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Task 2A - Piketty & Zucman Percentile Growth Chart

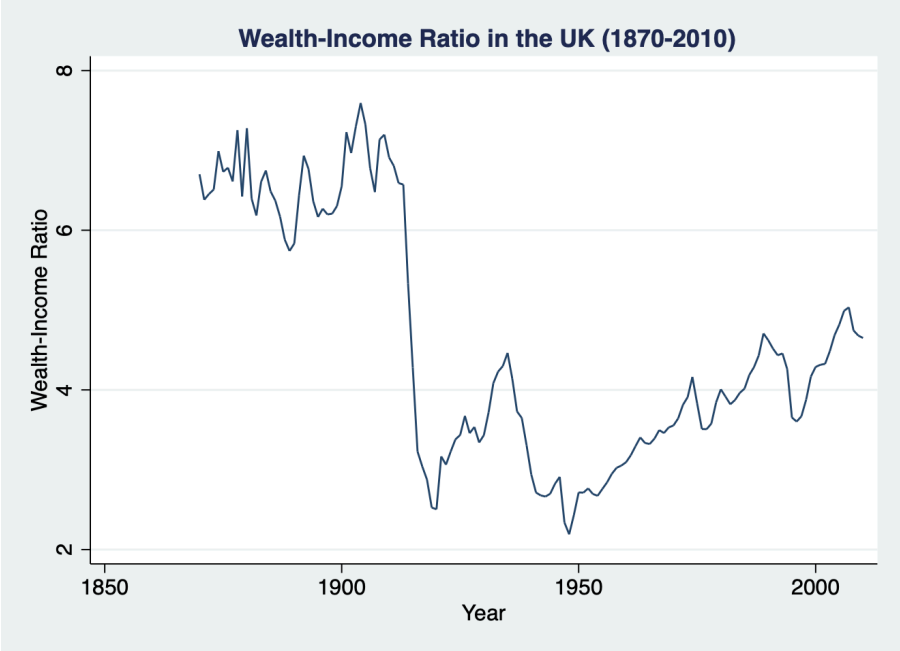

Fig 1. Wealth-Income Ratio in the UK (1870-2010)

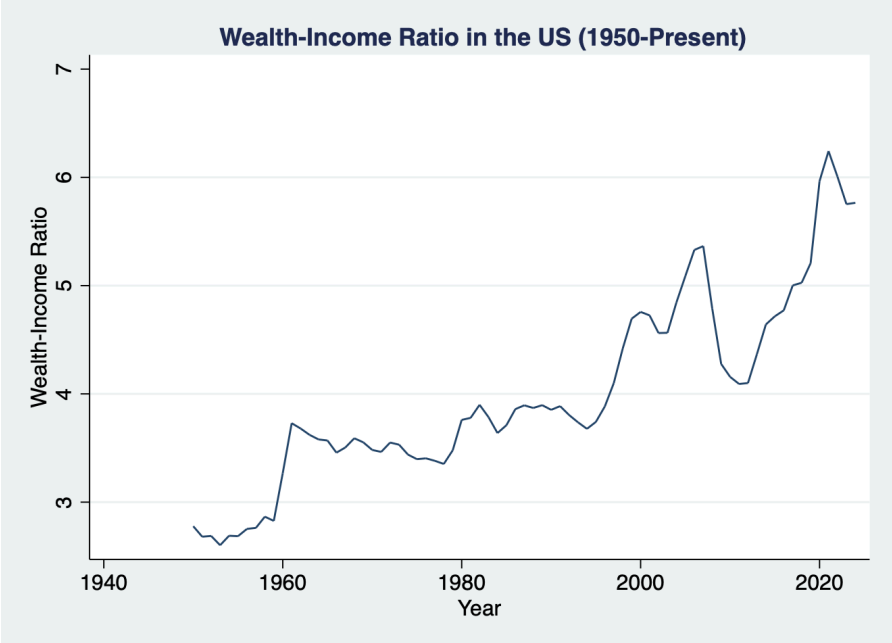

Fig 2. Wealth-Income Ratio in the US (1950-Present)

The wealth-income ratio (β) measures wealth relative to income, usually for a nation. It is a generally positively correlated with inequality and can be calculated using two ways:

$\beta = \frac{s}{g}$, where s is the country's savings rate and g is the country's growth rate

$\beta = \frac{national\ wealth}{national\ income}$

For the purposes of this paper and for many measurements, the latter equation is often used due to more availability in data. Countries generally already record their wealth and income, making it easier to obtain, whereas savings and growth rates require more calculation and oftentimes rely on estimations. As such, we will be using national wealth divided by national income to calculate the wealth-income ratio for this task.

Piketty and Zucman uses market-value national wealth (W_{nt}) which can be defined as the sum of private and public wealth. Private wealth being defined as the net wealth of households and nonprofit institutions that serve households, and includes both financial and non-financial items such as land, buildings, and life insurance funds. Social security and government transfers to households that have not yet occurred, such as future children educational expenses and health benefits are omitted. Public wealth then is the net wealth of government agencies and public administrations, and includes items such as (public) schools, (public) hospitals, and government bonds.

An alternative measure is to use book-value national wealth. However, a disadvantage of going by book-value is that it neglects a large fraction of the value of the housing stock (p. 1280). In the case of the UK, France, and Canada, a large increase in housing wealth was significantly attributed to the rise of housing market value. Choosing book-value may lead to underestimations in wealth measured which affects the validity of the calculated wealth-income ratio, therefore a market value approach is preferred.

The denominator of the wealth-income ratio is national income, which is the total value of all final goods and services produced in a country within a given year. As such, the formula used to reproduce the wealth-income ratio in this paper is:

$\beta = \frac{market\ value\ national\ wealth}{national\ income}$

Through this equation, a wealth-income ratio variable was created for each year, and was graphed against the year variable in Stata. Examining the wealth-income ratio for the UK (1870-2010), the country starts with a very high wealth-income ratio, ranging between 6 to 8 during the periods of 1870-1910. This indicates a very high level of inequality which aligns with our expectations of Britain at the time, where inequality gaps widened during the industrial revolution in the 1800s. A significant fall in the wealth-income ratio occurred around the 1910s,

which may have been attributed to the World Wars. A likely explanation of this was the destruction of wealth/capital during the wars. Over the years, there was a short peak in the wealth-income ratio around 1940, and from 1950 onward, the wealth-income ratio in the UK seems to be demonstrating positive growth. This aligns with the rise in wealth-income ratios of rich countries, including the UK observed in the paper, which the authors attribute to a recovery effect. This implies however, that inequality is rising in the UK, and may revert back to the same high inequality levels in the 1870s without policy intervention.

The US observes a similar positive growth in the wealth-income ratio, which also aligns with the findings in the paper. The wealth-income ratio now sits at 5.76 in 2024, a value close to the wealth-income ratio observed in European countries in the 19th century. This raises concern about the growing level of inequality in the United States, and also encourages speculation about the effectiveness of implemented policies to reduce inequality since 1950.

Addressing methodology and data differences that may impact the results, we first discuss the choice between using real versus nominal income. As real income adjusts for inflation which is often positive for most countries, real income will be smaller than nominal income. Using real income would result in a higher wealth-income ratio. This is useful for measuring the real effects of inequality (indicated through wealth-income ratio) for households. For this model, I decided to focus on the real implications of the wealth-income ratio on households within a country, and therefore chose to use real national income.

Next, the authors emphasize data limitations that restrict the scope of their study. First, sufficient data for long-term analysis only exists for four countries, all of which are rich. It would be insightful to examine inequality through the wealth-income ratio for poorer countries as well. For example, how inequality has changed throughout the growth of a developing country. Furthermore, insufficient raw data sources for the 18th and 19th century also restrict the ability to compare wealth-income ratios between countries and time periods. For example, pre-1970 US data are from combining historical estimates instead of official balance sheets. This affects the consistency in data between pre-1970 and post-1970, which may limit the ability to compare US wealth-income ratios over a longer historical period.

Finally, Piketty and Zucman discuss savings and capital gains effects as two factors that explain wealth accumulation (p. 1285). An important point is that savings and capital gains may be underestimated, as observed national wealth has been much higher than predicted national wealth. Improvements include accounting for R&D expenditure in savings and reevaluating the value of public assets at equivalent market values. With these taken into consideration, we should then be able to more accurately estimate national wealth. Re-evaluating national wealth under this method is likely to produce a more accurate but much higher national wealth, indicating an even higher level of inequality than in our initial estimates.

To conclude, wealth-income ratio trends in both the US and UK show positive growth. In the US, the wealth-income ratio is already similar to that of Europe in the late 1800s. With more scrutinized methodology, specifically regarding real income, better historical data, and measurement of wealth, we may find that the wealth-income ratio is even higher than current estimations. This aligns closer with observed data and reflects the reality that inequality persists and is again growing in the world today.