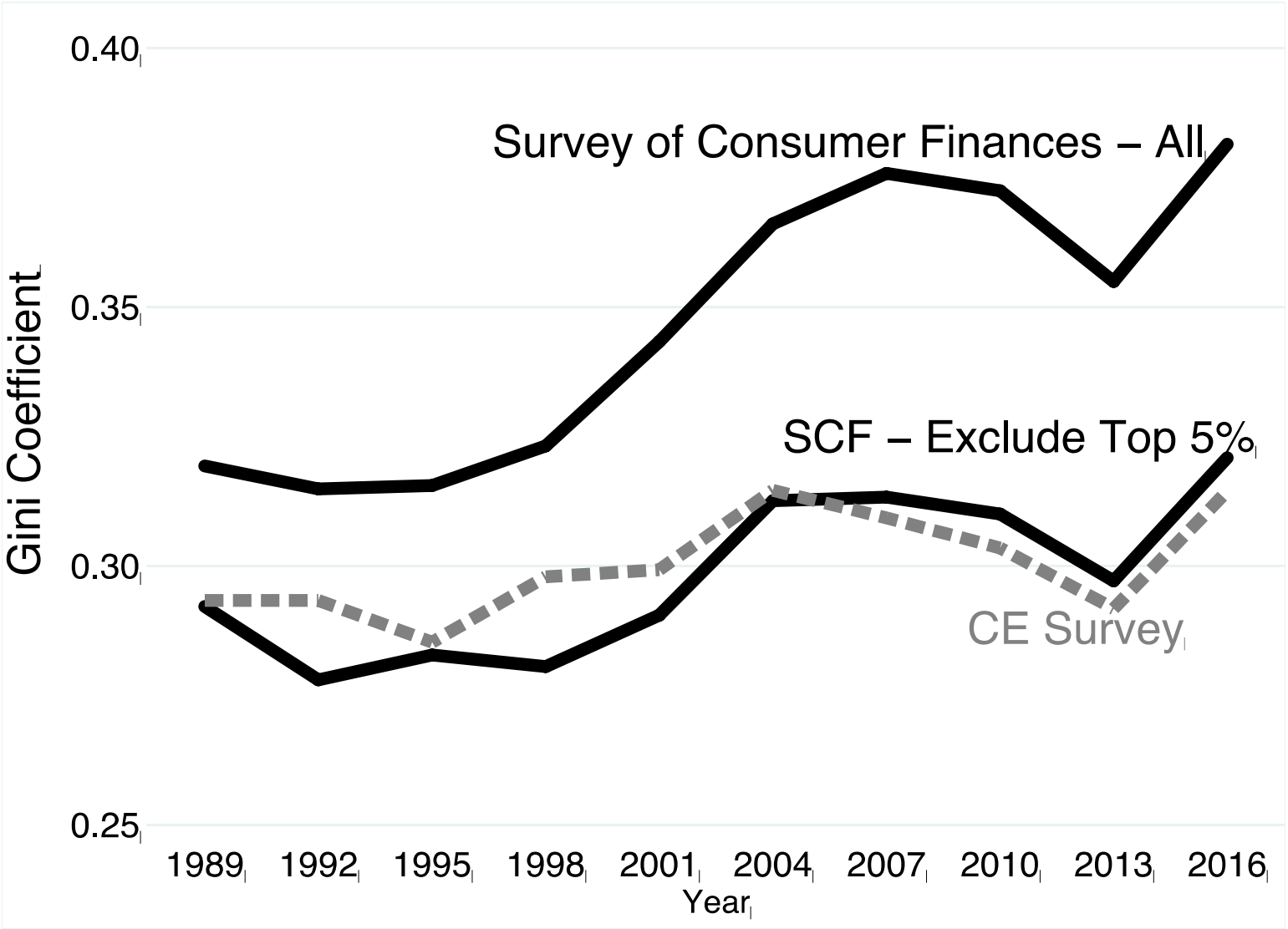
Own Shares for top 5% of Wealth, Income, and Consumption



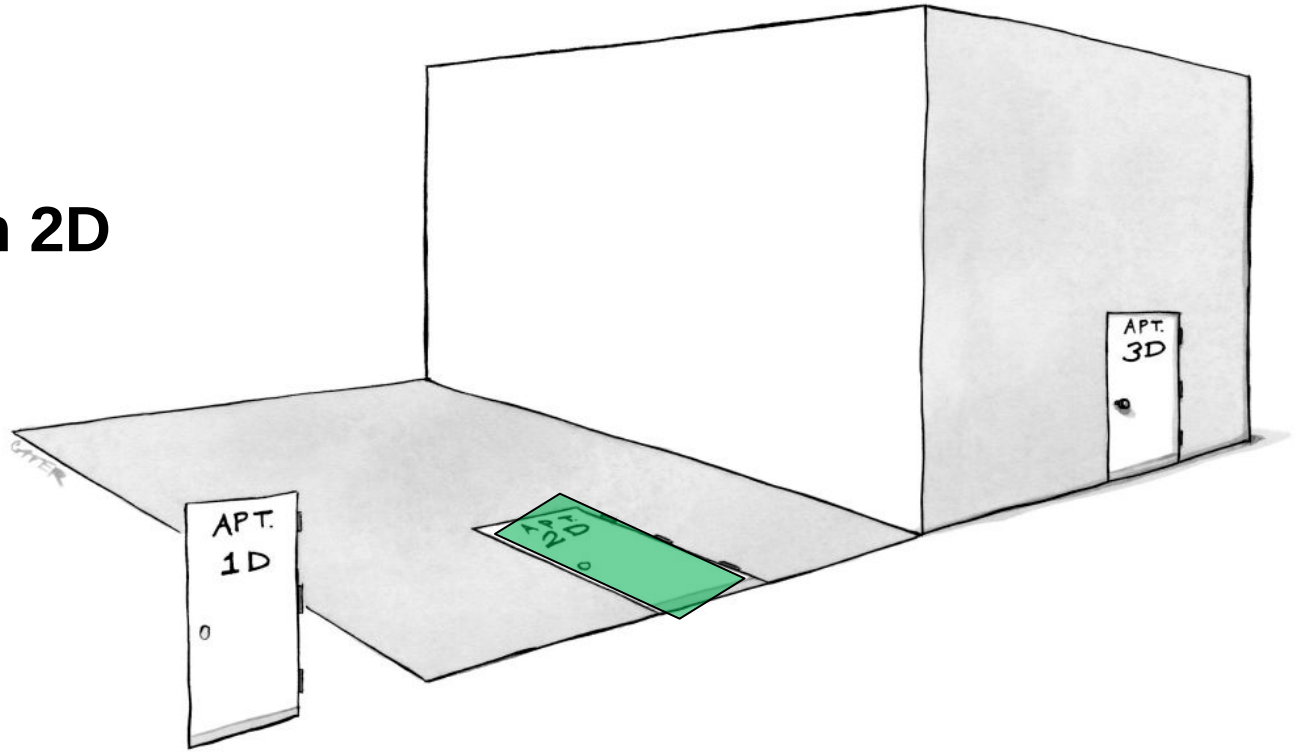
SCF has a higher Consumption Gini than CE (1989-2016)



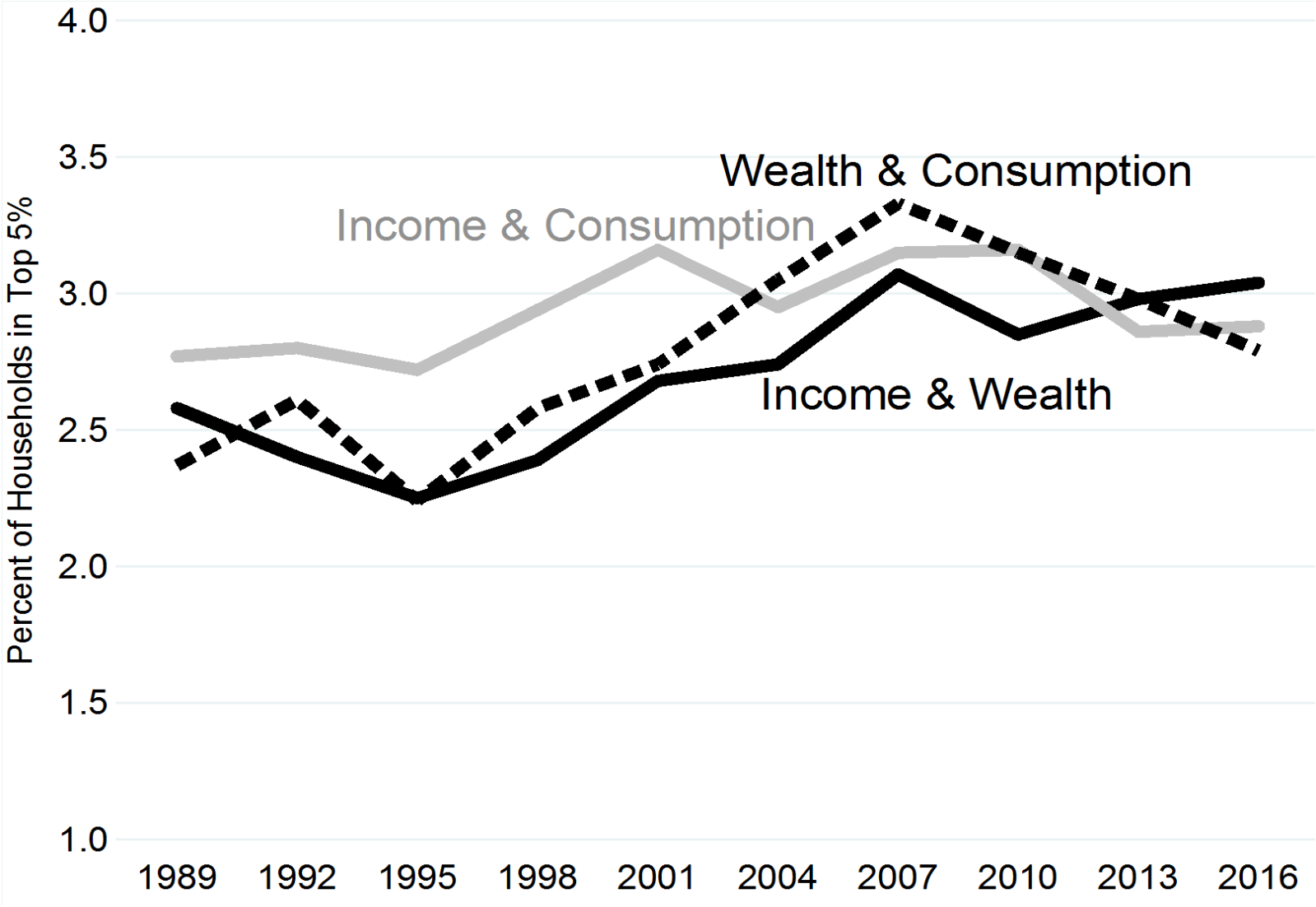
Mainly due to the high income oversample in the SCF (1989-2016)



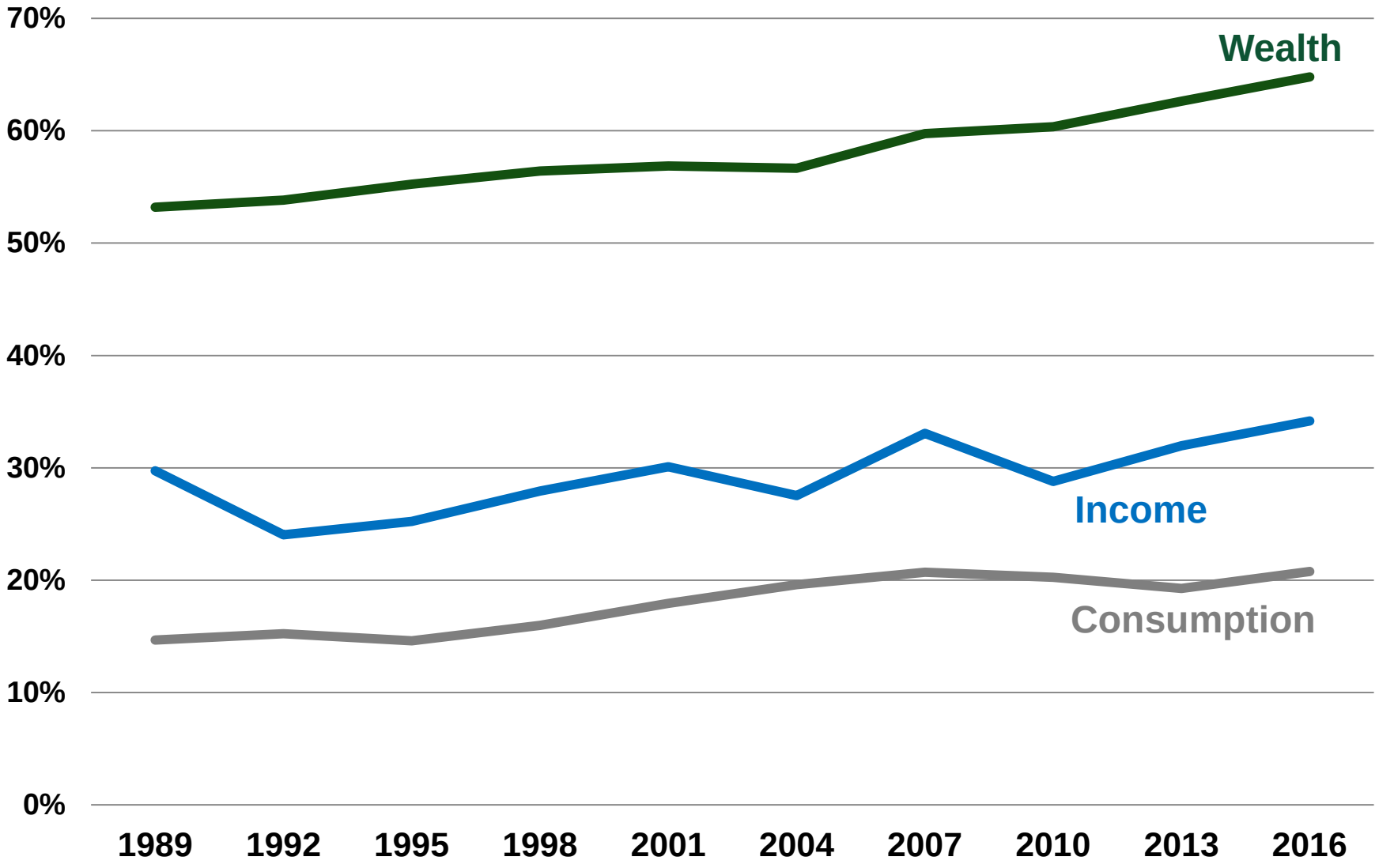
Inequality in 2D



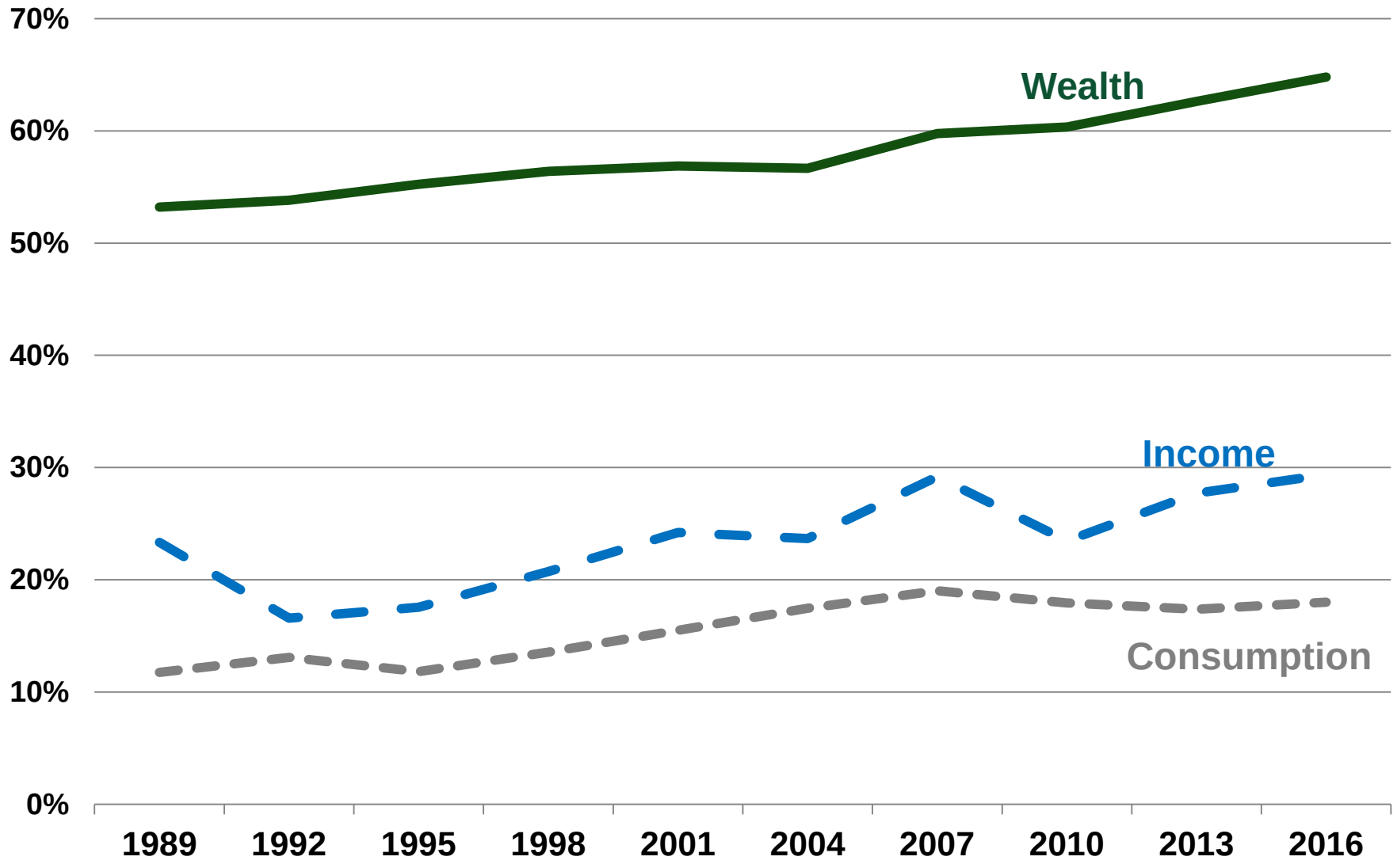
2-D inequality: Percent of households in top 5% of two measures



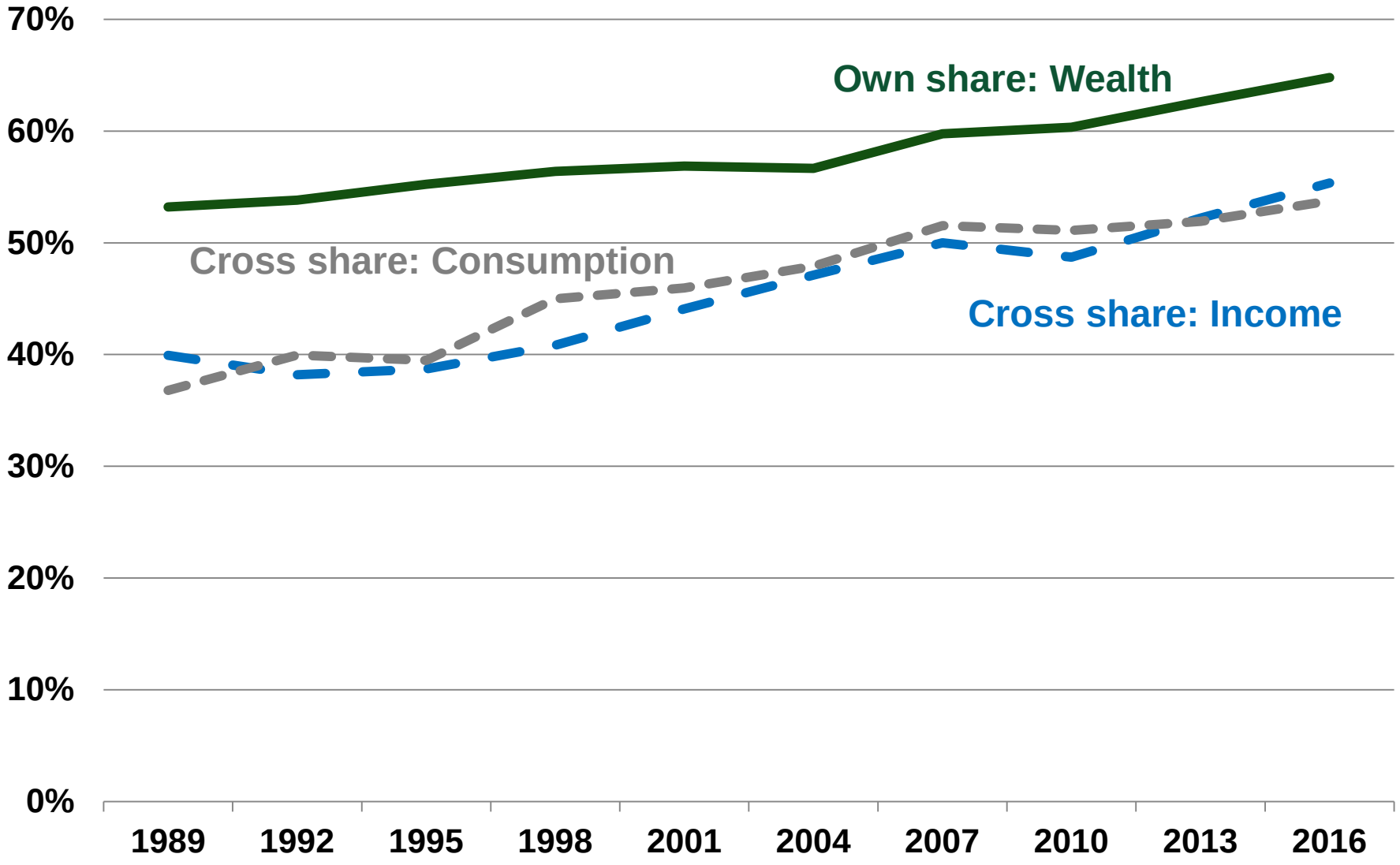
Recall 1D: Own Shares for top 5% of Wealth, Income, and Consumption



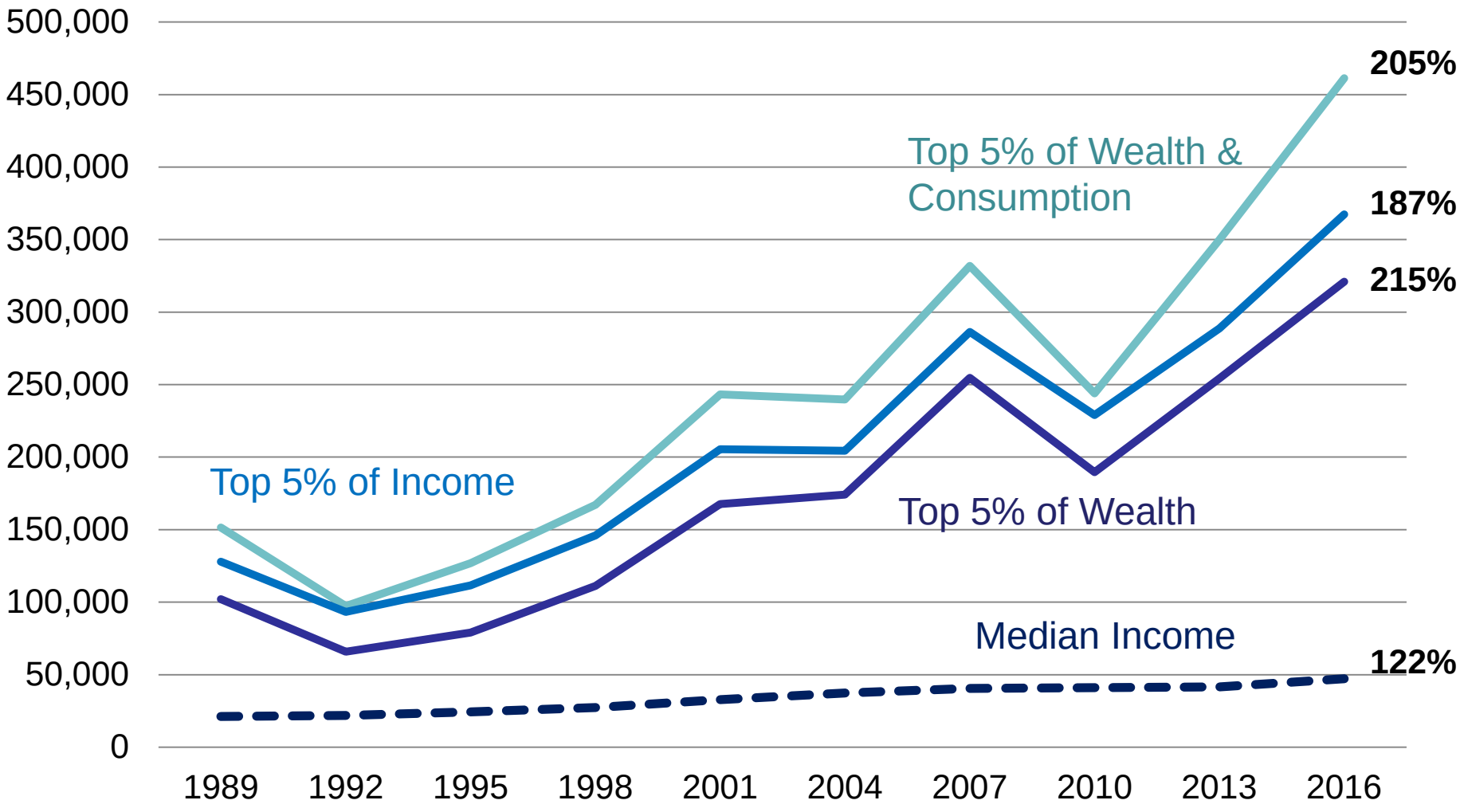
2D: Shares of Wealth, Income and Consumption for top 5% of Wealth



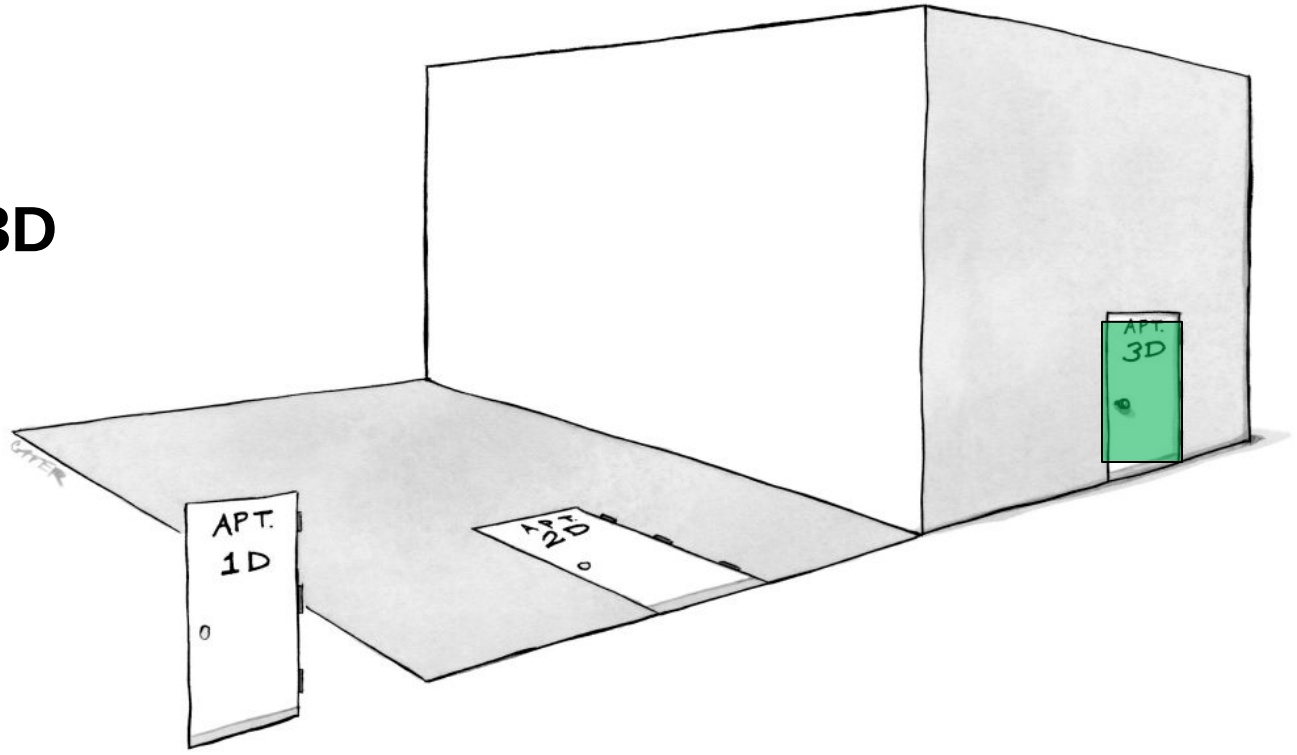
2D: Wealth Shares (own and cross) for top 5% of Wealth, Income, and Consumption



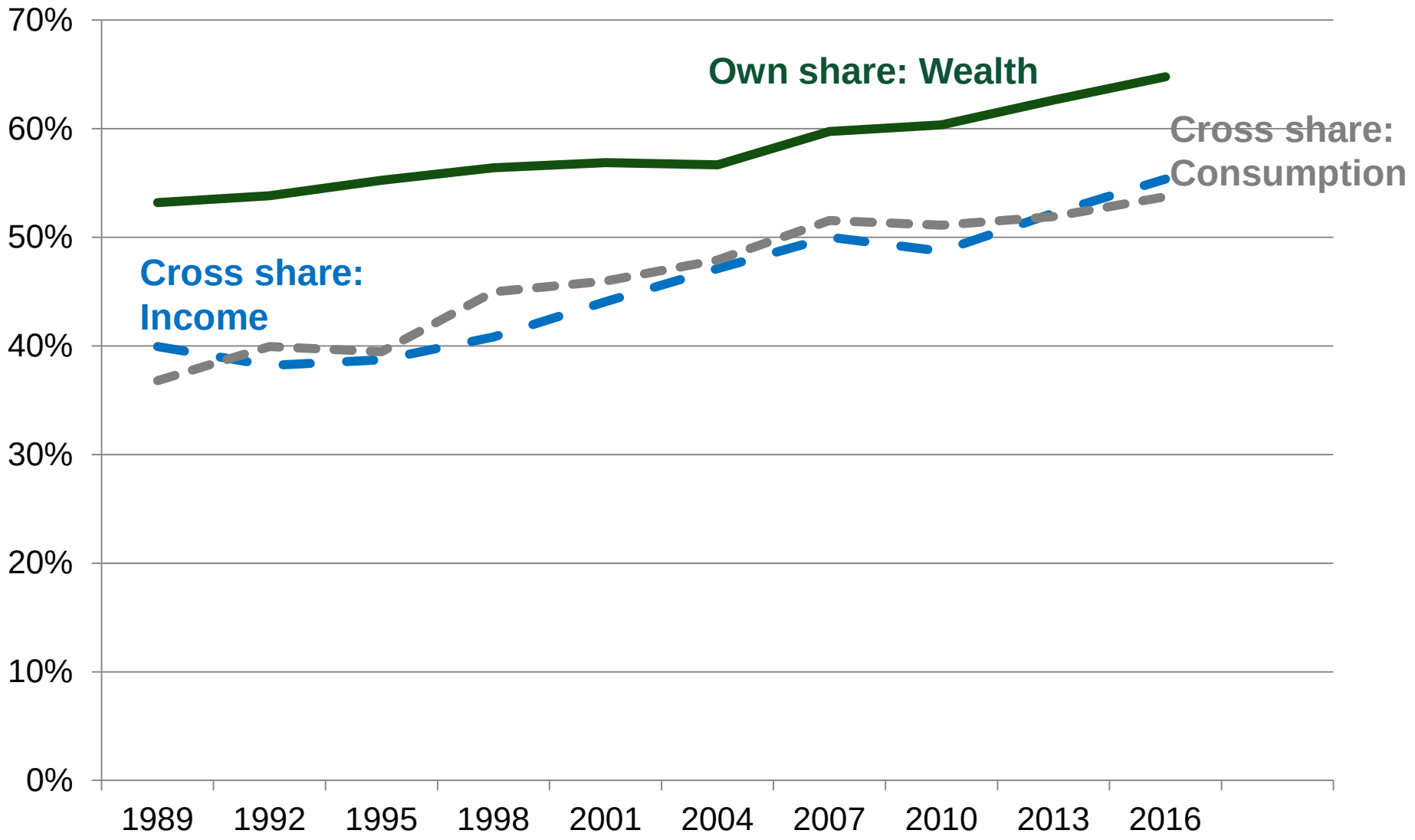
Top 5% have a larger increase in Income for those in top 5% of Wealth and Consumption



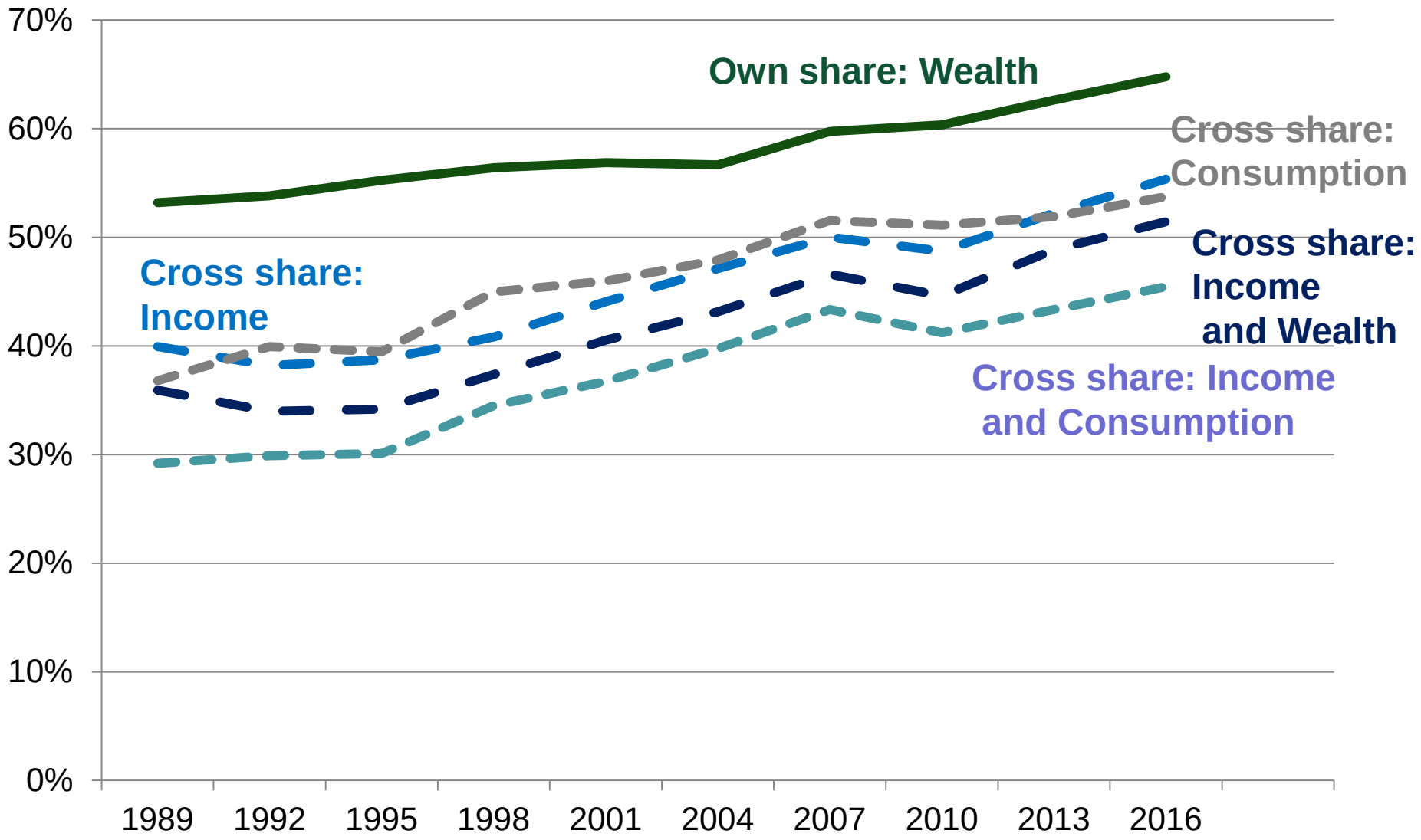
Inequality in 3D



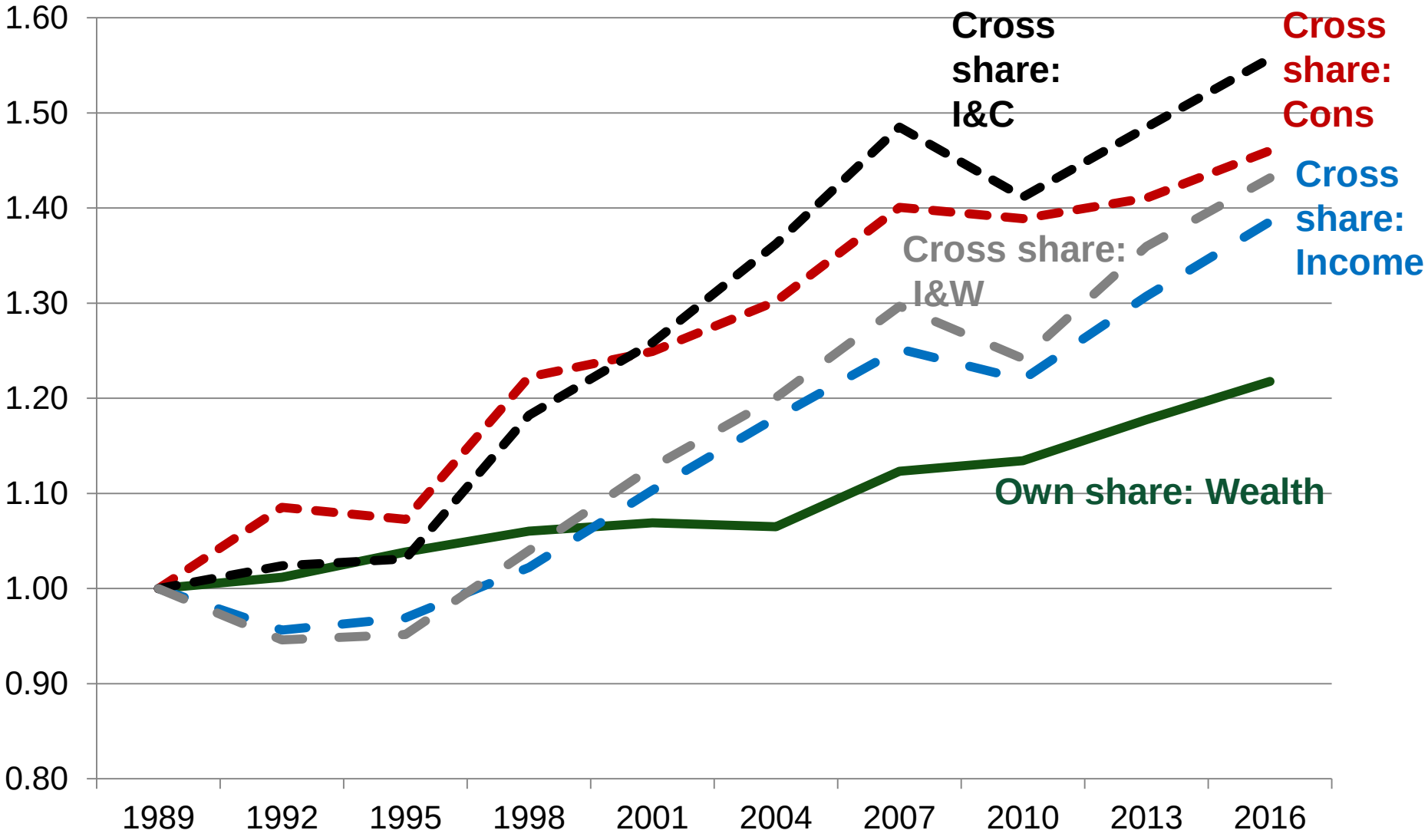
Recall 2D: Wealth Shares (own and cross) for top 5% of Income and Consumption



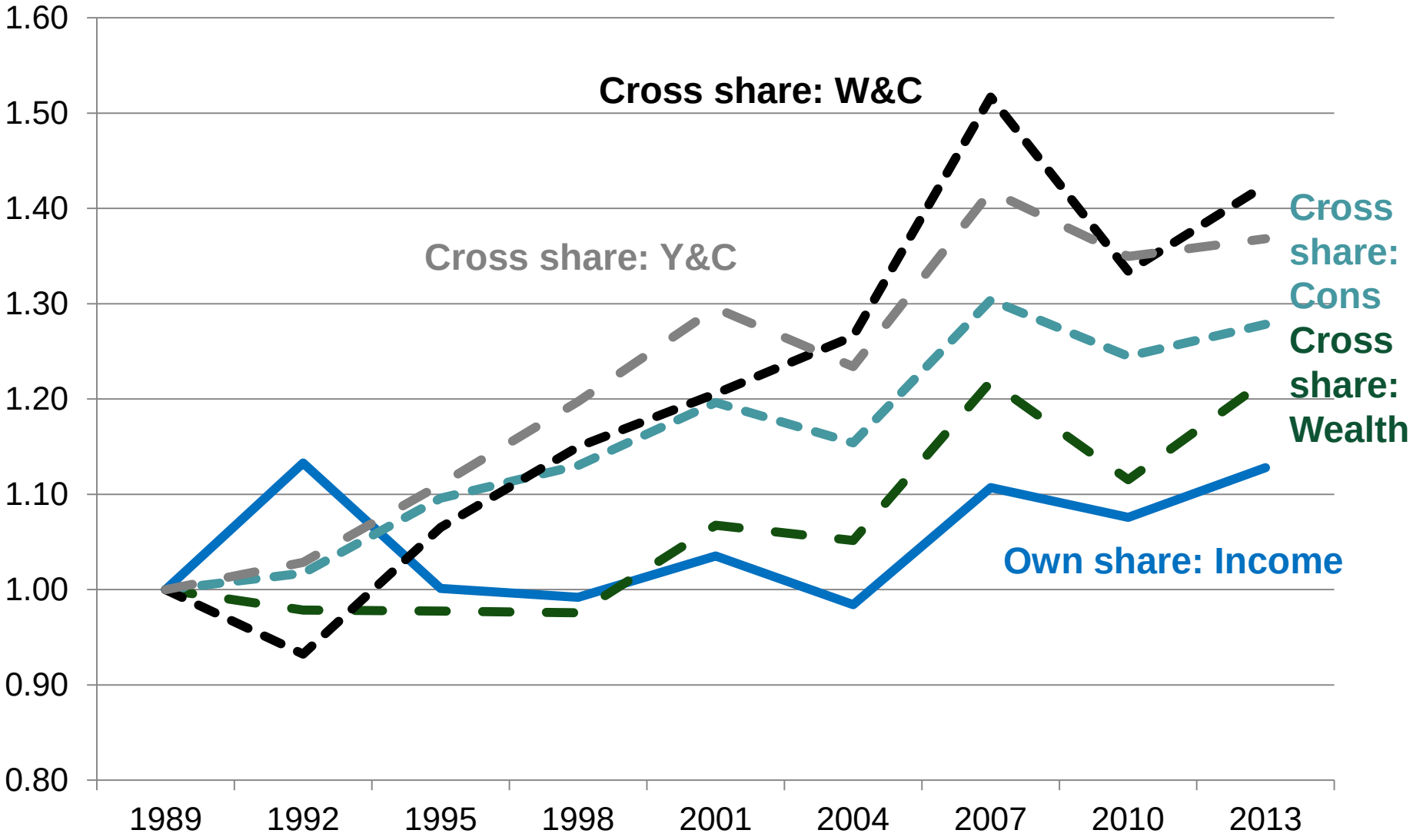
3D: Wealth Shares (own and cross) for top 5% of Income/Wealth and Income/Consumption



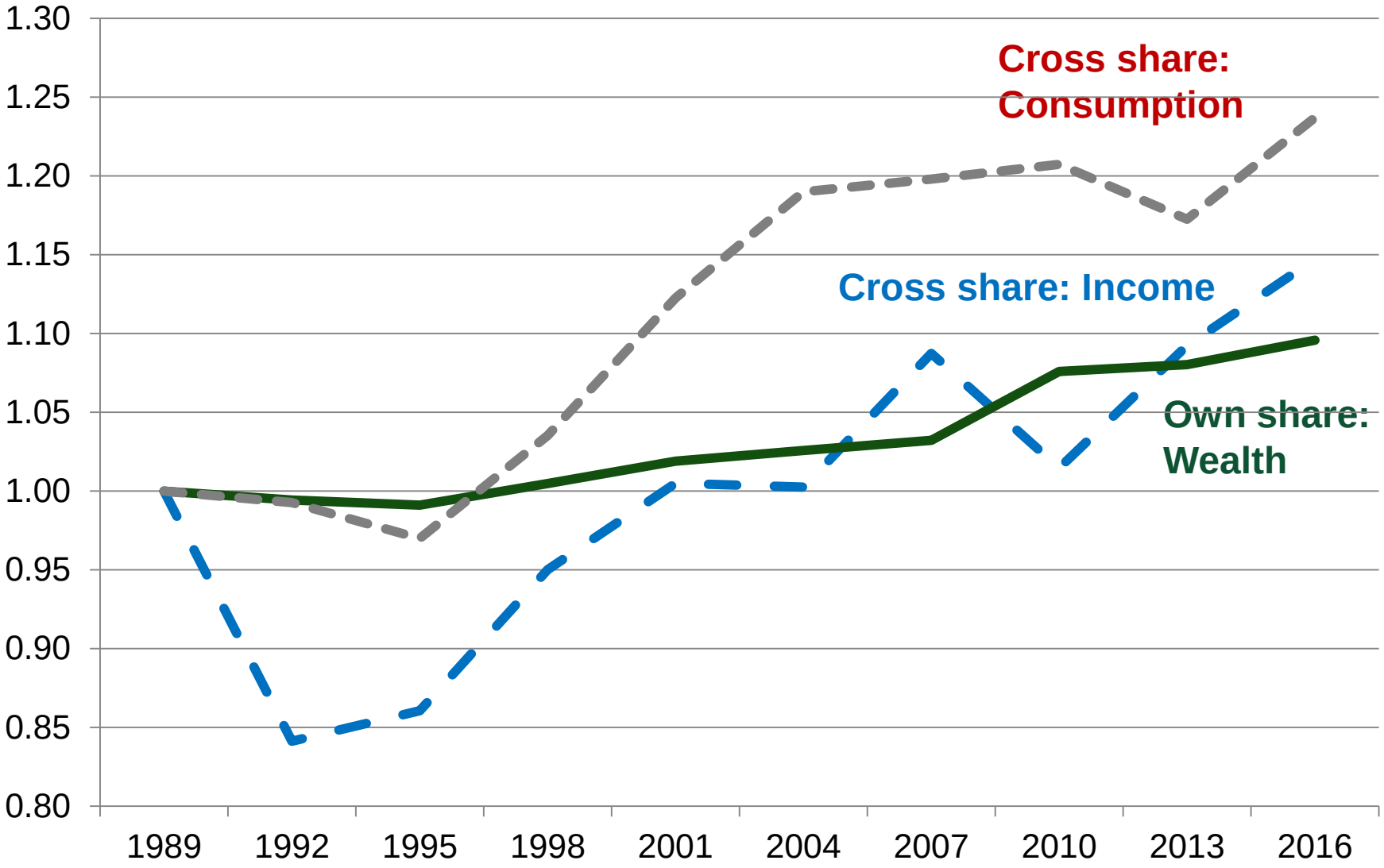
2D and 3D Wealth Shares increase more than 1D own Wealth Shares



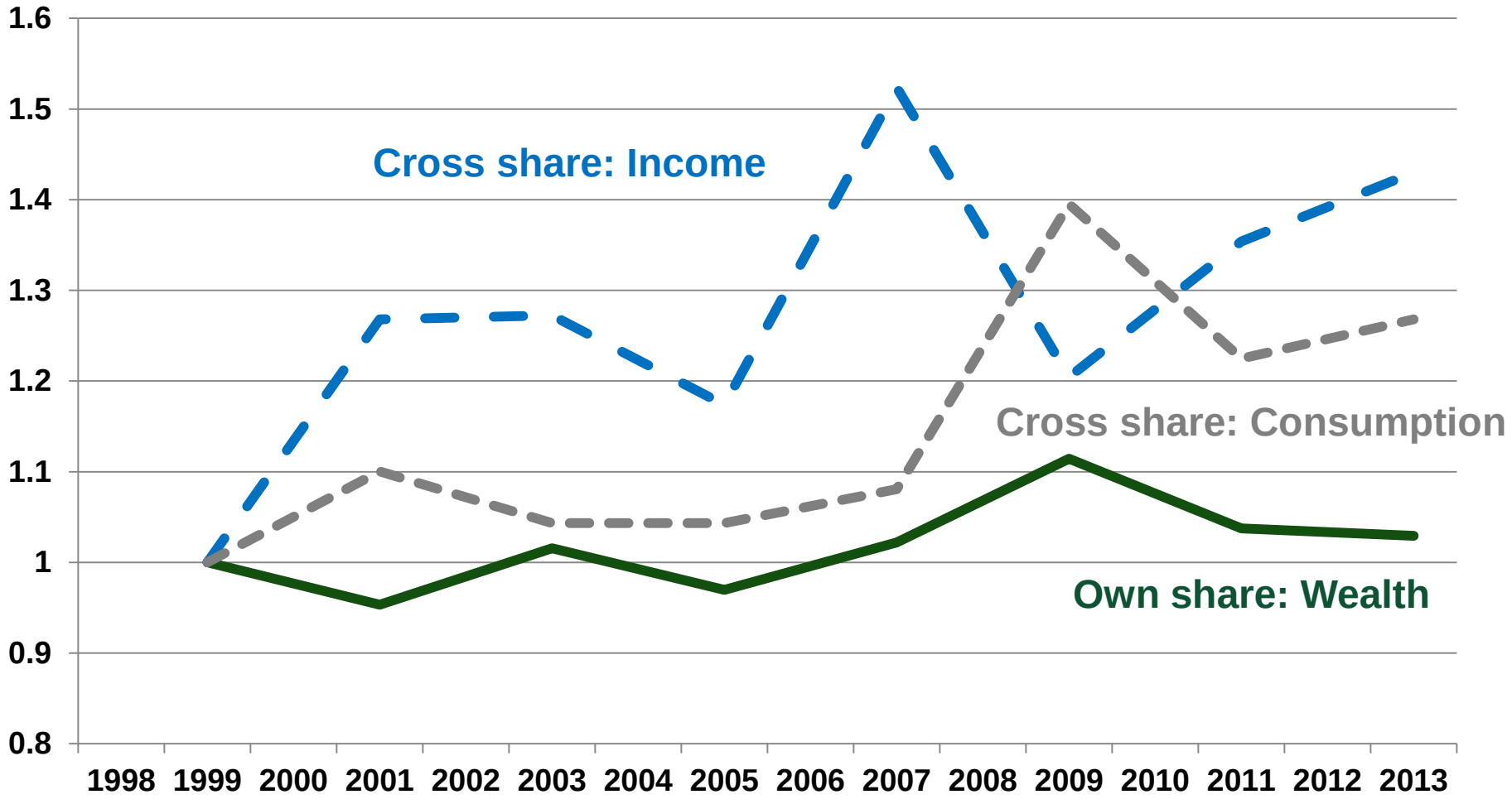
2D and 3D Income Shares increase more than 1D own Income Shares



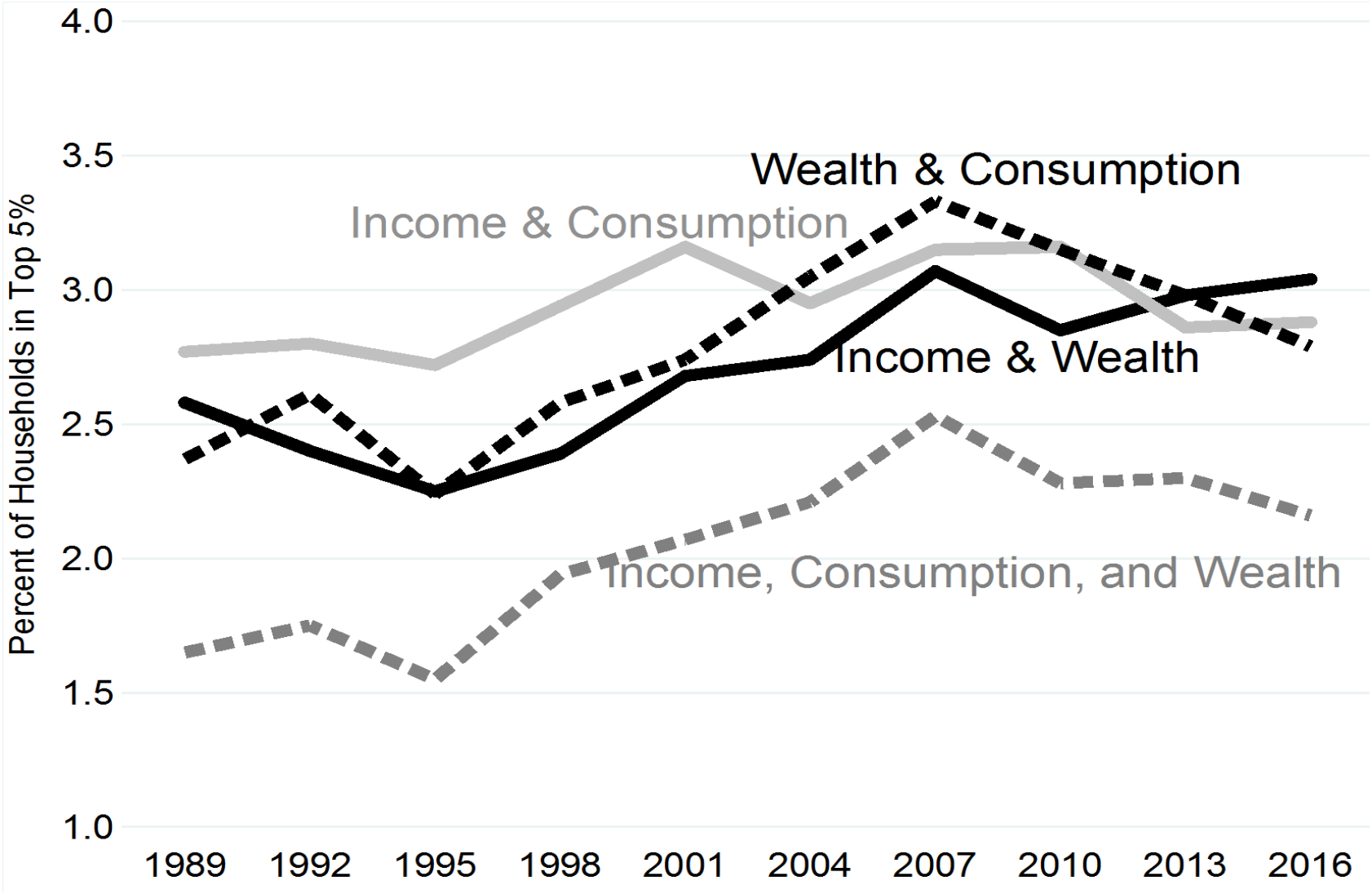
Same pattern occurs for top quintile



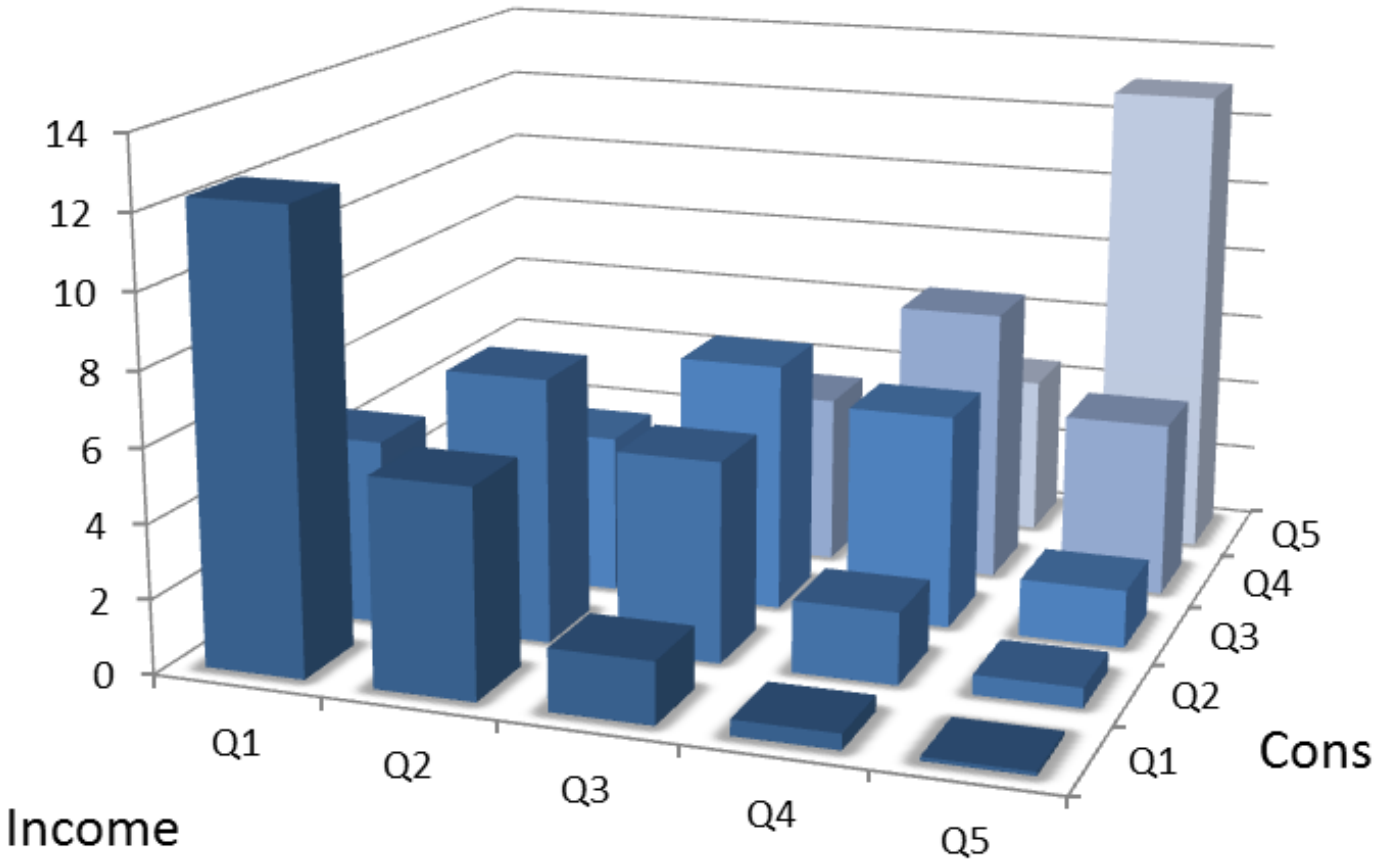
PSID shows similar increases in 2D (using quintiles)



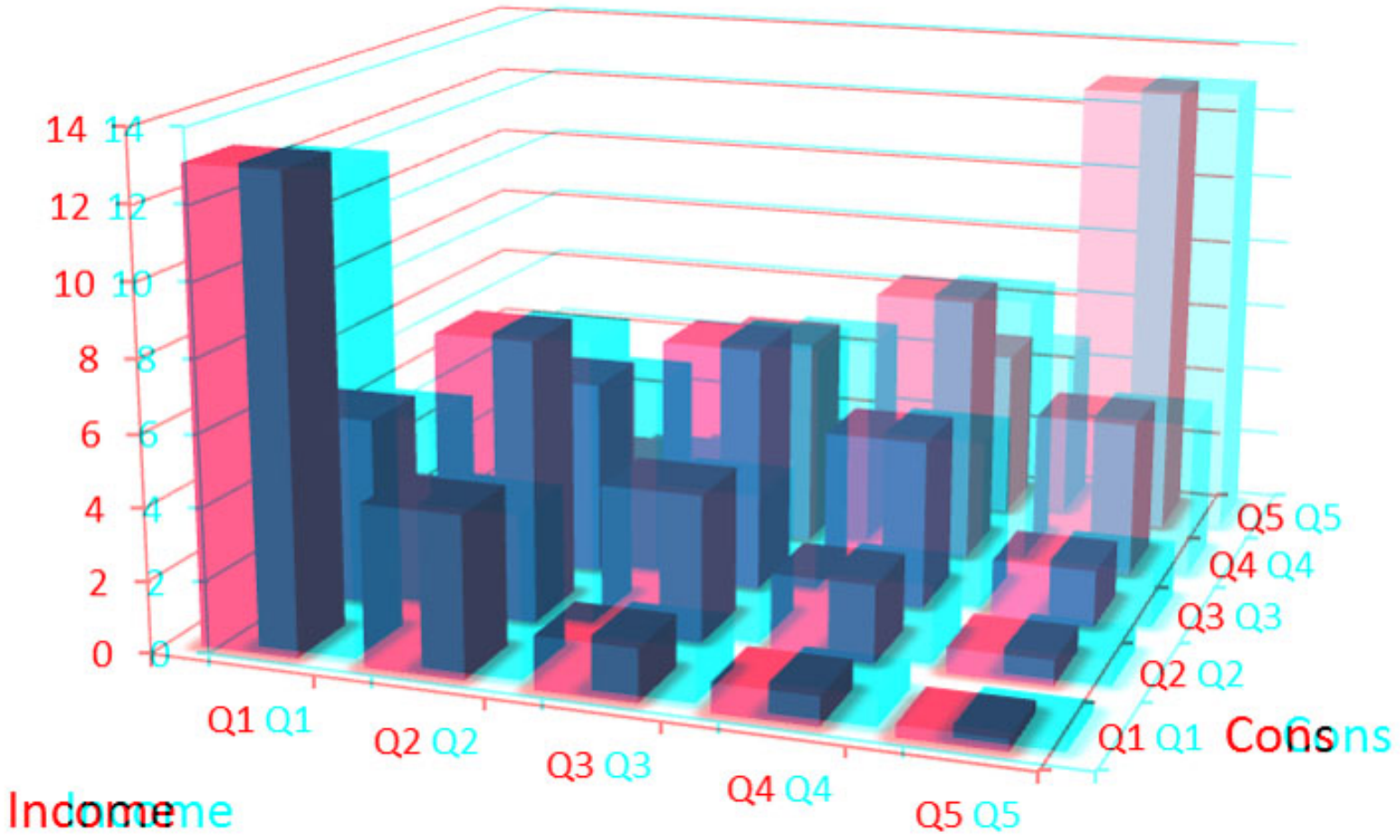
Mainly because the Percent of Households in Top 5% of all three measures increases



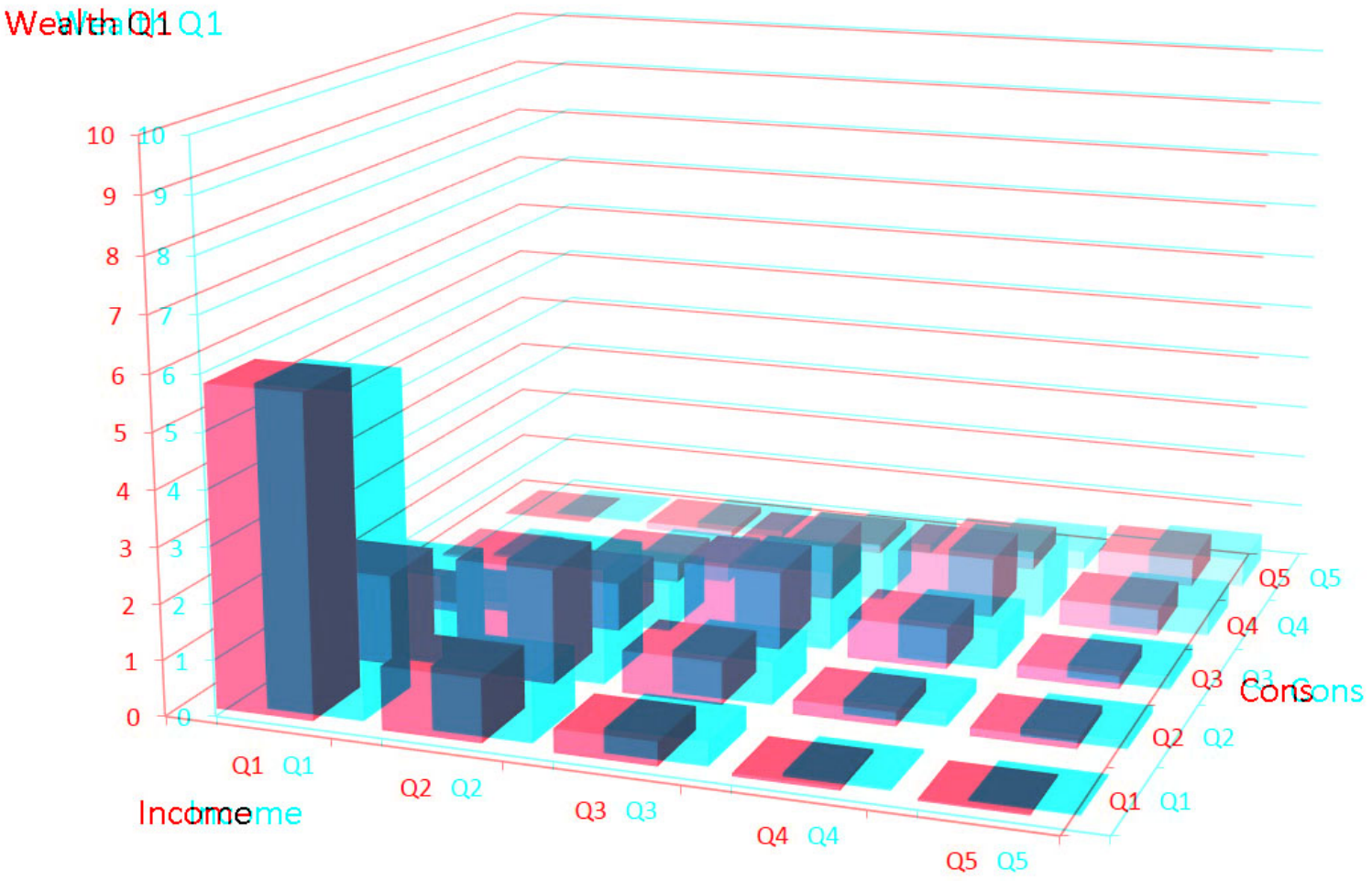
Inequality in 3D: Transition matrix for income and consumption quintiles by wealth quintile: all quintiles



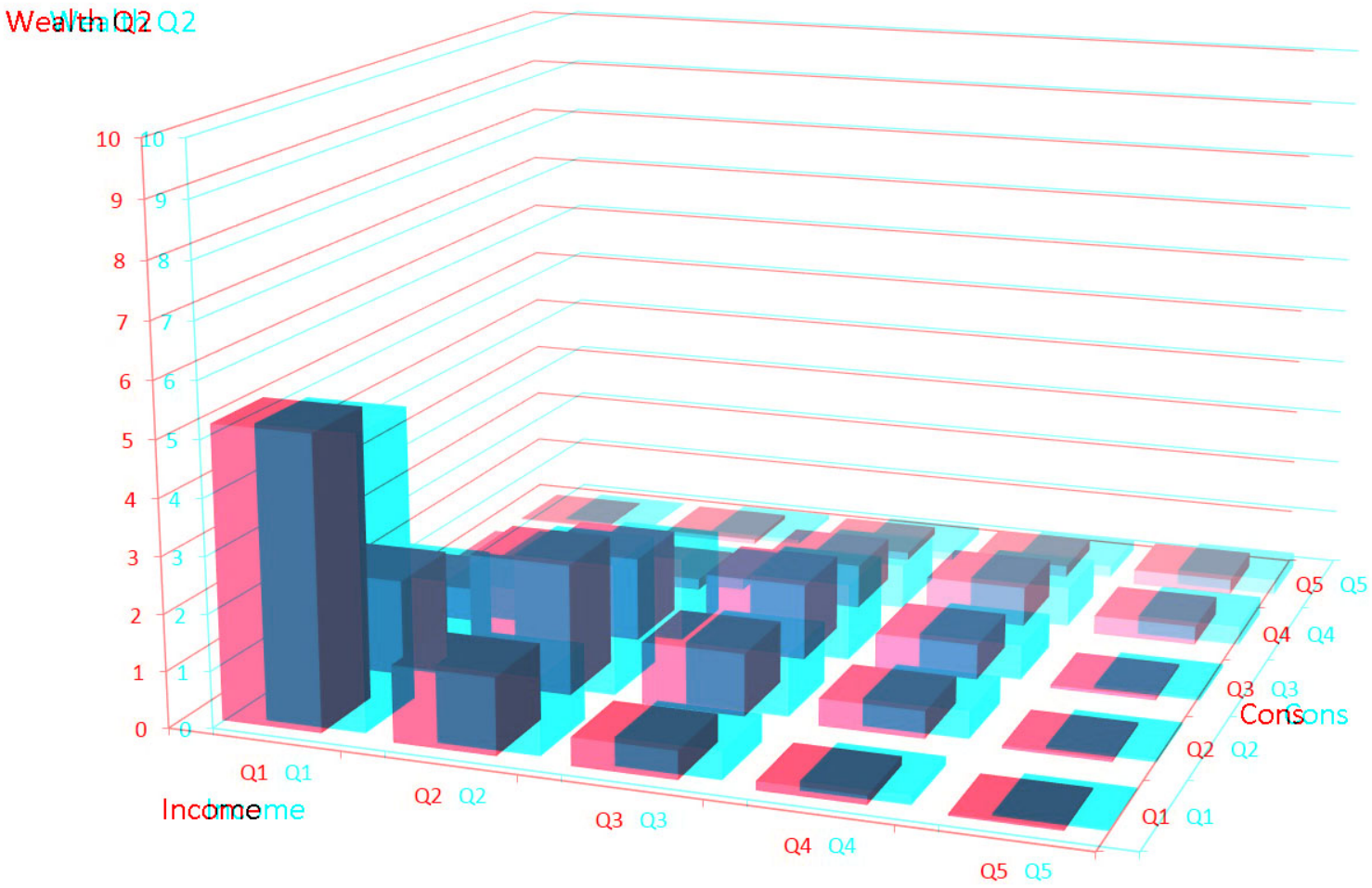
Inequality in 3D: Transition matrix for income and consumption quintiles by wealth quintile: all quintiles



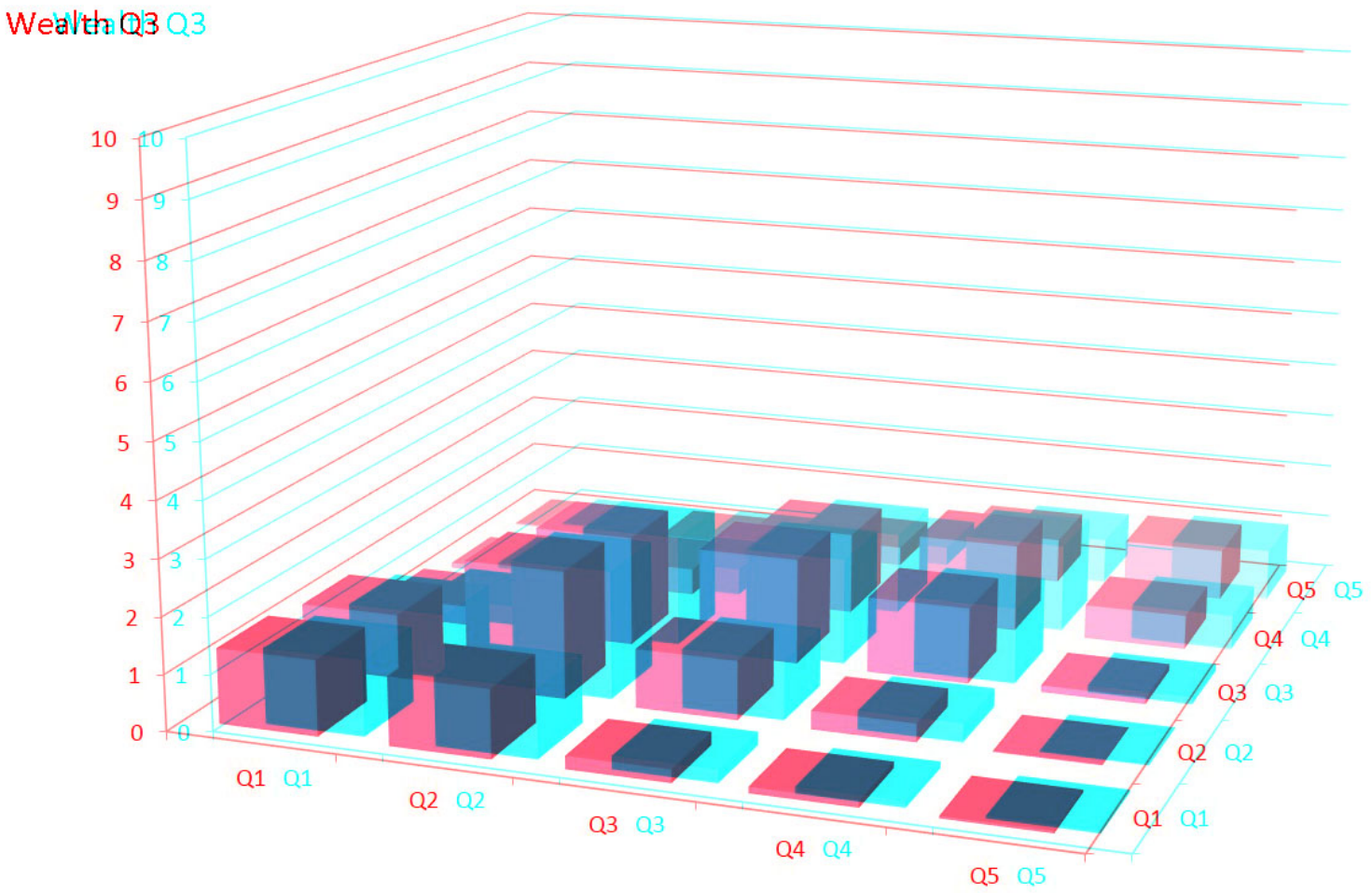
Inequality in 3D: Transition matrix for income and consumption quintiles by wealth quintile: Q1



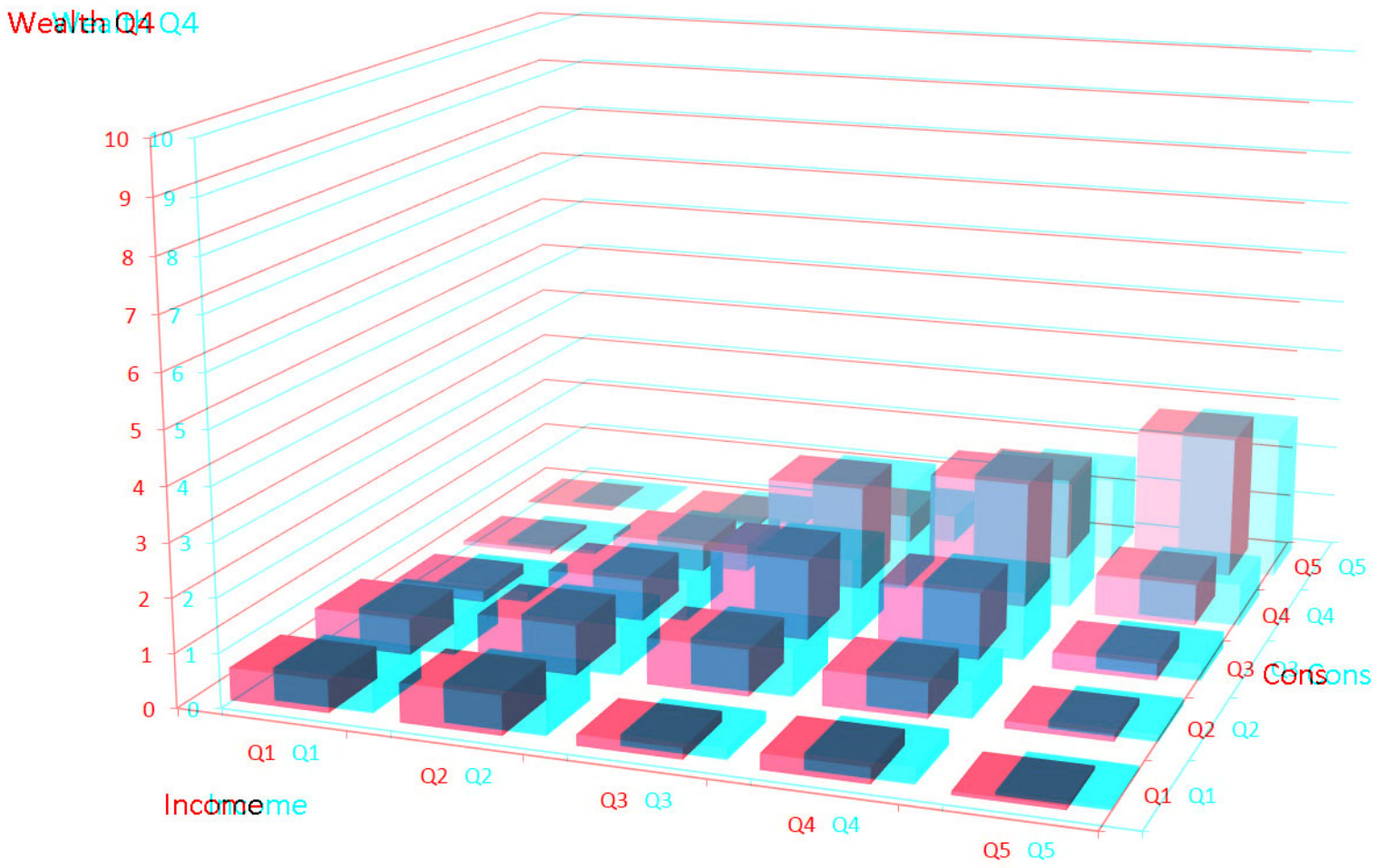
Inequality in 3D: Transition matrix for income and consumption quintiles by wealth quintile: Q2



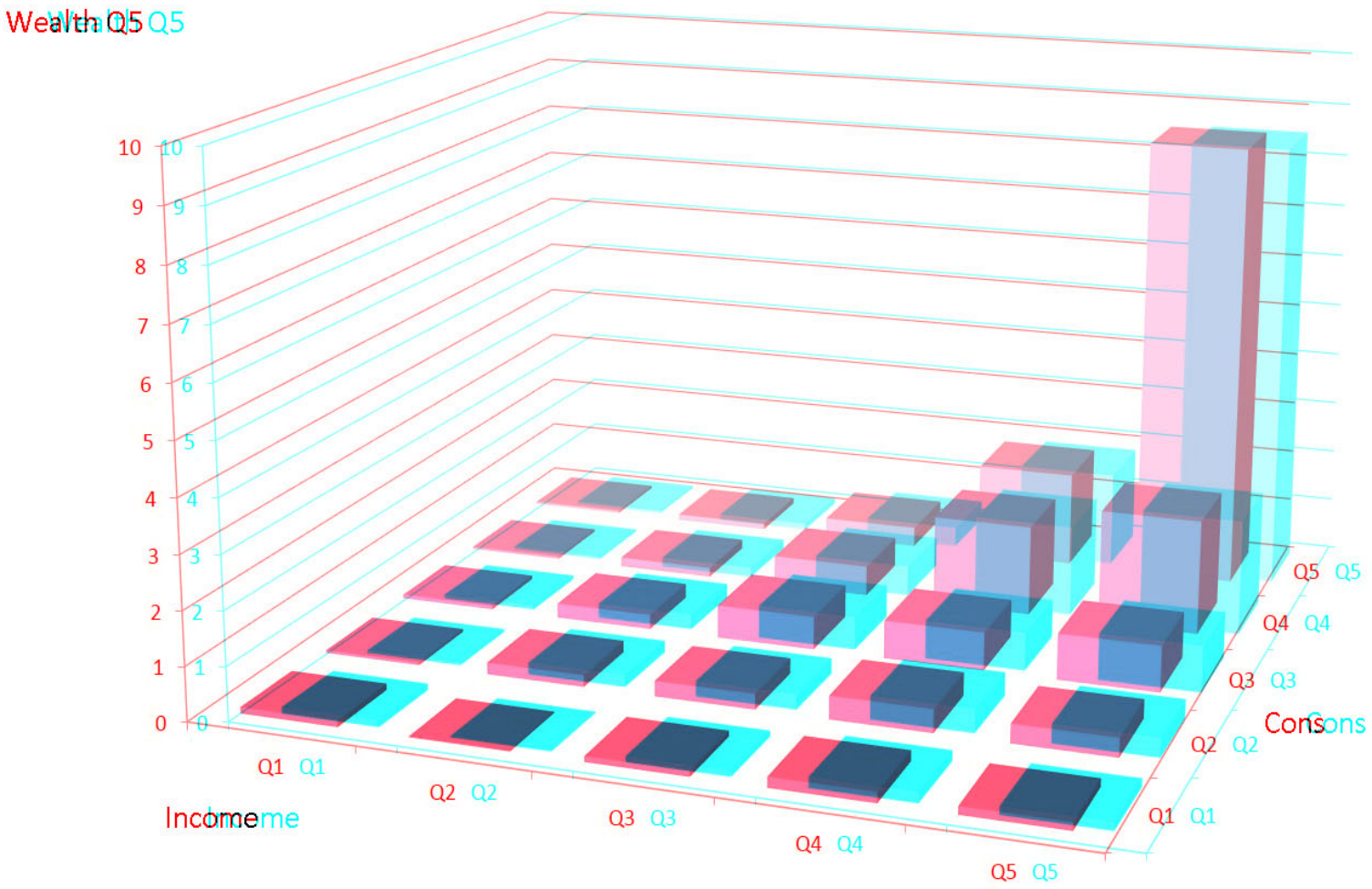
Inequality in 3D:
Transition matrix for income and consumption quintiles by wealth quintile: Q3



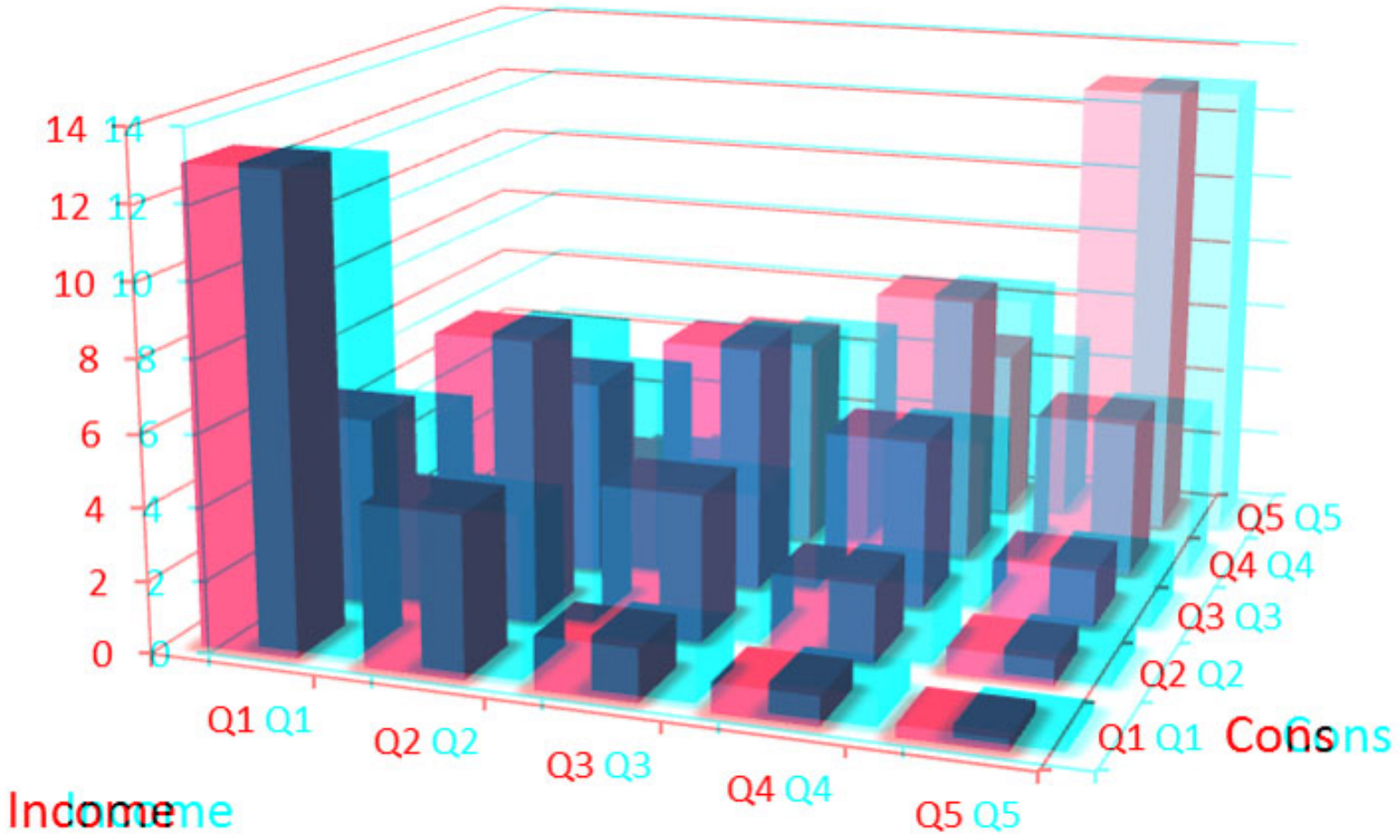
Inequality in 3D: Transition matrix for income and consumption quintiles by wealth quintile: Q4



Inequality in 3D:
Transition matrix for income and consumption quintiles by wealth quintile: Q5



Inequality in 3D: Transition matrix for income and consumption quintiles by wealth quintile: all quintiles



Determining 2D and 3D measures using entire distribution

- Using pairwise Shorrocks measures shows correlations do not rise over time
- Using Gini correlation shows falling correlations over time

Next Steps

- Create a summary measure for inequality in 3D
- Integrate distributions with National accounts
- Examine the “off-diagonal” people – those who aren’t at the top and bottom for all three
- Fully examine the life-cycle relationships and mobility
- Compare to PSID and impute consumption and wealth back to 1968
  - Use PSID to measure intra- and inter-generational mobility
- Eurostat-OECD Expert Group on Measuring the Joint Distribution of Household Income, Consumption and Wealth at Micro Level