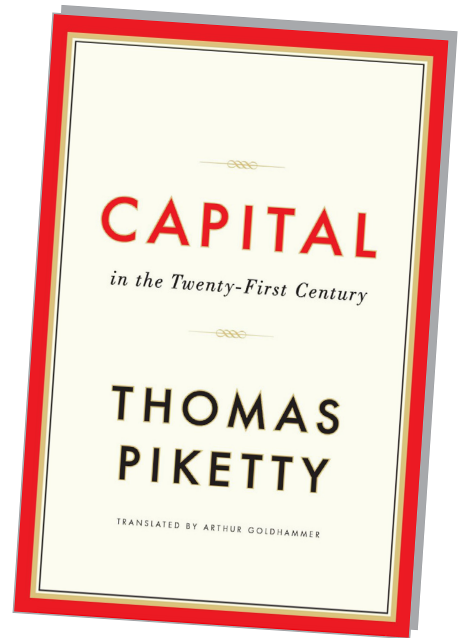
PICKING APART PIKETTY



Capital in the Twenty-first Century

By Thomas Piketty
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Inequality is clearly the issue *du jour* with the commentariat. Their latest standard-bearer is Thomas Piketty, with the publication of his book *Capital in the Twenty-First Century* (henceforth *Capital*) in 2014. In summary, *Capital* argues that income and wealth inequality in many countries has increased in recent decades, particularly because of high income earned by wealth (or capital, as the title has it) and steep increases in CEO salaries. To address the alleged problems caused by this increasing inequality, *Capital* proposes massive confiscatory taxes on capital income and wealth.

Piketty's book follows a long list of books decrying the supposed problems of inequality, including *The Price of Inequality* by Joseph Stiglitz (reviewed in Policy by Gordon Toy in 2013), but *Capital* stands apart in terms of its sales and impact on the public consciousness.

Matt Nolan considered some of the problems with the book in an earlier review in Policy (Nolan, Winter 2014). His review focused on the forecasts for inequality and the policy prescriptions. This review considers in more detail the many problems with the data in *Capital*. A range of other problems with *Capital* are explored in another review by this author (Potter, 2014).

In summary, the data problems with *Capital* are: it seriously underestimates the true income and wealth of the poor, somewhat overestimates the income and wealth of the rich, and fails to note a range of measures where inequality has fallen (including inequality at a global level and inequality in education and health). *Capital* also does not deal with the data showing that most of the increase in wealth is due to housing. In addition, *Capital* fails to recognise that there is substantial turnover in wealth at the very top, and the historical data does not support the central argument in *Capital* that inequality grows when there is an increase in the return on wealth.

Finally, the focus of *Capital* on inequality diverts attention from the clear successes in recent decades with addressing global poverty.

Data on Increased Inequality

Capital presents data purporting to show that income inequality was high in many countries in 1900, temporarily fell between

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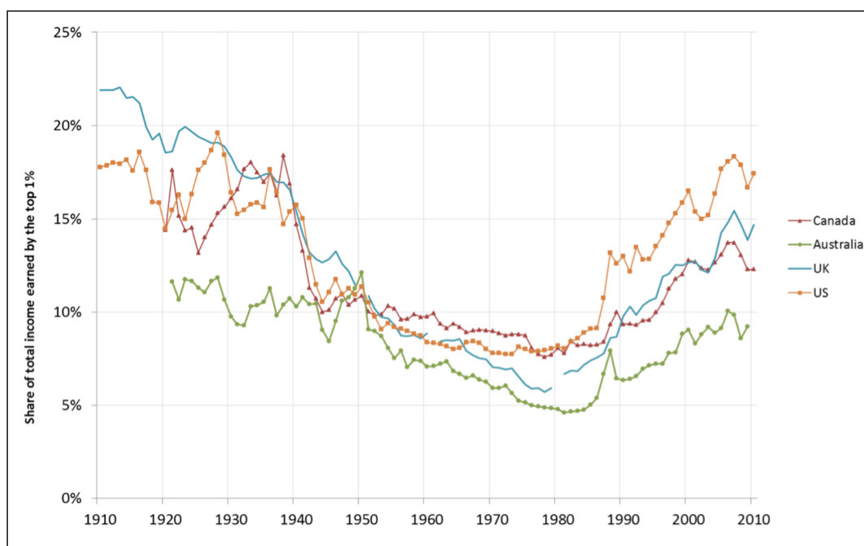
1900 and about 1950, then increased strongly after 1950, particularly in the U.S. *Capital* forecasts this increase in inequality to continue into the twenty-first century.

Capital measures income inequality as the proportion of total income that is earned by the top 10 percent, 1 percent or 0.1 percent. The data in *Capital* relating to the U.S., UK, Canada, and Australia for 1910 to 2010 is shown in Figure 1 below.

Figure 1: Top income shares in U.S., UK, Canada, and Australia, 1910–2010



Source: Capital's *online dataset: http://piketty.pse.ens.fr/en/capital21c*

All measures of inequality have disadvantages. A significant problem with the measure used in *Capital* is that it is focused largely on top incomes rather than low incomes (poverty). For example, this measure will not change if income is transferred from middle income earners to the very poor (or vice versa). This is a debatable value judgement.

Capital similarly analyses inequality in wealth. Some of the data from *Capital* on wealth inequality is shown in Figures 3 and 4 .

Piketty's Approach to his Data

Capital measures income inequality using data from tax returns. Piketty rejects the alternative, economic surveys, arguing they don't capture the incomes at the very top correctly. This is a reasonable argument—surveys don't accurately measure outliers and this becomes a major problem when the whole purpose is to measure these unusual points. A better approach is to collect data from all top incomes, not just some, and tax returns may be able to do this.

However, the use of tax return data also has major issues, mainly because the tax definition of income is different from the economic definition of income. Tax data usually leaves out income support payments, free government services, and non-taxable income; incorrectly measures capital gains; and is affected by changes in tax definitions over time. As a result, it is likely that *Capital* significantly underestimates the true income of middle and low income earners, and overestimates by a smaller amount the incomes at the top. (Most commentators accept that there have been increases in incomes at the very top.)

Piketty's data addresses one problem—the mismeasurement of top incomes in surveys—but while doing so creates several other problems that may be more severe than the issues he was originally attempting to fix.

In addition, a number of authors have raised significant problems with the construction of the data in *Capital*. Substantial questions were raised by Giles & Giugliano in the *Financial Times* (2014), to which Piketty responded in the *Huffington Post* (2014). More recently, Magnes & Murphy (2015) allege a multitude of errors in Piketty's datasets and his recounting of U.S. economic history; the data errors call into question many of the conclusions reached in *Capital*. It will be interesting to see if Piketty is able to address these newer concerns.

Income Support & Government Spending

Income tax data in many countries leaves out income support payments and welfare including pensions and unemployment benefits. In addition, free education, health care, and aged care are not valued or included. This is a serious omission, greatly understating the true level of resources and income available to the poorer members of society

(Winship 2014a, Burkhauser & Larrimore 2014; see also Milanovic 2013). This also means that *Capital* overstates the share of total income earned by the rich.

With the increases in the welfare state over recent decades, the problems caused by this omission are getting worse over time, with many payments and most government spending on subsidised services increasing faster than inflation, and the number of welfare recipients, particularly age pensioners, growing quickly.

The omission of income support and welfare is particularly odd because *Capital* discusses at length the development of the welfare state (Chapter 13). Regardless, Piketty ignores his own discussion when putting together the data for *Capital*, effectively implying that income support and welfare are not important to recipients—only private income is important. This would come as a surprise to those people who depend on government support.

A number of studies find different conclusions when this omission is corrected. The data source for *Capital* has the income of the bottom 90 percent in the US falling by over $US 3,000 from 1979 to 2012, whereas income after taxes and transfers actually increased by nearly $12,000, or $21,000 if the value of health care is included (Winship 2014a; see also Hagopian and Ohanian 2012). Conversely, the share of US disposable income going to the top 1 percent, including taxes and welfare payments, was around the same level in 1987–1988, 1996, 2001, and 2009 (Kaplan & Rauh 2013), although the proportion was significantly higher in some other years.

If the value of government services were included this would also result in a decline in measured inequality. Across the OECD, these services increase effective household income by about 27 percent, and particularly reduced inequality in the U.S. (Verbist, Förster, and Vaalavuo 2012).

There is also an important methodological problem with the omission: it is wrong to complain about increases in income inequality without measuring the things that reduce inequality (Worstall 2014a). The omission of this data in *Capital* is like turning off the lights and then complaining about the encroaching twilight.

Non-taxable Income

There are a range of tax exemptions that cause a divergence between taxable income and economic measures of income. Income that is likely to be exempt from tax, and therefore excluded from Piketty's data, include capital gains on the sale of the home (Winship 2014a) and the imputed rent from owner-occupied houses (Cross 2014, Bonnet et al. 2014).

The benefits of these tax exemptions are spread throughout society, and are not only available to the most wealthy, so this omission means that the data in *Capital* overstates income inequality. For example, the Australian Bureau of Statistics (2013, p27) has said that including imputed rent in income reduces measured inequality and allows for a "more meaningful" comparison of income circumstances.

Piketty's data also excludes some fringe benefits such as private health insurance in the U.S. (Winship 2014a); this exclusion substantially overstates measured U.S. inequality (Burkhauser & Simon 2010).

Piketty does discuss the impact of non-taxable income on his data (p. 282) but only focuses on exemptions that benefit the wealthy, missing the exemptions that have broader benefits.

Capital Gains

Most tax systems only record capital gains in the year in which assets are sold, which means capital gains are mismeasured. An asset that gains value every year for 20 years and then is sold in the final year appears in Piketty's data to generate no return for 20 years and then generate an enormous return in the final year. This clearly causes a fictitious increase in inequality.

It is difficult to correct for this measurement problem, but one study (Armour, Burkhauser and Larrimore 2014) finds that if capital gains are measured when they are accrued rather than realised, then U.S. income growth from 1989 to 2007 was slowest for the top 20 percent and fastest for the bottom 20 percent.

Changes in Definition of Taxable Income

The definition of taxable income changes over time, another reason why *Capital* has mismeasured

inequality. Burkhauser & Larrimore (2014) argue that, for Australia, the purported increase in top incomes from 1986 to 1989 is probably not a true change in inequality but instead is caused by a tax change, and another tax change—the introduction in the Capital Gains Tax—appears to be the reason for the measured growth in inequality since 1989. They also argue that one third of the purported increase in top incomes in the U.S. from 1985 to 2012 could be due to a reclassification of income for tax purposes (see also Winship 2014b).

More Issues with Data on Wealth Inequality

Capital argues that wealth inequality fell massively in many countries between 1900 and 1970 and has risen by a much smaller amount since then (see Figures 3 and 4 below). The total value of wealth has increased strongly according to *Capital* (see Figure 5.8 in the book), but inequality in wealth has grown more weakly.

Even this small recent increase in wealth inequality can be questioned. Estate taxes and surveys from the U.S. Federal Reserve show no increase in wealth inequality over the past 30 years (Kopczuk & Schrager 2014). Magness & Murphy (2014) also raise questions about Piketty's data on wealth inequality and discuss the differences between the various data sources.

In addition, there are conceptual issues with the definition of wealth, mirroring the problems with the data on incomes noted above. In particular, government welfare and income support payments are not included as wealth even though their value will be substantial to the poorest members of society. The capitalised value of these payments can be large and will be growing, with increases in payment rates, longevity, and the number of people on payments, as noted earlier. If these assets were included, wealth inequality would be significantly lower (Worstall 2014a, Kotlikoff 2014 and Weil 2015). The net wealth of the rich also fails to deduct the capitalised value of future tax payments, which would reduce measured wealth inequality as well.

An even more important asset is left out of Piketty's wealth calculations, namely human capital, which is the largest form of wealth in most countries (largely because the return on human capital is greater than the return on any other asset). For Australia, the ABS estimated the value of human capital in Australia at $6.7 trillion in 2001 (ABS 2008, p. 37). The total value of all other assets in the economy was $4.3 trillion in the same year (ABS 2014, table 10). Piketty argues that human capital should be omitted because it cannot be bought or sold (p. 46), but this doesn't eliminate its value.

If human capital is included, the value of total wealth will increase dramatically; but more importantly for current purposes, the distribution of wealth will be more equal, as human capital is more widely spread than other types of wealth (McCloskey 2014 and Weil 2015).

Housing

There are also specific issues with Piketty's wealth data relating to housing and land. His data shows that much of the recent increase in wealth in many countries comes from increases in the value of housing. For eight developed countries, including Australia, the U.S., and the UK, Piketty's data shows housing accounting for about 80 percent of the increase in wealth, and about 100 percent of the increase in income from wealth from 1970 to 2010 (Rognlie 2014). Piketty himself states that housing accounts for "virtually all" of the increase in wealth (technically the capital to output ratio) from 1970 in the United Kingdom, France, and Canada, for about two-thirds of the increase in the United States, and about half in Japan (Piketty & Zucman 2014).

The problems this creates for Piketty's argument include the following:

- Housing wealth is much more widely held than other types of wealth (Bonnet 2014). Increases in house prices do not create large wealth concentrations amongst the super wealthy. This is perhaps one reason why Piketty's own data doesn't show a significant increase in wealth inequality in recent decades.
- Piketty's forecast for sharp increases in inequality depends on labour and capital being very substitutable. But there is no reason why housing and labour should be substitutable to the extent assumed by Piketty, suggesting his

expectations about substitution are unlikely to hold.

- The problems with incorrect measurement of income in Piketty's data are more severe. As noted earlier, Piketty's data won't include capital gains on owner occupied housing in many countries, and will exclude imputed rent. This means that a substantial part of 'true' income is missed in the data in *Capital*. As well, capital gains that are included are mismeasured, artificially increasing inequality (as discussed earlier).
- A large part of gains in wealth comes from an increase in the price of existing wealth, not from accumulation of new wealth. This fits poorly with Piketty's argument that accumulation of wealth (from executive salaries and high returns to wealth) drives growth in wealth. Piketty argues that most of the increase in the value of housing is from investment/accumulation (p. 198), but this is wrong: see Potter (2014) for Australia, and Homburg (2014) for France. Instead, most of the recent increase in wealth is created by government regulation, particularly planning laws (Glaeser, Gyourko, & Saks 2005 and Quigley & Raphael 2005).

The Persistence of Top Wealth over Time

Piketty argues that wealth persists over time, particularly due to inheritances (p. 432–6). However, the data suggests otherwise. The proportion of the wealthiest 400 Americans who grew up rich has fallen substantially, from 60 percent in 1982 to 32 percent in 2011, and the proportion from multi-generation rich families has fallen dramatically over the same period (Kaplan & Rauh 2013). From 1982 to 2012, more than 90 percent of the original members of the richest 400 list dropped off (Summers 2014), and the biggest winners on this list are often entrepreneurs, while the biggest losers often inherited their wealth (McBride 2014).

Similarly, from 1992 to 2009, 73 percent of the individuals who appeared on the list of the top 400 taxpayers in the U.S. did so for only one year (Epstein & Boudreaux 2014). In addition, from 1989 to 2010, inheritances as a proportion of net worth fell from 29 percent to 26 percent, and the share of total wealth that comes from inheritances for the top 1 percent fell from 23 percent in 1989 to 11 percent in 2010 (Wolff 2014).

The failure of wealth to persist over time can be due to a range of factors including inheritances being split between multiple heirs; divorce; consumption; taxes; charity; poor investment returns; longer lifetimes; and higher health care expenses in retirement (Kotlikoff 2014, Kopczuk & Schrager 2014, McArdle 2014 and Wolff 2014).

What's Happening at a Global Level?

All of Piketty's analysis is about inequality inside individual countries. However, international inequality figures are very different.

Global income inequality (measured by the Gini coefficient) fell slightly from 1988 to 2008 (Lakner & Milanovic 2014), and this result still holds when Piketty's concern about surveys underreporting top incomes is addressed. Sala-i-Martin and Pinkovskiy (2009), using a different methodology, find that global inequality fell by six percentage points from 1970 to 2006; and the reduction is *greater* when the issue with underreporting of top incomes is fixed (note, however, that this study makes specific assumptions about the distribution of incomes that could be disputed). Liberati (2013) also finds reductions in world inequality in the period 1970–2009. And these studies do not include all government spending, so they could overestimate global inequality.

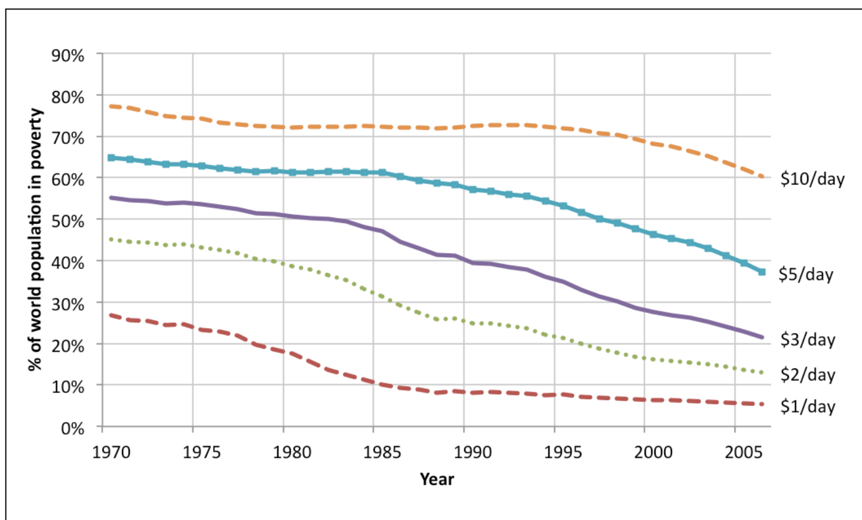
In broad terms, the fall in global inequality is because increased inequality within countries is more than compensated for by developing countries becoming (much) richer. Economic forces, such as globalisation and technical change, and government policies, such as immigration and trade, can cause inequality to decrease for the globe even while they cause increased inequality within nations. In particular, globalisation has caused low value production to move to the developing world (Hagopian & Ohanian 2012, Cassidy 2014, Ezrati 2014, McArdle 2014 and Cowen 2014).

Other Measures of Inequality

There are many other measures that show declines in inequality. Political inequality has diminished

over the last century with the growth in democracy and universal suffrage, and there have been large declines in educational, health, cultural, and social inequality. For example, inequality in U.S. life expectancy (measured by Gini index for lifespan) was cut in half between 1933 and 2010 (Worstall 2014b). World educational inequality (again measured by the Gini coefficient) fell from 0.64 in 1950 to 0.34 in 2010 (Wail et al 2012). Morrisson & Murtin (2012) also find a decrease in global education inequality since 1970.

Figure 2: World poverty rates, 1970–2006



Source: Pinkovskiy and Sala-i-Martin (2009), table 1.

In addition, consumption inequality is much lower than income inequality (Gates 2014, McCloskey 2014, Hagopian & Ohanian 2012). Income inequality can be misleading compared to consumption inequality. A student doctor could look poor but have very high future income. Gates (2014) argues that a capital owner who doesn't sell their shares could appear to have a very low income in particular years (see the comments on mismeasurement of capital gains above).

General Improvements in Wellbeing

In addition to missing trends in inequality that don't support Piketty's argument, *Capital* glosses over significant improvements in poverty over the past few decades for hundreds of millions around the globe. In particular, *Capital* is completely one-sided in discussing developing countries. Inequality has allegedly increased in these countries (for example, see Figure 9.9 of *Capital*), but *Capital* downplays or ignores the enormous increases in income (Cassidy 2014).

The achievements are quite extraordinary. From 1970 to 2006, poverty fell by 87 percent in South Asia, 73 percent in Latin America, 39 percent in the Middle East, and 20 percent in Africa (Pinkovskiy and Sala-i-Martin 2009). Figure 2 below shows the decline in the percentage of the world population meeting various poverty definitions (income of $1 a day to $10 a day).

Using a different approach, the World Bank (2014) indicates that "since 1990, the percentage of the world's population living in extreme poverty, defined as living on less than $1.25 per day, has dropped from 36% in 1990 to 18% in 2010." As Rogoff (2014) states, "The past 30 years have been among the greatest in history for improving the lot of the poor."

The improvement has not only been in income: "In the early nineteen-fifties, the average life expectancy in developing countries was forty-two years. By 2010, it had risen to sixty-eight years" (Cassidy 2014).

The Philosophical Issue with Inequality

Taken as a whole, *Capital* is effectively arguing that inequality is bad per se, even if the situation of the least well-off is improving. If the free market causes both a reduction in poverty and an increase in inequality, it is hard to see how some could argue against this—but this is what Piketty is arguing, at least implicitly.

Innovation provides a specific example of how an economy can change for the benefit of all, even while inequality increases. Innovators often become wealthy, but the overwhelming portion of the benefits from technological improvements goes to consumers rather than entrepreneurs. Nordhaus (2004) estimates that entrepreneurs capture only 2 percent of the social value of their inventions. That 2 percent can be a very large amount of money, but it is hard to see how the rest of society can complain about getting "only" 98 percent of the benefit of innovation (McCloskey 2014).

Another way of looking at this is that those who focus on inequality alone would oppose an improvement in the situation of the poor, if the rich have a greater improvement. They would prefer a situation where the poor were poorer, as long as the rich had a greater reduction in their incomes (paraphrasing Margaret Thatcher). It is hard to see how such an approach could be justified.

Supposed Drivers of Wealth Inequality

Capital's thesis is that there are two important drivers of wealth and wealth inequality: (1) a large gap between the returns to capital and economic growth; and (2) increasing income inequality, particularly due to executive salaries. However, the historical data does not support this connection. We have not seen increases in wealth inequality when there have been higher returns to capital or increases in income inequality. In fact, there is some evidence for the exact opposite.

One possibility is that his data is wrong. Alternatively, the problem lies in Piketty's thesis about the drivers of wealth inequality. Either way—if the data is wrong or if the data is right—there is a problem with Piketty's analysis. Piketty's contention may turn out to be right in the future, but to date, the evidence contradicts him.

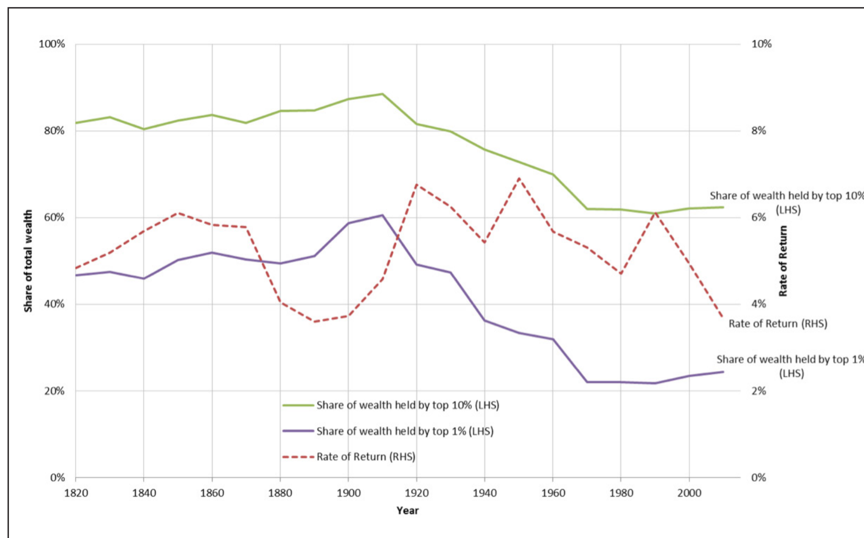
Piketty does argue that wealth is driven by *both* returns on wealth and executive salaries. But this in fact makes the problems in his analysis greater. If executive salaries are driving up wealth, then, removing the impact of these salaries from Piketty's wealth data, this leaves an even smaller increase in wealth to be explained by the returns on wealth. The problem with Piketty's data is more severe.

A graphical analysis shows the flimsiness of the conclusions in *Capital* for France and Britain.

Britain & France: Capital Returns & Wealth Inequality

Piketty's data for France is shown in Figure 3 below. We should see, if Piketty's argument were correct, that wealth inequality (the solid lines) increases when the return on wealth (the dotted line) is higher. However, we see the opposite. The rate of return fell in the 1880s but wealth inequality was largely unchanged; the return increased strongly after the 1900s but wealth inequality went *down*, and wealth inequality continued to fall to about 1970 even with returns remaining relatively high.

Figure 3: Wealth inequality and rate of return to capital, France 1820–2010



Source: Capital's *online dataset: http://piketty.pse.ens.fr/en/capital21c*

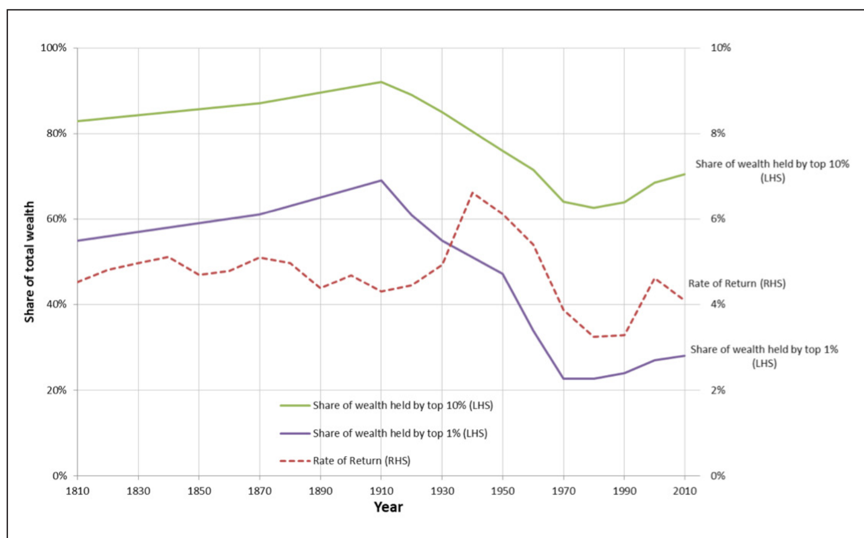
This figure also indicates that wealth inequality hasn't substantially increased in the recent four decades in France, showing the difficulties Piketty's thesis faces when confronted by the data.

Figure 4 shows Piketty's analytical problem for Britain. Piketty's argument is supported by the increase in wealth inequality from 1810 to 1870, which occurred at the same time as a very small increase in returns. However, returns fell after 1870s while wealth inequality continued to increase, and there was a sharp fall in wealth inequality from 1910 to 1940 but a (relatively) large *increase* in the returns on wealth. The data after 1940 is more in line with Piketty's position, but overall the data for Britain shows only mixed support for Piketty's argument.

The analysis shown in these graphs is partial and incomplete; in particular, the rate of return in these figures doesn't subtract the growth rate of the economy. Acemoglu and Robinson (2014) conduct

a somewhat more detailed analysis, examining the relationship between income inequality and the excess return to capital (i.e. the returns on wealth subtracting the economic growth rate). They examine a range of models and find that in some cases a higher excess return is actually linked with *lower* inequality, the exact opposite of the argument

Figure 4: Wealth inequality and rate of return to capital, Britain 1770–2010



Source: Capital's *online dataset:* *http://piketty.pse.ens.fr/en/capital21c*

in *Capital*. In the remainder of cases, the link is statistically insignificant. In *none* of the specifications do the results show statistically significant support for Piketty's argument.

This analysis will be developed over time, but at least for the moment, the clearest analysis of Piketty's argument from the data shows no support whatsoever for his conclusion (a more detailed examination could include use of lags and first differences rather than levels; more controls; and use of wealth inequality as well as 'or instead of' income inequality).

Forecasts for Inequality

As outlined earlier, the historical data in *Capital* does not support the argument that inequality is driven by the returns on wealth. This does not bode well for Piketty's argument that the high future returns to wealth will drive inequality to new heights. There could be other factors that cause inequality to increase (such as continuing technological advancement, see Rogoff 2014 and McArdle 2014), but the evidence so far for Piketty's causal factor is very flimsy.

On the other hand, there are a number of factors that argue against Piketty's forecasts for substantial increases in inequality. In particular, many commentators have disagreed with Piketty's argument that the returns to capital will remain high in the future, particularly given his assumptions about an increasing quantity of capital (Kotlikoff 2014, Cassidy 2014, McArdle 2014, Acemoglu & Robinson 2014, Summers 2014, and Milanovic 2014). Since the Global Financial Crisis, the returns on wealth have been quite low, and this could continue into the future (*Economist* 2014). Conversely, economic growth could be faster than Piketty assumes (Cassidy 2014 and Cross 2014).

Others have noted that wages growth could be stronger than assumed, due to an ending of the recent dramatic increases in global labour supply and retirements from ageing labour forces (Ezrati 2014 and Rogoff 2014).

Finally, as noted earlier, much of the recent increase in wealth was due to housing policy, which could also be a major influence on the growth in wealth in coming years. This factor is not considered in *Capital*.

Further Problems in Brief

This review has not discussed all the problems with *Capital*. There are very substantial difficulties with other parts of the book, including:

- The assertion that growth in executive salaries is because executives have significant influence over their own pay regardless of profitability;
- The implied argument that investment is bad (particularly foreign investment);
- Piketty's arguments (implied and stated) that inequality causes many problems;
- The proposed solutions to these 'problems' (punitive taxes on capital and incomes); and

- The lack of adequate discussion of alternative policies to address these 'problems'.

These issues are discussed in more detail in Nolan (2014) and Potter (2014).

Conclusion

Capital in the Twenty-First Century is a book that has come at the right time for those who are obsessed by inequality and its alleged harmful effects. But there are significant doubts on the data purporting to show massive increases in income at the top and stagnation at the bottom. *Capital* argues the drivers of wealth inequality are income inequality and a high rate of return on wealth, but the data shows no such link. In addition, global inequality has declined in recent decades, as has inequality in health, education, and democratic rights.

But perhaps most importantly, the focus of *Capital* on inequality clearly ignores the successes of recent decades in dealing with poverty, particularly in developing countries.

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