# ECON 133 Global Inequality and Growth

# Section #9

# Wealth inference methods and wealth/income inequality interplay

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NB: note against measuring consumption inequality—hard to make proper comparisons

## Wealth data and inference methods

We generally think that wealth is harder to measure than income. The are several reasons for this perception.

1. the valuation of wealth changes over time; e.g. housing, stocks, etc. We employ the term *fair market value* to refer to how much an asset/liability would sell for on the market right now. The fair market value often diverges from an asset or liability's valuation because significant time + growth have accrued since the last time the valuation was updated. N.B. we use the term *cost basis* to refer to the cost of the asset/liability upon acquisition.

2. Wealth often isn't *doing* anything—e.g. flowing between hands, getting liquidated, etc.— that would generate information about wealth.

3. There isn't great policy impetus to comprehensively and accurately measure wealth—especially in the absence of a wealth tax

4. Relatedly, there doesn't really exist great third-party reporting for verifying amounts of wealth as there exists for income.

Here are some of the ways we measure wealth:

### Survey data

We can design a survey and ask: **Hey!** what types of assets and liabilities are you holding and in what amounts? Surveys are potentially generally not super costly to conduct (relative to the cost of maintaining governmental data) and are generally more easily available to researchers, but face important limitations:

1. Difficulty in accurately measuring small groups. Here, the important small group would be the wealthiest individuals, since we know that the distribution of wealth extremely concentrated in a very small group of people.

2. Veracity of survey reporting?

3. Limited by their design and the items they exclude

4. Representative-ness? Sort of closed book.

Some ways to overcome these obstacles include:

1. Top-end corrections either using Pareto interpolation

2. Top-end corrections either using Forbes 400 list of wealthiest individuals.

A great example of survey data is the Survey of Consumer Finances conducted triannually by the Federal Reserve Board.

## Estate multiplier method

In jurisdictions with estate taxes, we can observe wealth at death. The estate multiplier method asks: I observe a person with characteristics $X$ die with some valuation. Assuming I observe sufficiently many decedents and know something about the mortality rate of individuals with characteristics $X$, I can make some statement about the aggregate wealth individuals with characteristics $X$. E.g. I observe men dying between ages 85 and 90 have estates valued in the aggrgegate at USD 30 B. If their mortality rate is 4%, then I could conclude that, if those decedents are representative of men in that age group, men between ages 85 and 90 hold $\frac{30}{.04} = 750$ billion USD.

We canonically take $X = \{age, \ gender\}$, but we can include other objects in principle as long as we can calculate a mortality rate.

The IRS calculates its estate tax multiplier as

$$MULTIPLIER = \frac{\text{estate sample weight} \cdot \text{nonresponse adjustment}}{\text{national mortality rate} \cdot \text{mortality differential}}.$$

Limitations include:

1. Difficulties observing wealth in certain individuals in case spousal or generation skipping estate tax exemptions allow for non-filing

2. Lower bound censoring because only wealthy people pay estate tax

3. Death is NOT random, and those dying from group $X$ are not necessarily representative of all individuals from group $X$.

4. We need to be able to account for transfers *inter vivos* (i.e. lifetime gifts)

5. You need access to estate tax data

6. Doesn't lend for very granular decompositions (not *tons* of data, maybe 10k individuals per year)

7. Ranking individuals by wealth is therefore quite coarse.

Some upshots:

1. We *can* sometimes account for *inter vivos* transfers—both in data (sometimes reported) and econometrically (just augment reported estate valuation with lifetime gifts)

2. Perhaps not being able to measure the low-wealth individuals *isn't* so much of a problem.

3. We can (try to) account for the positive correlation between wealth and longevity

4. Partial extensions with inheritance taxes? Limitation: Inheritance taxes give partial wealth + US does not have federal inheritance tax

5. Estate tax data aggregates are publicly available

A great example of the estate tax multiplier method in practice is the IRS estimates of the personal wealth distribution.

## Income capitalization method

Wealth sometimes generates income that is taxable! If we know the rates of returns of those assets, we can make inference on the size of the underlying wealth generating those returns. E.g. Let's say the stocks I own give me USD 400 in dividends. Dividends are a form of income and are observed with reliable veracity in income tax data. If you know that on average, 1 dollar in stock generates 2 cents in dividends every year, then you might infer that I have $\frac{400}{.02} = USD\ 20,000$ in stocks. This method generalizes to other forms of reported capital income, such as property rents.

The idea is sort of simple: for asset class $j$, we have

$$Wealth_j = \frac{Income_j}{r_j}.$$

A researcher might estimate asset class rates of return (with heterogeneity) from an external source, like the SCF. Limitations include:

1. What if rates of return systematically vary within asset classes? Spoiler: they do, and there's lot's of discussion about how. How do you think rate of return within an asset class varies by wealth? How does that bias our wealth estimate?

2. What if rates of return vary non-randomly *within* asset class over the population?

3. What about wealth that does not generate taxable income? E.g. Jeff Besos has billions of Dollars in Amazon stock, but this stock pays no dividends.

4. You need income tax data.

Upshots include:

1. Income tax data aggregates are publicly available

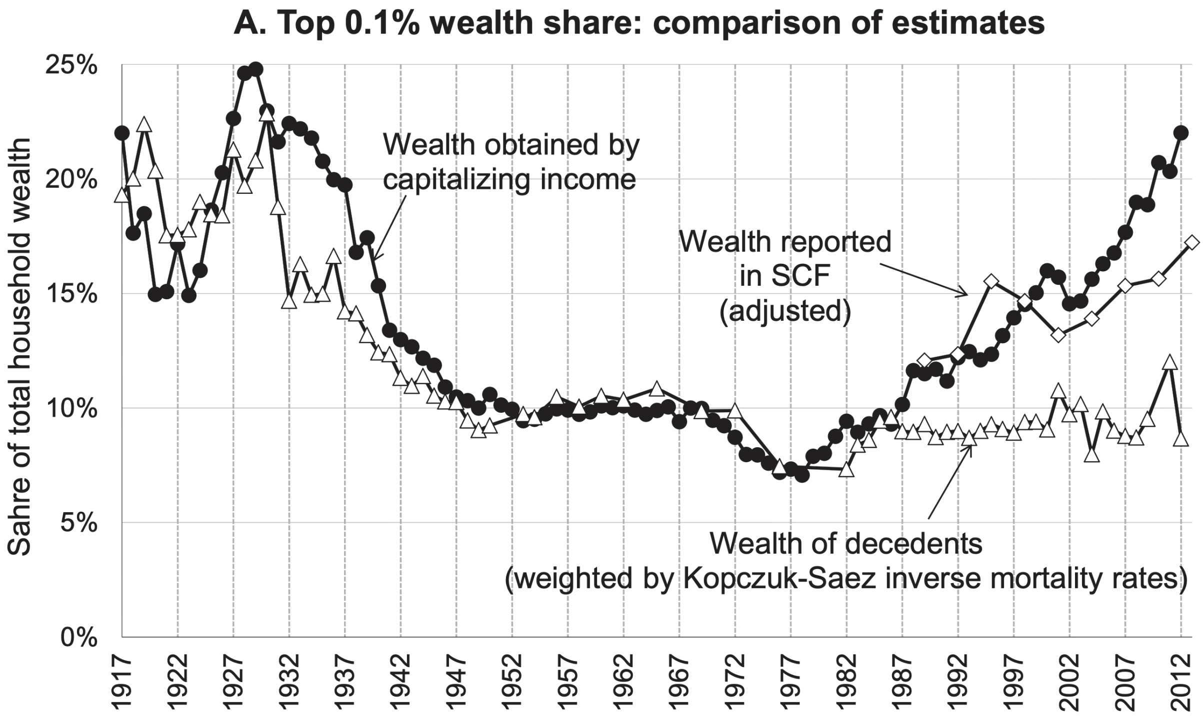
2. Relatively lots of individuals report some capital income generated from wealth (at least compared to decedents hit with the estate tax)

A great example is Saez and Zucman (2014), which is probably the state-of-the-art implementation of the method.

## Tax data

The gold standard! So far, we only observe non-housing wealth in tax data when individuals sell assets, and these data only give very partial information. The US government does not maintain any administrative wealth data. Some local governments require property valuations to be updated with some regularity for property taxation purposes, but these data are very partial and largely decentralized.

Administrative wealth data only tends to exist in jurisdictions with a wealth tax—for obvious reasons. E.g. Colombia, Norway, Denmark.




Source: Saez and Zucman (2014)

**NOT PICTURED HERE: TAX DATA METHOD**

Conclusion: measuring wealth is hard. The best estimates likely combine the above methods to suit the data environment and each method's strengths and weaknesses. What do you think of these different methods? Can you think of any other creative ways to measure wealth?

## Income/wealth inequality dynamics

Central, simple result:

$$sh_w^p = sh_y^p \cdot \frac{s^p}{s},$$

for wealth and income share of group $p$, $sh_w^p$ and $sh_y^p$ respectively, and savings rate of group $p$, $s^p$ and overall savings rate $s$.

**Proof:** Assume no capital gains, and homogeneous growth over groups $p$. Let us denote $x^p$ the variable $x$ for group $p$ and un-superscripted variables as the total over all groups of that variable. Recall our steady state result:

$$\beta^p = \frac{w^p}{y^p} = \frac{s^p}{g^p}$$

Now take the quotient:

$$\begin{aligned}
\frac{\beta^p}{\beta} &= \frac{w^p/y^p}{w/y} = \frac{s^p/g^p}{s/g} \\
\frac{w^p/w}{y^p/y} &= \frac{s^p/s}{g^p/g} \\
\frac{w^p}{w} &= \frac{y^p}{y} \cdot \frac{s^p}{s} \cdot \frac{g^p}{g}. \\
sh_w^p &= sh_y^p \cdot \frac{s^p}{s} \cdot \frac{g^p}{g}.
\end{aligned}$$

But, recall that growth is homogeneous over groups such that $g^p \equiv g$. We have our result:

$$sh_w^p = sh_y^p \cdot \frac{s^p}{s}.$$