The Central Contradiction of Capitalism?

A collection of essays on *Capital in the Twenty-First Century*

Edited by Geoffrey Wood and Steve Hughes

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Introduction

When Thomas Piketty's *Capital in the Twenty-First Century* first appeared in English in 2014 it received a reception which fully merits the description "sensational". The book was discussed on radio and television, and on all social media. It was reviewed and discussed in newspapers and in magazines, and without exception these were no mere notes but full length articles. To see how remarkable this was, contrast it with the reception given to another scholarly book on its publication. When Milton Friedman and Anna Schwartz's *A Monetary History of the United States* appeared, it was extensively discussed by professional economists whether they were in academe, business, or government. It was reviewed widely and at length, by the most distinguished scholars of the day, in academic journals. But it received only the slightest amount of "popular" attention.

The difference can not be explained by the size of the books: both are substantial volumes. The quality of writing does not help to understand the contrast. Friedman and Schwartz's book was written in lucid, vigorous, prose. Professor Piketty's translator while no doubt accurate did not produce English of the standard of Friedman and Schwartz. The analysis and empirical work in Friedman and Schwartz was recognised as being of the very highest quality, even by those, such as the Nobel Prize winner James Tobin, who dissented strongly from some of its conclusions. Their book has so far stood the test of time. On the 50th anniversary of its publication the Journal of Monetary Economics, one of the two or three leading journals in the world specialising in work on that subject, engaged several economists to write articles on the theme of the *Monetary History Fifty Years On*. One of those so engaged, Robert Lucas (another economics Nobel Prize winner), wrote, among other things, that were he to go to Washington as a policy adviser, a book he would regard as essential to have by his side is

the *Monetary History*. And today monetary policy round the world is, at least as described by its practitioners, conducted in line with the main recommendations to emerge from that book.

An explanation can however be found in the number and nature of the two books' conclusions. Although in Friedman and Schwartz there were two or three what can be called main conclusions, there was much else, including not just further policy implications but also reinterpretations of important historical episodes. Piketty's conclusions, albeit supported by some thorough analysis and empirical work, were simple. The concentration of wealth has increased, is increasing, and will continue to do so inexorably through time. Something should be done about it. And this "something" is almost inescapably substantial and worldwide taxation of accumulated wealth.

Not only was this simple, but it seemed to capture the temper of the times. There are always those who claim to want higher taxation, regardless of the level of taxes and the size of the state. This really is inexplicable: if a private firm were about half of the economy, everyone would expect that it would do some things badly, waste many scarce resources, and have some employees not really dedicated to the service of their customers. The very size of the firm, even were it run by a group of Platonic guardians, would guarantee that. Why advocates of higher taxation do not have such hesitations about a large state is inexplicable. And there is perhaps another factor also at play – the infantilisation of much of Western society.

This is certainly not to say that Professor Piketty, a distinguished scholar, is in any way infantile. Rather it is a description of a distressingly common attitude, that if some aspect of a person's situation is unsatisfactory, it is in no degree their responsibility; rather someone has done it to them, and the situation must be changed – for true infants by their parents, for others by the government.

Be that as it may, the policy recommendations of Professor Piketty's book are yet to be implemented. Whether or not that

is a matter for regret depends in part on the robustness of his analysis. If the conclusions are false, or at the least not robustly supported, acting on them would not be prudent even aside from any unintended consequences such action might have. The aim of this pamphlet is to consider, in a series of brief essays, Professor Piketty's empirical work and the analysis which he uses to show the inevitability of his conclusions.

Several types of criticism were made of his empirical work. These include detailed analysis, and dissent from, his conclusions on UK (and other countries') wealth distribution; the importance of his neglecting changes in the US tax code; his forgetting that the incomes and wealth of individuals changes through time; the embedding of his analysis in a particular French philosophical tradition which has been discredited elsewhere; and his neglect of the long run. There is also a meticulous analysis of his theoretical model which reveals the peculiar nature of the assumptions embodied in it, and shows how changing them to ones more in accord with experience leads to a completely different conclusion. All the papers in this short volume are very readable, so a detailed summary of each is unnecessary. Below is simply a highlighting of some key points that emerge.

Martin Feldstein, unsurprisingly given his main area of research, shows how changes in the US tax code have created an impression of income and wealth inequality that reflects not that, but rather changes in classification.

> *"These changes in taxpayer behavior substantially increased the amount of income included on the returns of high-income individuals. This creates the false impression of a sharp rise in the incomes of high-income taxpayers even though there was only a change in the legal form of that income."*

Further,

> *"… Mr. Piketty's use of estate-tax data to explore what he sees as the increasing inequality of wealth is problematic. In part, this is because of changes in estate and gift-tax rules, but more fundamentally because bequeathable assets are only a small part of the wealth that most individuals have for their retirement years…"*

As Professor Feldstein writes, Piketty's conclusions rest, among other things, on

> *"… a flawed interpretation of US. income-tax data, and a misunderstanding of the current nature of household wealth…"*

Herbert Grubel, like Feldstein, also discusses changes in income and wealth distribution. But his focus is on conceptual and international issues. Conceptually, as he points out, both income and wealth change over individuals' lifetimes. A snapshot misleads.

> *"Professional athletes, performers in successful movies, authors of best-sellers and even managers typically have high incomes for short periods. Statistics Canada data show that in recent years, earners in the top 1% did not have incomes at that level five years earlier."*

And high incomes lead to high levels of wealth, which are subsequently depleted as income drops.

> *"Dynamic income statistics show that all are getting richer, the poor more than the rich. He also wrongly attributes most of the growth in inequality of wealth to excessive savings accruing to the rich when in fact it is due to recent technological revolutions and the globalisation of business that benefited super-managers and innovators-entrepreneurs like Gates and Jobs."*

That last point is one we return to. But before that to the UK, where there was a most detailed analysis of Piketty's results by Chris Giles of the *Financial Times*. (I must say here that I am astonished that a working journalist had the time to do this work – it really is impressive.) Prompted by a discrepancy between ONS data and that shown by Piketty, Giles looked further. And when he looked at data from other countries he found similar problems that were consistent with his conclusion on UK data. Overall,

> *"I discovered that his estimates of wealth inequality – the centrepiece of* Capital in the Twenty-First Century *– are undercut by a series of problems and errors. Some issues concern sourcing and definitional problems. Some numbers appear simply to be constructed out of thin air.*
>
> *"When I have tried to correct for these apparent errors, a rather different picture of wealth inequality appeared.*
>
> *"Two of* Capital in the Twenty-First Century*'s central findings – that wealth inequality has begun to rise over the past 30 years and that the US obviously has a more unequal distribution of wealth than Europe – no longer seem to hold."*

Professor Piketty's most courteous response to the FT critique, in which he draws attention to work subsequent to that in his book, and reiterates both his openness of mind and his willingness to engage in further debate and discussion, follows immediately behind the contribution of Chris Giles. (We invited Professor Piketty to contribute a response to this collection, and he suggested that we reprint his reply to Chris Giles.)

All but two of the papers make points of that sort: conceptual, or concerned with the way in which Professor Piketty constructs or interprets his data. Charles Gave's contribution is significantly different. Like Piketty a Frenchman, his particular concern is

how the policy implications of the book are a natural extension of a centralised, redistributive, French political system which, he observes, has wrought so much damage on France.

Dick Sargent attacks the analysis which is presented as both explaining the results displayed in *Capital*, and showing them to be inevitable. Piketty asserts:

> *"… that during the 21st century economies like France, the U.K. and the USA will become destabilised by growing inequality, as capital grows faster than income as a whole, leaving a diminishing share of the latter for those whose income, such as wages and salaries, is not derived from ownership of capital."*

But as Sargent shows, this depends on a very particular assumption - that "profits, dividends, interest, rents and other income from capital" are saved.

> *"… it would be highly unusual to find an economy in which savings followed the simple pattern described above. Normally, the flow of income which emerges as the return on capital is not simply re-invested by being added to the existing stock of capital; some of it is spent. Dividends and interest, for example, are part of that flow, and to a non-negligible extent are paid to individuals who do not save them all but spend part of them on consumption. Or they are distributed to pension funds and other savings media, through which they are passed on to individuals who consume part of what they receive."*

Sargent shows, in other words, that Piketty's "inevitable" result is in fact a special case, and one which rests on assumptions manifestly inconsistent with the facts. Now of course a model is not tested by the realism of its assumptions. But if a model has assumptions that do not just simplify but contradict reality, and if that model leads to predictions not manifestly consistent with facts, the model is not a very useful guide to the future.

Three general points remain to be made in conclusion. But before making these, it should be made clear that the criticisms and refutations of Piketty's results set out in this volume are in no way a condemnation of his work. Science progresses by the advancing and testing of hypotheses.[1] Piketty has redirected economists to an area of work that had been somewhat neglected in the years before his book appeared.[2]

Now to conclude. The great economist Joseph Schumpeter, Austrian in origin but for many years resident in the United States, where he taught and researched at Harvard University, was a close student of capitalism. He wrote of the "perennial gale of creative destruction" that pervades a free market capitalist economy. Innovations are always destroying old ways of doing things and replacing them with new, and if the new are better than the old then the new survive and the old die. And most important in this context, they create great wealth for the innovators until the advantage is in turn competed away. In other words, temporary concentrations of wealth in one set of hands after another are an essential part of economic growth.

Such concentrations of wealth can, once in existence, still further advance economic growth. Rich individuals can make investments in high risk untried technologies which less rich people, or those trusted to manage their assets, can not hazard.[3]

And finally there is chance. Chance has an inescapable role in all aspects of life. The Roman poet Horace, who lived from 65BC to 8AD, was from his own experience keenly aware of this. What is surely his most famous poem concludes:

> "... *Dum loquimur, fugerit invida*
> *Aetas. Carpe diem, quam minimum credula postero.*"

A recent translation (by Harry Eyres) captures that beautifully in English:

1 For a particularly interesting paper that reflects this, see Henry Ohlsson, Jesper Roine and Daniel Waldenström, Inherited wealth over the path of development: Sweden, 1810–2010, www.ucls.nek.uu.se/digitalAssets/297/297202_320147_ucls.pdf

2 Should economists then go on from the study of wealth distribution to making distribution rather than creation of wealth the main question, that would however be a grave misdirection of their efforts.

3 I am indebted to my former student, now friend, Michael Taylor, for this observation. He suggested the Tesla car as an example of the result of such an investment.

> "… *As we speak the seconds*
> *Tick away; today is ripe for tasting;*
> *Who knows what tomorrow's fruit will be?*"

Even the greatest concentration of wealth is not free of that inevitable uncertainty, and can not be shielded from it.

Geoffrey Wood
Professor Emeritus of Economics, Cass Business School
Professor Emeritus of Monetary Economics, University of Buckingham

Biographies

Martin Feldstein is the George F. Baker Professor of Economics at Harvard University and President Emeritus of the National Bureau of Economic Research. From 1982 through 1984, Martin Feldstein was Chairman of the Council of Economic Advisers and President Reagan's chief economic adviser. He served as President of the American Economic Association in 2004. In 2006, President Bush appointed him to be a member of the President's Foreign Intelligence Advisory Board. In 2009, President Obama appointed him to be a member of the President's Economic Recovery Advisory Board.

Herbert Grubel is a Senior Fellow at The Fraser Institute, and Professor of Economics (Emeritus), Simon Fraser University. He has a B.A. from Rutgers University and a Ph.D. in economics from Yale University. He has taught full-time at Stanford University, the University of Chicago, and the University of Pennsylvania; and has had temporary appointments at universities in Berlin, Singapore, Cape Town, Nairobi, Oxford, and Canberra. He has published 16 books and 180 professional articles in economics dealing with international trade and finance and a wide range of economic policy issues.

Charles Gave became founding partner of GaveKal Research Limited and GaveKal-Dragonomics Research in 2001. Prior to this, he co-founded Cursitor-Eaton Asset Management in 1986 and served as its Chief Investment Officer until 1995, before it was sold to Alliance Capital. He served at Alliance Capital from 1995 to 1999. Earlier in his career, after three years as a Financial Analyst in a French investment bank, he was the founder at Cecogest in 1974.

Chris Giles is the Economics Editor and a columnist at the *Financial Times*. He won Business journalist of the year prize in the 2012 Brit-

ish journalism awards. He has also won the Royal Statistical Society prize for excellence in journalism in both 2008 and 2012. Before joining the FT in 2000, Chris was an economics correspondent at the BBC. He started his career in research, spending seven years as an economist for the Institute for Fiscal Studies.

Thomas Piketty is Professor of Economics at the Paris School of Economics, and author of *Capital in the Twenty-First Century*. He regularly contributes articles published in journals such as the *Quarterly Journal of Economics*, the *Journal of Political Economy*, the *American Economic Review* and the *Review of Economic Studies*. He has undertaken major historical and theoretical work on the interplay between economic development and the distribution of income and wealth.

Matt Ridley's books have sold over a million copies, been translated into 30 languages, been short-listed for nine major literary prizes and won several awards. With BA and DPhil degrees from Oxford University, he worked for the Economist for nine years as science editor, Washington correspondent and American editor, before becoming a self-employed writer and businessman. He was founding chairman of the International Centre for Life in Newcastle. As Viscount Ridley, he was elected to the House of Lords in February 2013.

Dick Sargent founded the Department of Economics at Warwick in 1965; he was its first chairman, and was a professor in the department until 1973. He has also a member of the Council of the Royal Economic Society, and visiting professor at the London School of Economics. He has combined a distinguished academic career with spells in government and business: at the Treasury (1963 to 1965), the Ministry of Technology (1968 to 1969), and the Midland Bank (1974 to 1984) as group economic adviser. He was also Houblon-Norman research fellow at the Bank of England (1984 to 1985).

Scott Winship is the Walter B. Wriston Fellow at the Manhattan Institute. Previously a fellow at the Brookings Institution, his areas of expertise include living standards and economic mobility, inequality, and insecurity. Earlier in his career, he was research manager of the Economic Mobility Project of The Pew Charitable Trusts and a senior policy advisor at Third Way. He writes a column for Forbes.com and his research has been published in *City Journal*, *National Affairs*, *National Review*, *The Wilson Quarterly*, and *Breakthrough Journal*, among others. He has also testified before Congress on the issues of poverty and inequality.

Barrie A. Wigmore studied at Oxford University, and subsequently worked for a Canadian investment dealer. He began to work for Goldman, Sachs & Co in 1970. He founded the firm's Public Utility Department dealing with electric and gas utilities, natural gas pipelines, and telephone companies around the world and became a Partner in 1978. He retired in 1988 as a Limited Partner but maintained an office at Goldman Sachs until 2006. He has published two financial histories, *The Crash and Its Aftermath—Securities Markets in the United States 1929-1933* and *Securities Markets in the 1980s*, as well as numerous academic articles.

Geoffrey Wood is Professor Emeritus of Economics at Cass Business School and of Monetary Economics at the University of Buckingham. He has taught also at Warwick University, and has worked at the Bank of England as well as, among other institutions, the US Federal Reserve System and the New Zealand Treasury. He has published numerous scholarly articles and books in the fields of monetary economics, monetary and financial history, and regulation. Currently, in addition to his continuing research and other professional activities, he is on the board of an investment trust, is economic adviser to King &Wood Mallesons, and a senior adviser to PI Capital.

1. Piketty's Numbers Don't Add Up

Martin Feldstein

Originally published in *The Wall Street Journal*, 14 May, 2014

Thomas Piketty has recently attracted widespread attention for his claim that capitalism will now lead inexorably to an increasing inequality of income and wealth unless there are radical changes in taxation. Although his book, *Capital in the Twenty-First Century* has been praised by those who advocate income redistribution, his thesis rests on a false theory of how wealth evolves in a market economy, a flawed interpretation of US. income-tax data, and a misunderstanding of the current nature of household wealth.

Mr. Piketty's theoretical analysis starts with the correct fact that the rate of return on capital – the extra income that results from investing an additional dollar in plant and equipment – exceeds the rate of growth of the economy. He then jumps to the false conclusion that this difference between the rate of return and the rate of growth leads through time to an ever-increasing inequality of wealth and of income unless the process is interrupted by depression, war or confiscatory taxation. He advocates a top tax rate above 80% on very high salaries, combined with a global tax that increases with the amount of wealth to 2% or more.

His conclusion about ever-increasing inequality could be correct if people lived forever. But they don't. Individuals save during their working years and spend most of their accumulated assets during retirement. They pass on some of their wealth to the next generation. But the cumulative effect of such bequests is diluted by the combination of existing estate taxes and the number of children and grandchildren who share the bequests.

The result is that total wealth grows over time roughly in proportion to total income. Since 1960, the Federal Reserve flow-of-funds data report that real total household wealth in the US. has grown at 3.2% a year while the real total personal income calculated by the Department of Commerce grew at 3.3%.

The second problem with Mr. Piketty's conclusions about increasing inequality is his use of income-tax returns without recognising the importance of the changes that have occurred in tax rules. Internal Revenue Service data, he notes, show that the income reported on tax returns by the top 10% of taxpayers was relatively constant as a share of national income from the end of World War II to 1980, but the ratio has risen significantly since then. Yet the income reported on tax returns is not the same as individuals' real total income. The changes in tax rules since 1980 create a false impression of rising inequality.

In 1981 the top tax rate on interest, dividends and other investment income was reduced to 50% from 70%, nearly doubling the after-tax share that owners of taxable capital income could keep. That rate reduction thus provided a strong incentive to shift assets from low-yielding, tax-exempt investments like municipal bonds to higher yielding taxable investments. The tax data therefore signaled an increase in measured income inequality even though there was no change in real inequality.

The Tax Reform Act of 1986 lowered the top rate on all income to 28% from 50%. That reinforced the incentive to raise the taxable yield on portfolio investments. It also increased other forms of taxable income by encouraging more work, by causing more income to be paid as taxable salaries rather than as fringe benefits and deferred compensation, and by reducing the use of deductions and exclusions.

The 1986 tax reform also repealed the General Utilities doctrine, a provision that had encouraged high-income individuals to run their business and professional activities as Subchapter C corpora-

tions, which were taxed at a lower rate than their personal income. This corporate income of professionals and small businesses did not appear in the income-tax data that Mr. Piketty studied.

The repeal of the General Utilities doctrine and the decline in the top personal tax rate to less than the corporate rate caused high-income taxpayers to shift their business income out of taxable corporations and onto their personal tax returns. Some of this transformation was achieved by paying themselves interest, rent or salaries from their corporations. Alternatively, their entire corporation could be converted to a Subchapter S corporation whose profits are included with other personal taxable income.

These changes in taxpayer behavior substantially increased the amount of income included on the returns of high-income individuals. This creates the false impression of a sharp rise in the incomes of high-income taxpayers even though there was only a change in the legal form of that income. This transformation occurred gradually over many years as taxpayers changed their behavior and their accounting practices to reflect the new rules. The business income of Subchapter S corporations alone rose from $500 billion in 1986 to $1.8 trillion by 1992.

Mr. Piketty's practice of comparing the incomes of top earners with total national income has another flaw. National income excludes the value of government transfer payments including Social Security, health benefits and food stamps that are a large and growing part of the personal incomes of low- and middle-income households. Comparing the incomes of the top 10% of the population with the total personal incomes of the rest of the population would show a much smaller rise in the relative size of incomes at the top.

Finally, Mr. Piketty's use of estate-tax data to explore what he sees as the increasing inequality of wealth is problematic. In part, this is because of changes in estate and gift-tax rules, but more fundamentally because bequeathable assets are only a small

part of the wealth that most individuals have for their retirement years. That wealth includes the present actuarial value of Social Security and retiree health benefits, and the income that will flow from employer-provided pensions. If this wealth were taken into account, the measured concentration of wealth would be much less than Mr. Piketty's numbers imply.

The problem with the distribution of income in this country is not that some people earn high incomes because of skill, training or luck. The problem is the persistence of poverty. To reduce that persistent poverty we need stronger economic growth and a different approach to education and training, not the confiscatory taxes on income and wealth that Mr. Piketty recommends.

2. What Piketty Misses

Herbert Grubel

Originally published 23 May 2014

Thomas Piketty's book *Capital in the Twenty-First Century* is a global best-seller that has attracted more reviews from academics and public intellectuals than any other economics book in recent memory. In the middle of May, Google showed an astounding 12.5 million entries about him and his work.

None of these many reviews have made the point that the voluminous statistics used by Piketty are of limited relevance for reaching his neo-Marxian conclusion about the inevitability of rising inequality, social unrest and the collapse of existing market economies. The statistics he uses are snapshots of the distribution of income and wealth taken of a population whose composition changes with every picture taken.

What is more relevant to the assessment of the problems he foresees is information that traces the incomes of the same individuals through time. Only in recent years have governments begun to publish some of this information. In the United States one set of data has been authored by the Treasury. In Canada, Statistics Canada has published some data, which have received virtually no media attention. The Fraser Institute has recently published a study using data specifically compiled by the agency at considerable cost.

These Canadian data provide information that surprises many: Out of 100 workers who were in the lowest income quintile in 1990, 87 had moved to higher income quintiles 19 years later, with 21 of them having reached the very top quintile. Income mobility also results in downward movements. Of 100 Canadians in the highest income quintile in 1990, 36 were in lower quintiles 19 years later.

Another important piece of information provided by the Fraser Institute data puts a lie to the many reports about the demise of the

middle class. The same Canadian families who had inflation-adjusted average incomes in the lowest quintile in 1990, by 2009 had incomes 280% higher. During the same period families in the top quintile in 1990s experienced an increase of only 112%. The average incomes of the middle three quintiles rose by 153%. These data show that all Canadians have become richer, the poor more so than the rich and the middle class has more than kept pace with the rich.

> “Out of 100 workers who were in the lowest income quintile in 1990, 87 had moved to higher income quintiles 19 years later”

The income distribution dynamics revealed by these statistics is the result primarily of the life-time pattern of income: Pay and productivity are low when workers enter the labour force, rise with age and work experience and later decrease with the onset of age-related disabilities and retirement.

The time pattern of incomes of individuals is also caused by short-lived influences on the ability to work such as illnesses and personal decisions about raising children, further education and changes in life style. In Western market economies the impact of these events on income is limited through access to social security benefits and private insurance.

High incomes also tend to be earned only for limited periods of time as a result of one-off events like the realisation of capital gains, earning performance bonuses and even lottery winnings. Professional athletes, performers in successful movies, authors of best-sellers and even managers typically have high incomes for short periods. Statistics Canada data show that in recent years, earners in the top 1% did not have incomes at that level five years earlier. The Forbes data on billionaires shows that only 10% of those on the 1982 list were still on the list in 2012, even after adjustment for inflation over the 30 years.

Most of the extra-ordinary recent growth in the income of top earners, the infamous 1%, is due to the growth in the market for their services, which has been driven by the introduction of new

electronic media, globalisation and the growth in incomes of audiences: professional athletes, creative artists and entertainers now reach millions rather than the hundreds who used to fit into arenas or thousand in movie theatres.

The globalisation of commerce has increased the size of firms and raised the dollar value of the contributions managers can make to their bottom line. A firm with domestic sales of $100 million can offer a top manager expected to raise sales by 1% less than it can pay after globalisation raised this same firm's sales to $10 billion. The earnings of Bill Gates and Steve Jobs and their top managers would have been much smaller if their innovations had been sold only in the United States rather than in the entire world.

Piketty used the wrong data to conclude that the rich are getting richer and the poor are getting poorer. Dynamic income statistics show that all are getting richer, the poor more than the rich. He also wrongly attributes most of the growth in inequality of wealth to excessive savings accruing to the rich when in fact it is due to recent technological revolutions and the globalisation of business that benefited super-managers and innovators-entrepreneurs like Gates and Jobs.

The case Piketty makes for confiscatory income taxes and imposts on wealth to prevent "potentially terrifying" events is very weak for Western nations where most people rightfully expect growing incomes and wealth during their lives and where social insurance transfers protect the incomes of the temporarily and permanently needy.

Yet, Piketty's book and analysis has been praised widely by many well informed economists and columnists. The reason for this praise may be found in the fact that many people are envious of the successes of others. However, these people have the problem that, as Francois de La Rochefoucauld put it in 1665: "We often pride ourselves on even the most criminal passions, but envy is a timid and shame-faced passion we never dare acknowledge."

Piketty's message that the inevitable increases in the inequality of income and wealth will lead to very serious problems for Western culture and societies, just as they did by motivating the popular revolutions in 18th–century France and 20th–century Russia, provides the envious the opportunity to advocate more income and wealth redistribution policies on the grounds that they are needed to preserve existing Western culture and societies. That is a much nobler and socially acceptable motive for redistribution policies than envy. Redistributionists everywhere love Piketty for providing them with it.

3. The Problem with Piketty

Charles Gave

Originally published 9 May 2014

Thomas Sowell coined a marvellous phrase to describe the well-intentioned social engineers who always know what needs to be done to improve the wellbeing of the downtrodden. He called them "the anointed" and explained how their reasoning always evolves in the same three stages:

1. They identify a problem, which may or may not exist. But whether it is real or not, they always insist the problem is caused by market failures.
2. They propose a solution, which inevitably involves a greater role for the State – and for themselves as its high priests (high priests do not work, except within the Temple).
3. When their solution fails (as it invariably does), they don't re-examine their thinking, but just complain that it has been implemented with insufficient vigour. Needless to say, they put forward a new and improved plan they insist will work better next time …

Thomas Piketty is one of France's great (self-) anointed. Like the rest of his cohort, he eagerly supported François Hollande in the run-up to the 2012 presidential election. Once voted in, the great man started to follow Piketty's advice, and massively raised taxes on capital. Naturally, the policy failed miserably, so Piketty has published a book which explains – predictably – that his recommendations only failed because they were not applied on a worldwide basis. Apparently this book has now become a bestseller.

The extraordinary thing is that Piketty's analysis is based on a massive logical error. His thesis runs as follows: if r is the rate of

return on invested capital and if g is the growth rate of the economy, since r>g, profits will grow faster than GDP, and the rich will get richer and the poor poorer. This is GIGO (garbage in, garbage out) at its most egregious.

Piketty confuses the return on invested capital, or ROIC, with the growth rate of corporate profits, a mistake so basic it is scarcely believable.

“Thomas Piketty is one of France’s great (self-) anointed”

Let me explain with an example. I happen to be a shareholder in an industrial bakery in the south west of France. It has a return on invested capital of 20%, but we cannot reinvest the profits in the company at 20%. If we were to reinvest the profits by putting more capital to work, the profits would not change at all, because nobody in the region is going to buy more bread and productivity gains there are non-existent. In other words, the marginal return of one more unit of capital put to work is zero.

So instead of reinvesting in the bakery, we distribute the profits among the shareholders and they invest them elsewhere as they see fit. In short, our bakery has a high ROIC but no profit growth.

At the other extreme, a company expanding rapidly according to a “stack ’em high, sell ’em cheap” model might well show a low ROIC but very fast profit growth. Every company in the world can be “mapped” according to these two criteria: ROIC, and the growth rate of corporate profits.

Over the long term, the growth rate of corporate profits cannot be higher than the growth rate of GDP. That’s simply because if it were, after a while corporate profits would rise to reach 100% of GDP, which we all know is silly. Historically, the ratio of domestic profit to GDP has been a mean reverting variable. In reality, all Piketty has done is to rehash the great Marxist theory about the “unavoidable impoverishment” of the working classes, recasting it as a theory in which the capitalist class gets richer and richer over

time, and everyone else poorer and poorer. We only need to look at the history of the last 150 years, or of the last 20 – in which two billion people have escaped poverty – to see how valid this theory has proved to be.

Still, it was fine for Marx to confuse the ROIC and the growth rate of corporate profits, because he worked in the days before William Jevons, Eugen Böhm-Bawerk, Knut Wicksell, Joseph Schumpeter and Alfred Marshall, who between them developed the notion of the marginal return on one more unit of capital. Alas, one cannot make the same excuse for Piketty, who is writing more than 100 years after this discovery.

The next question, then, is: why has his book become a best seller? The answer was provided a long time ago by the early 20th Century Italian economist Vilfredo Pareto, who argued that to the governing and chattering classes a theory can be:

1. true and useful
2. false and useful
3. true and useless
4. false and useless

Here, a "useful" theory is one that increases the power of the anointed, not one that benefits the population at large. Theories that fall into the "false and useful" category are grasped especially fiercely by the anointed precisely because they help them to consolidate their political power. Keynesianism is a prime example.

Which brings us to Schumpeter. In Capitalism, Socialism and Democracy he made a fabulous remark which throws more light on the matter. He explained that the rise in living standards allowed by capitalism through the process of creative destruction was going to drive a huge rise in the educational level of the population. The educated but uncompetitive would grow to hate the capitalist system, under which their merits were not recognised, and would

try to seize control of educational and cultural institutions in order to teach the youth that markets do not work. Much the same idea was expressed by the Italian Marxist Antonio Gramsci. If these fellows were to take control of the cultural and educational world, then 30 years later the political system would fall into their hands like a ripe fruit. Then they would be able to use the democratic process to destroy the free market, having first brain-washed the electorate.

Don't get me wrong, I am absolutely in favour of education. But I am against a centralised educational system, easily controlled by the anointed. This leaves open a question: why do intellectuals hate free markets? Because, as French sociologist Raymond Boudon explained, in a free market they would be paid at their real value.

Their success in controlling not ideas, which are uncontrollable, but the teaching of ideas, continued Schumpeter, would inevitably lead to a shift from a democratic, market-based system, to tyranny and poverty. This is exactly what is happening in the old world today. An over-educated, self-anointed elite is fighting tooth and nail to defy market forces and preserve its position in the educational and cultural system. Piketty, as one of this elite, is being feted accordingly. Nothing new there.

4. Data Problems with *Capital in the Twenty-First Century*

Chris Giles
Originally published 23 May 2014, *Financial Times*

Professor Thomas Piketty's *Capital in the Twenty-First Century* has data on wealth inequality at its core. His data collection has been universally praised. Prof. Piketty says he has collected,

> *"as complete and consistent a set of historical sources as possible in order to study the dynamics of income and wealth distribution over the long run"*

However, when writing an article on the distribution of wealth in the UK, I noticed a serious discrepancy between the contemporary concentration of wealth described in *Capital in the Twenty-First Century* and that reported in the official UK statistics. Professor Piketty cited a figure showing the top 10 per cent of British people held 71 per cent of total national wealth. The Office for National Statistics latest Wealth and Assets Survey put the figure at only 44 per cent.

This is a material difference and it prompted me to go back through Piketty's sources. I discovered that his estimates of wealth inequality – the centrepiece of *Capital in the Twenty-First Century* – are undercut by a series of problems and errors. Some issues concern sourcing and definitional problems. Some numbers appear simply to be constructed out of thin air.

When I have tried to correct for these apparent errors, a rather different picture of wealth inequality appeared.

Two of *Capital in the Twenty-First Century*'s central findings – that wealth inequality has begun to rise over the past 30 years and that the US obviously has a more unequal distribution of wealth than Europe – no longer seem to hold.

Without these results, it would be impossible to claim, as Piketty does in his conclusion, that "the central contradiction of capitalism" is the tendency for wealth to become more concentrated in the hands of the already rich and

> *"the reason why wealth today is not as unequally distributed as in the past is simply that not enough time has passed since 1945".*

I will outline the classes of data problems I have found in Chapter 10 of Piketty's book, which deals with the inequality of capital ownership. I will then show why these problems matter for each one of the four countries Prof. Piketty studies – France, Sweden, UK and the US.

Finally, I will put all the revised data together to show that, based on the sources Piketty cites, the conclusions that (a) wealth inequality rose after 1980 and (b) wealth inequality in the US is larger than in Europe no longer seem to hold.

There is one important caveat. None of the source data at the basis of Piketty's work is completely reliable. So while this post is clear about what is wrong with Piketty's charts, it is much less certain about the truth.

The FT sent its concerns about the data problems in the book to Prof. Piketty, requesting a reply. Prof. Piketty's reply is reproduced in full after this essay.

1. Problems with Piketty's analysis of wealth inequalities

a) Fat fingers

Prof. Piketty helpfully provides sources for the data he uses in his work. Frequently, however, the source material is not the same as the numbers he publishes.

An example is the data for the wealth held by the richest 10 per cent and 1 per cent of people in Sweden in 1920. Prof. Piketty says his source is Waldenstrom (2009). It seems clear from the provided source data that the relevant numbers should be 91.69 and 51.51 respectively. However, Prof. Piketty's spreadsheet showsthat he uses 87.7 and 53.8, thereby appearing to get both numbers wrong. The most likely explanation for this problem is that it is a transcription error. The number Piketty uses for the top 1 per cent is the figure his source has for 1908 to two decimal places.

b) Tweaks

On a number of occasions, Prof. Piketty modifies the figures in his sources. This might not be a problem if these changes were explained in the technical appendix. But, with a few exceptions, they are not, raising questions about the validity of these tweaks. Here are a few examples:

The first example relates to French inequality between 1810 and 1960. The original source reports data relative to the distribution of wealth among the dead. In order to obtain the distribution of wealth across the living, Prof. Piketty augments the share of the top 10 per cent of the dead by 1 per cent and the wealth share of the top 1 per cent by 5 per cent. An adjustment of this sort is standard practice in this type of calculations to correct for the fact that those who die are not representative of the living population.

“In one year, 1910, it is not constant and the adjustment scale rises to 2 per cent and 8 per cent respectively. There is no explanation”

Prof. Piketty does not explain why the adjustment is usually constant. But in one year, 1910, it is not constant and the adjustment scale rises to 2 per cent and 8 per cent respectively. There is no explanation.

I will give two more examples of similar seemingly arbitrary adjustments to the source data.

In the US data, Prof.Piketty simply adds 2 percentage points to the top 1 per cent wealth share for his estimate of 1970. The 1970 formula is also interesting as it relates the top 1 per cent wealth estimate in 1970 to the change in a different source's wealth share of the top 0.1 per cent. This odd assumption is not explained and is possibly a simple excel problem.

Another example comes from the British data. For 1810 and 1870, Prof. Piketty estimates the wealth share for the top 10 per cent using the share for the top 1 per cent and then adding an arbitrary constant. This constant changes over time. For 1870, the wealth share for the 10 per cent is equivalent to the top 1 per cent share plus 26 percentage points. For 1810, the constant is 28 percentage points. There is no explanation of these estimates, although a careful reading of Prof. Piketty's sources shows that there are actual estimates for these two numbers in the original source. The source number for the top 10 per cent in 1870 (1875 in the original source) is not used, but stands at 76.7 per cent, not 87.1 per cent as presented.

c) Averaging

Prof. Piketty constructs time-series of wealth inequality relative for three European countries: France, Sweden and the UK. He then combines them to obtain a single European estimate. To do so, he uses a simple average. This decision is questionable, as it gives every Swedish person roughly seven times the weight of every French or British person. Using an average weighted by population appears more sensible.

d) Constructed data

Because the sources are sketchy, Prof. Piketty often constructs his own data. One example is the data for the top 10 per cent wealth share in the US between 1910 and 1950. None of the sources Prof. Piketty uses contain these numbers, hence he assumes the top 10 per cent wealth share is his estimate for the top 1 per cent share

plus 36 percentage points. However, there is no explanation for this number, nor why it should stay constant over time.

There are more such examples. Here's a list of constructed data, where there appears to be no source or where the source is not described either accurately or fully.

UK
1810 Top 10%
1870 Top 10%
1910 Top 10%
1950 Top 10%

Sweden
1810 Top 10%

France
1920 Top 10% and Top 1%
1970 Top 10% and top 1%
2000 Top 10% and top 1%

US
1810 Top 10% and top 1%
1870 Top 10% and top 1%
1910 Top 10%
1920 Top 10%
1930 Top 10%
1940 Top 10%
1950 Top 10%
1970 Top 10% and top 1%
1980 Top 10% and top 1%

e) Picking the wrong year for comparison

There is no doubt that Prof. Piketty's source data is sketchy. It is difficult to find data that relates to the start of each decade as his graphs demand. So it is only natural that he might say 1908 is a reasonable data point for 1910 on the graph.

It becomes less reasonable when, for example, Prof. Piketty uses data from 1935 Sweden for his 1930 datapoint, when 1930 data exists in

his original source material. Nor is it clear why the UK source data for 1938 should equate to 1930 rather than 1940. Nor is it obvious why Swedish 2004 data should be used to represent 2000 (when a datapoint for 2000 exists in the original source), but 2005 data applies to 2010.

f) Problems with definitions

There are different ways to compute wealth data ranging from estimates based on records at death to surveys of the living. These methods are not always comparable.

In the source notes to his spreadsheets, Prof. Piketty says that the wealth data for the countries included in his study are all obtained using the same method.

"Note: as explained in the text, these are for all countries estimates of inequality of net worth between living adults (using mortality multiplier methods)," he says, making it clear that the source data comes from estate taxes.

But this does not seem to be true. For the US, he uses the mortality multiplier method until 1950 and it forms a basis for the 1970 numbers, while in 1960 and from 1980 he uses a wealth survey. For the UK, his choices are different. For 2000 and 2010, he bases his estimates on probate data even though the Office for National Statistics has produced a wealth and assets survey.

These inconsistencies are not mentioned in Prof. Piketty's technical appendix. They can also produce large biases.

g) Cherry-picking data sources

There is little consistency in the way that Prof. Piketty combines different data sources.

Sometimes, as in the US, he appears to favour cross-sectional surveys of living households rather than estate tax records. For the UK, he tends to avoid cross sectional surveys of living people.

Prof. Piketty's choices are not always the best possible ones. A glaring example is his decision relative to the UK in 2010.

The estate tax data Prof. Piketty favours comes with the following health warning.

> *"[The data] is not a suitable data source for estimating total wealth in the UK, or wealth inequality across the whole of the wealth population; the Wealth and Asset survey is more suitable for those purposes".*

These choices matter: in both the UK and US cases, his decision of which type of data to use has the effect of showing wealth inequality rising, rather than staying constant (US) or falling (UK).

2. Correcting the errors – what difference does it make to the country charts?

If the problems outlined above made trivial differences to Prof. Piketty's final results, there would be little need to worry. But, as this section shows, the combined result of all these problems is to make wealth concentration among the richest in the past 50 years rise artificially.

a) Britain

The problems seem most acute for Britain, where Prof. Piketty shows rising concentrations of wealth among the richest since 1980, when his source data does not. This appears to be the result of swapping between data sources, not following the source notes, misinterpreting the more recent data and exaggerating increases in wealth inequality.

To understand the British data, you must first start with the raw numbers, which come from a variety of sources, outlined in red in the chart below and in this spreadsheet. I have included every year of data that exists, including additional data in the papers Prof. Piketty cites, but does not use.

From this chart, I believe you can deduce the following:

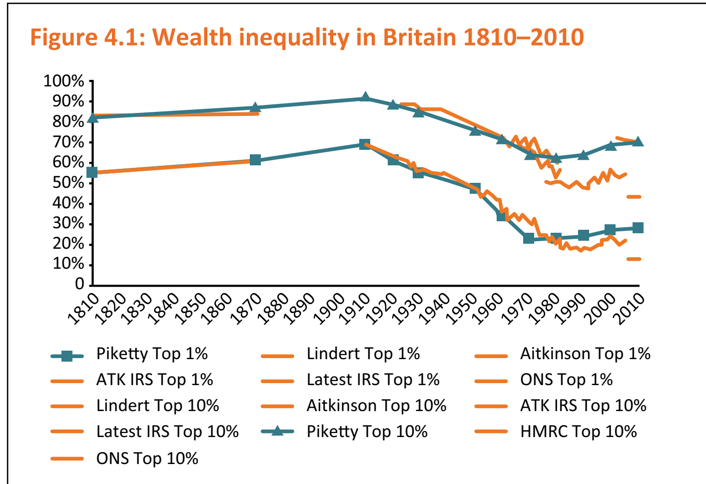


Figure 4.1: Wealth inequality in Britain 1810–2010

1. Prof. Piketty's representation of the data (in green) cannot be supported by the raw data (in orange).
2. Prof. Piketty's representation of the 1970s does not match any of the underlying data. All the raw data for the 1970s shows wealth concentrations falling rapidly (by about 10 percentage points). In Prof. Piketty's representation, however, concentration declines a little (top 10 per cent) and rises a touch (top 1 per cent)
3. The level of wealth concentration in Britain in 1980, 1990, 2000 and 2010 is significantly lower than Prof. Piketty reports.
4. Prof. Piketty ends his series taking at face value the level of the HMRC data, despite HMRC saying clearly (see section 1-g) the data is not suited for that purpose, nor is it consistent with the old Inland Revenue Series which Prof. Piketty uses for earlier years. This latter point is also clearly stated in the notes to the source data.
5. There seems to be little consistent evidence of any upward trend in wealth inequality of the top 1 per cent. Their wealth share

declines from after the first world war to around 1980 and is pretty constant thereafter. The best guess for a consistent series would be a figure close to 20 per cent in 2010. In fact, the ONS Wealth and Assets Survey, which is now three waves old and consistently measures the share of the top 1 per cent has a much lower estimate, at 12.5 per cent, which should be the best current estimate of that wealth share. That is less than half Prof. Piketty's estimate.

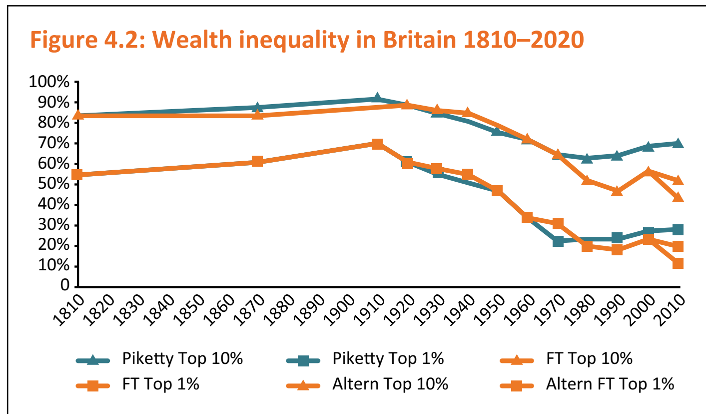
6. There is also little consistent evidence of any upward trend in wealth inequality of the top 10 per cent. Top 10 per cent wealth appears to have fallen from around the time of the first world war until about 1980. There was a gentle rise in the 1990s (largely because of fast-soaring equity prices which are very concentrated among the rich), but inequality then fell again after the millennium and remained stable. My best guess for a number consistent with this data would be around 52 per cent in 2010, but note should again be taken of the ONS data, which is specifically designed to measure wealth. It puts the concentration in the top 10 per cent in each of its three waves at 44 per cent, well below Prof. Piketty's own estimate. The latest ONS wealth survey was published after *Capital in the Twenty-First Century*, but the first two waves were published in good time and provide the same result.

“With such discontinuities, making any long-run time series is fraught with the danger of getting things horribly wrong”

7. There are discontinuities in the raw data which should give anyone pause for thought. Look at the steep change between 1959 and 1960 for the top 1 per cent. And look at the far right of the data (around 2010) for both the 1 per cent and the 10 per cent: the levels of these latest figures are very different from the previous data series. There are also some inconsistencies around 1980 for the top 10 per cent. With such discontinuities, making any long-run time series is fraught with the danger of getting things horribly wrong.

To put the data together in a consistent and simplified form, I get the chart below which includes two options for the 2010 data entry, based on whether one takes not of the ONS Wealth and Assets survey or not. My preference is to use that survey because it is the best data on the whole chart, specifically designed for the purpose of measuring wealth, but I show both results. In each case the tendency for wealth inequalities to rise after 1980 disappears.

Figure 4.2: Wealth inequality in Britain 1810–2020



b) France

The main problems relating to the French numbers used by Piketty seem to relate to the arbitrary tweaks he uses for 1910 which raises the wealth share at the top around the turn of the 20th century (see 1–b).

The other main difference is that I have taken data for the year in question rather than an average of the data for the rest of the decade. This makes the series more compatible with other countries.

Where the data is missing, for example in 1970, I have not included any point in the chart.

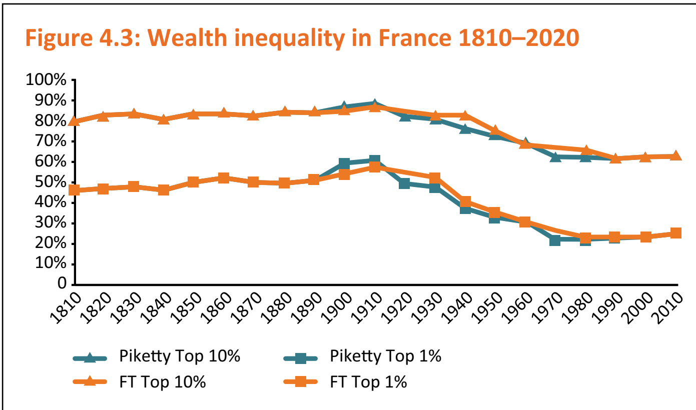


Figure 4.3: Wealth inequality in France 1810–2020

c) Sweden

There appear to be few problems with the choices made by Prof. Piketty for Sweden. These are mostly data omissions, transcription errors and odd choice of data to represent the years in the graph.

For 2010, I use the latest data from 2006, which shows a small decline. Prof. Piketty uses an average of 2005 and 2006, but does not explain why.

He also chose to use 2004 for 2000, when the data point for 2000 was available in the sources he cited. I prefer to stay with the 2000 data.

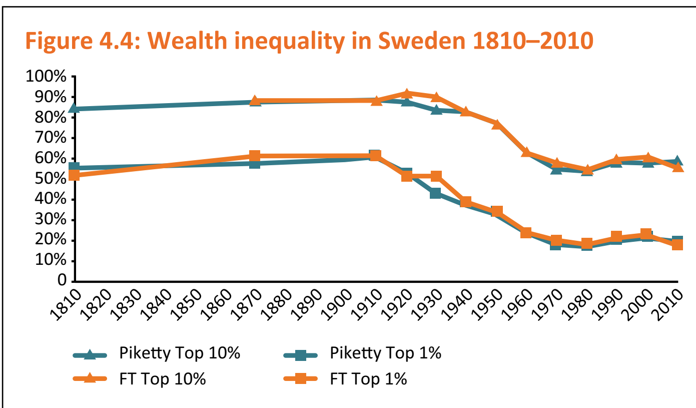


Figure 4.4: Wealth inequality in Sweden 1810–2010

d) Europe

I constructed a population-weighted European average of Britain, France and Sweden. There is little doubt that as Piketty claims, wealth inequality fell after the First World War and that this fall levelled off after 1980.

But there are two differences between my results and Prof. Piketty's. The first, more tentative, conclusion is that wealth inequality was not as high at the turn of the 20thcentury as Piketty says. This result is largely the consequence of giving Sweden a smaller weight in the results than Piketty, reflecting its lower population.

The second, more important, discrepancy is that once more reliable British results are included, there is no sign that wealth inequality in Europe is rising again. The finding that wealth inequality has not been rising in the last 30 years in Europe is a fundamental challenge to Prof. Piketty's thesis that all advanced economies have been witnessing a turnround in a long historic trend of falling wealth inequality after 1980. The data does not suggest that is true. The two alternative pictures in the graphs represent different choices regarding the UK data for 2010, as discussed in section 2-a.

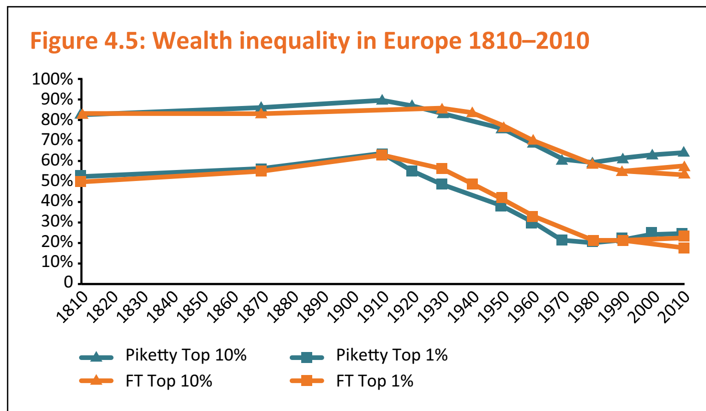


Figure 4.5: Wealth inequality in Europe 1810–2010

e) The US

The US is tricky as the source data is even sketchier than that for the three European countries included in the study. I do not feel comfortable in attempting to create an FT long-term trend as the source data does not allow it.

Instead, I will graph the source data along with Prof. Piketty's view of the long-term trend, to demonstrate his graph does not seem to be an entirely fair representation of that source data.

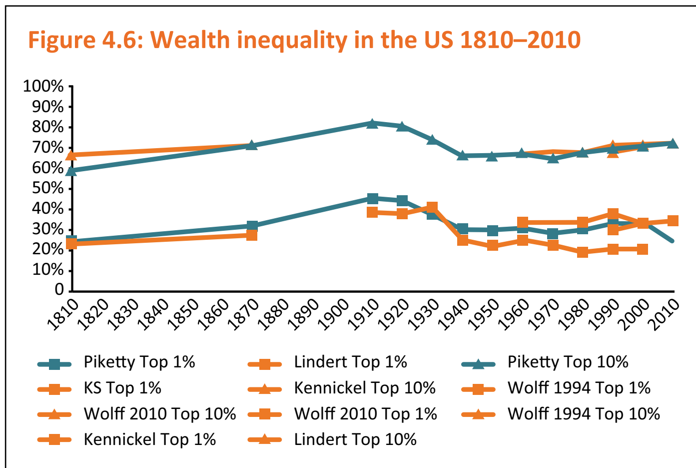


Figure 4.6: Wealth inequality in the US 1810–2010

Look first at the top lines, representing the share of wealth for the top 10 per cent of the population. There is simply no data between 1870 and 1960. Yet, Prof. Piketty chooses to derive a trend.

The top 1 per cent wealth share has many more data points, including a long-running time series from Kopczuk-Saez (2004). This series gives numbers remarkably similar to those from European data in both level and trend after the Second World War.

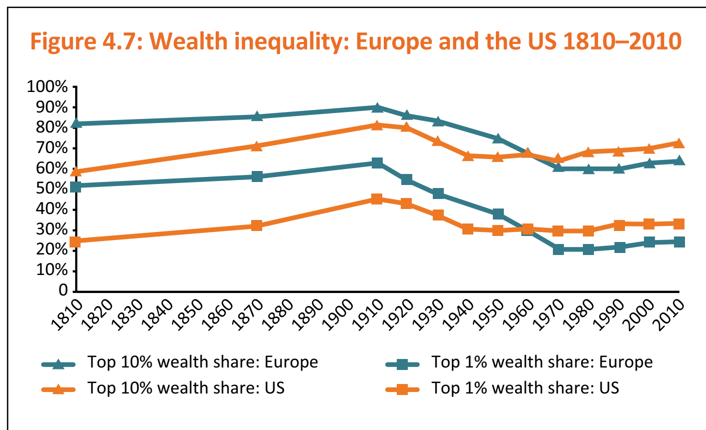
In constructing his long-run series (in blue), Prof. Piketty migrates from the Kopczuk-Saez data to that of Wolff (1994, 2010) and Kennickel (2009), even though these are measured on a very different basis. The result is that his line does not have the fall in inequality seen by Kopczuk-Saez but instead shows a rise.

Looking at the two papers by Wolff, which provide estimates from 1960 to 2010, the top 1 per cent wealth share appears to be essentially flat, going from 33.4 per cent of total wealth in 1960 to 34.6 per cent in 2010. Wolff's papers describe a modest increase in inequality, significantly gentler than Piketty's graph shows.

3. Put all the wealth data together

When Piketty puts Europe and the US together, he gets the dramatic chart below (figure 10.6 in the book). It shows inequality in Europe dipping below the US after 1960 and an upward trend on both lines thereafter.

Figure 4.7: Wealth inequality: Europe and the US 1810–2010



As I have noted, even with heroic assumptions, it is not possible to say anything much about the top 10 per cent share between 1870 and 1960, as the data for the US simply does not exist.

There is more data for the top 1 per cent share, but I also do not think it is wise to draw a definitive time series for the US as the data is inconsistent. But one can plot all the individual data and compare it to the European data, as I do in the picture below.

The chart shows that Europe did have higher wealth concentration in the 19thcentury and that inequality fell more than in the US. On this Prof. Piketty appears to be right.

The exact level of European inequality in the last fifty years is impossible to determine, as it depends on the sources one uses. However, whichever level one picks, the lines in red in the graph show that – unlike what Prof. Piketty claims – wealth concentration among the richest people has been pretty stable for 50 years in both Europe and the US.

There is no obvious upward trend. The conclusions of *Capital in the Twenty-First Century* do not appear to be backed by the book's own sources.

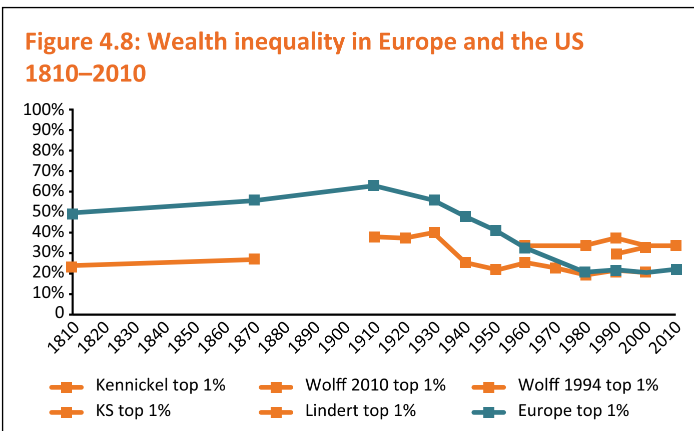


Figure 4.8: Wealth inequality in Europe and the US 1810–2010

5. Piketty Response to FT Data Concerns

Thomas Piketty

Originally published in the *Financial Times* 23 May 2014

Dear Chris,

I am happy to see that FT journalists are using the excel files that I have put online! I would very much appreciate if you could publish this response along with your piece.

Let me first say that the reason why I put all excel files online, including all the detailed excel formulas about data constructions and adjustments, is precisely because I want to promote an open and transparent debate about these important and sensitive measurement issues (if there was anything to hide, any "fat finger problem", why would I put everything online?).

Let me also say that I certainly agree that available data sources on wealth are much less systematic than for income. In fact, one of the main reasons why I am in favor of wealth taxation and automatic exchange of bank information is that this would be a way to develop more financial transparency and more reliable sources of information on wealth dynamics (even if the tax was charged at very low rates, which you might agree with).

For the time being, we have to do with what we have, that is, a very diverse and heterogeneous set of data sources on wealth: historical inheritance declarations and estate tax statistics, scarce property and wealth tax data, and household surveys with self-reported data on wealth (with typically a lot of under-reporting at the top). As I make clear in the book, in the online appendix, and in the many technical papers I have published on this topic, one needs to make a number of adjustments to the raw data sources so as to make them more homog-

enous over time and across countries. I have tried in the context of this book to make the most justified choices and arbitrages about data sources and adjustments. I have no doubt that my historical data series can be improved and will be improved in the future (this is why I put everything online). In fact, the "World Top Incomes Database" (WTID) is set to become a "World Wealth and Income Database" in the coming years, and we will put online updated estimates covering more countries. But I would be very surprised if any of the substantive conclusion about the long run evolution of wealth distributions was much affected by these improvements.

For instance, my US series have already been extended and improved by an important new research paper by Emmanuel Saez (Berkeley) and Gabriel Zucman (LSE). This work was done after my book was written, so unfortunately I could not use it for my book. Saez and Zucman use much more systematic data than I used in my book, especially for the recent period. Also their series are constructed using a completely different data source and methodology (namely, the capitalisation method using capital income flows and income statements by asset class). The main results are available here: http://gabriel-zucman.eu/files/SaezZucman2014Slides.pdf.

As you can see by yourself, their results confirm and reinforce my own findings: the rise in top wealth shares in the US in recent decades has been even larger than what I show in my book.

In this graph: www.documentcloud.org/documents/1173481-pages-de-pikettyzucman2014hid-1-2.html I compare their series with the approximate series that I provide in the book. As you can see by yourself, the general historical profiles are very similar. This is exactly what I expect as we collect more data in other countries as well: we will certainly improve upon my series and adjustments (some of which can certainly be discussed), but I don't think this will have much of an impact on the general findings.

(see also this paper pp. 91–92 of pdf: http://gabriel-zucman.eu/files/PikettyZucman2014HID.pdf)

Finally, let me say that my estimates on wealth concentration do not fully take into account offshore wealth, and are likely to err on the low side. I am certainly not trying to make the picture look darker than it is. As I make clear in chapter 12 of my book (see in particular table 12.1–12.2), top wealth holders have apparently been rising a lot faster average wealth in recent decades, at least according to the wealth rankings published in magazines such as Forbes. This is true not only in the US, but also in Britain and at the global level. This is not well taken into account by wealth surveys and official statistics, including the recent statistics that were published for Britain. Of course, as I make clear in my book, wealth rankings published by magazines are far from being a perfectly reliable data source. But for the time being, this is what we have, and what we have suggests that the concentration of wealth at the top is rising pretty much everywhere. Of course, if the FT produces statistics and wealth rankings showing the opposite, I would be very interested to see these statistics, and I would be happy to change my conclusion! Please keep me posted.

Best,
Thomas

6. Technical Appendix of the Book *Capital in the Twenty-First Century*

Appendix to chapter 10. Inequality of Capital Ownership

Addendum: Response to FT

Thomas Piketty, May 28 2014

http://piketty.pse.ens.fr/capital21c

This is a response to the criticisms – which I interpret as requests for additional information – that were published in the *Financial Times* on May 23 2014 (see FT article here).[4] These criticisms only refer to the series reported in chapter 10 of my book "Capital in the 21st century", and not to the other figures and tables presented in the other chapters, so in what follows I will only refer to these series.

This response should be read jointly with the technical appendix to my book, and particularly with the appendix to chapter 10 (available here). The page numbers given below refer to the HUP edition of my book that was published in March 2014.

Let me start by saying that the reason why I put all excel files on line, including all the detailed excel formulas about data constructions and adjustments, is precisely because I want to promote an open and transparent debate about these important and sensitive measurement issues.

Let me also say that I certainly agree that available data sources on wealth inequality are much less systematic than what we have for income inequality. In fact, one of the main reasons why I am in favor of wealth taxation, international cooperation and automatic exchange of bank information is that this would be a way to develop more financial transparency and more reliable sources of information on wealth dynamics (even if the tax was charged at very low rates, which everybody could agree with).

4 See also the other two articles published by the FT on May 23 2014: here and there. See also my short reponse published here in the FT. Unfortunately I was given limited time to submit this response, so I could not address specific points; here is a longer response.

For the time being, we have to do with what we have, that is, a very diverse and heterogeneous set of data sources on wealth: historical inheritance declarations and estate tax statistics; scarce property and wealth tax data; household surveys with self-reported data on wealth (with typically a lot of under-reporting at the top); Forbes-type wealth rankings (which certainly give a more realistic picture of very top wealth groups than wealth surveys, but which also raise significant methodological problems, to say the least). As I make clear in the book, in the on-line appendix, and in the many technical papers on which this book relies, I have no doubt that my historical data series can be improved and will be improved in the future (this is why I put everything on line). In fact, the "World Top Incomes Database" (WTID) is set to become a "World Wealth and Income Database" in the coming years, and together with my colleagues we will put on-line updated estimates covering more countries. But I would be very surprised if any of the substantive conclusions about the long run evolution of wealth distributions was much affected by these improvements.

"Regarding Britain, the FT seems to put a lot of trust in self-reported wealth survey data that notoriously underestimates wealth inequality"

I welcome all criticisms and I am very happy that this book contributes to stimulate a global debate about these important issues. My problem with the FT criticisms is twofold. First, I did not find the FT criticism particularly constructive. The FT suggests that I made mistakes and errors in my computations, which is simply wrong, as I show below. The corrections proposed by the FT to my series (and with which I disagree) are for the most part relatively minor, and do not affect the long run evolutions and my overall analysis, contrarily to what the FT suggests. Next, the FT corrections that are somewhat more important are based upon methodological choices that are quite debatable (to say the least). In particular, the FT simply chooses to ignore the Saez-Zucman

2014 study, which indicates a higher rise in top wealth shares in the United States during recent decades than what I report in my book (if anything, my book underestimates the rise in wealth inequality). Regarding Britain, the FT seems to put a lot of trust in self-reported wealth survey data that notoriously underestimates wealth inequality.

I will start by giving an overview of the series on wealth inequality that I present in chapter 10 of my book. I will then respond to the specific points raised by the FT.

Overview of the series on wealth inequality reported in chapter 10

The long run series on wealth inequality provided in chapter 10 of my book deal with only four countries: France, Britain, Sweden, and the United States.

- Figure 10.1. Wealth inequality in France, 1810–2010 (p.340)
- Figure 10.2. Wealth inequality in versus France 1810–2010 (p.341)
- Figure 10.3. Wealth inequality in Britain, 1810–2010 (p.344)
- Figure 10.4. Wealth inequality in Sweden, 1810–2010 (p.345)
- Figure 10.5. Wealth inequality in the United States, 1810–2010 (p.348)
- Figure 10.6. Wealth inequality in Europe versus the US, 1810–2010 (p.349)

The series used to construct figures 10.1–10.6, replicated in the book on p.340–348 are available in table S10.1, as well as in the corresponding excel file.

These wealth inequality series deal with much fewer countries and are substantially more exploratory than the empirical material provided in other parts of the book: income and population

growth in chapters 1–2; wealth-income ratios in chapters 3–6; income inequality series in chapters 7–9. This follows from the fact that available data sources on wealth inequality are much less systematic than data sources on growth, wealth-income ratios and income inequality. In particular, we do have yearly income declarations statistics for dozens of countries, but we do not have yearly wealth declarations statistics for most countries. So we have to do with the diverse set of sources that I described above.

I believe that the data we have on wealth inequality is sufficient to reach a number of conclusions. Namely, wealth inequality was extremely high and rising in European countries during the 19th century and up until World War 1 (with a top 10% wealth share around 90% of total wealth in 1910), then declined until the 1960s–1970s (down to about 50–60% for the top 10% wealth share); and finally increased moderately since the 1980s-1990s. In the United States, wealth inequality was less extreme than in Europe until World War 1, but it was less strongly affected by the 20th century shocks, and in recent decades it rose more strongly than in Europe. Both in Europe and in the United States, wealth inequality is less extreme than what it was in Europe on the eve on World War 1.

I believe that the data that we have is sufficient to reach these conclusions, but that it is insufficient to go much beyond that. In particular, our ability to measure the most recent trends in wealth inequality is limited, partly due to the huge rise in cross border financial assets and offshore wealth. According to Forbes-type wealth rankings, the very top of the world wealth distribution has been rising about three times faster than average wealth at the global level over the 1987–2013 period (see chapter 12 of my book, in particular Table 12.1. The growth rate of top global wealth, 1987–2013). This seems to be clear evidence than wealth inequality is rising, partly because the rate of return to very large portfolios is higher than the growth rate. This interpretation is consistent with what I find with the returns to large university endowments (see

Table 12.2. The return on the capital endowments of US universities, 1980–2010). But we do not really know whether this holds only at the very very top or for bigger groups (say, above 10 millions $ and not only above 1 billion $). Let me make very clear that I do not believe that r>g is the only force that determines the dynamics of wealth inequality. There are many other important forces that could in principle drive wealth inequality in other directions. The main message coming from my book is not that there should always be a deterministic trend toward ever rising inequality (I do not believe in this); the main message is that we need more democratic transparency about wealth dynamics, so that we are able to adjust our institutions and policies to whatever we observe.

I now consider each of the four countries one by one and respond to the specific points raised by the FT. I start with Sweden (the first country for which the FT expresses concerns), and then move to France, the United States, and finally to Britain (arguably the country with the biggest data problems) and to the European average.

Sweden (see figure 10.4 here)

The FT does not point out any significant disagreement regarding Sweden. Their corrected figure looks virtually identical to mine (see their figure on Sweden here).

The FT argues however that my choice of years from raw data sources is not entirely clear. For instance, they point out that raw data for year "1908" for year "1910", year "1935" for year "1930", and so on. These issues are already explained in the book and in the technical appendix, but they probably need to be clarified. Generally speaking, when I present series on wealth-income ratios and wealth inequality (and also for some figures on income inequality), I usually choose to present decennial averages rather than yearly series. This is because wealth series often display a lot of short-run volatility (in particular due to sharp movements in asset prices). So in order to focus the attention on long-run

evolutions, it is better to abstract from these short-run movements and show decennial averages. See for instance the wealth- income series presented in chapter 5: contrast figure 5.1 and figure 5.5. When full yearly series are available, the way decennial averages are computed in the book is the following: "1900" usually refers to the average "1900–1909", and so on. This is further explained in the technical paper "Capital is back..." (Piketty-Zucman QJE 2014) available here.

In the case of the wealth inequality series reported in chapter 10, the raw series are usually not available on annual basis, so I compute decennial averages on the basis of the closest years available. This is clearly explained in the chapter 10 excel file (see sheet "TS10.1"). For instance, "1870" is computed as the average for years "1873–1877", "1910" as the average "1907–1908", and so on. These choices can be discussed and improved, but they are reasonably transparent (they are explicitly mentioned in the excel table, which apparently the FT did not notice), and as one can check they have negligible impact on long run evolutions.

The FT also suggests that I made a transcription error by using the estimate for 1908 for the top 1% wealth share (namely, 53.8% of total wealth) for year 1920 (instead of the correct raw estimate for that year, namely 51.5% of total wealth). In fact, this adjustment was intended to correct for the fact that there is a break in a data sources in 1908: pre-1908 series use estate tax data, while post-1908 use wealth tax data, resulting into somewhat lower top wealth (as exemplified by year 1908, for which both data sources co-exist; see Waldenstrom 2009, Table 3.A1, p.120–121). This is standard practice, but I agree that this adjustment should have been made more explicit in the technical appendix and excel file.[5] In any case, whatever adjustment one chooses to make to deal with this break in series is again going to have a negligible impact on long-run patterns.

France (see figure 10.1 and figure 10.2 here)

The FT does not point out any significant disagreement regarding France. Their corrected figure looks virtually identical to mine (see their figure on France here).

The FT argues however that no explanation is given for some of the data construction. Namely, the FT claims the following: "The original source reports data relative to the distribution of wealth among the dead. In order to obtain the distribution of wealth across the living, Prof Piketty augments the share of the top 10 per cent of the dead by 1 per cent and the wealth share of the top 1 per cent by 5 per cent. An adjustment of this sort is standard practice in this type of calculations to correct for the fact that those who die are not representative of the living population. Prof. Piketty does not explain why the adjustment is usually constant. But in one year, 1910, it is not constant and the adjustment scale rises to 2 per cent and 8 per cent respectively. There is no explanation."

> "Differential mortality is a complex issue, and we do not have perfect answers; but we do our best to address this issue in the most transparent way"

This is a surprising statement, because all necessary explanations are actually given in the technical research paper on which these series are based (see Piketty-Postel-Vinay-Rosenthal AER 2006) and in the chapter 10 excel file (see sheet "TS10.1DetailsFR"). Namely, the PPVR AER 2006 paper includes detailed, year-by-year estimates of how differential mortality affects wealth inequality among the living, and finds that the ratio between top wealth shares among the living and top wealth shares among decedents rises at the end of the 19th century and in the early 20th century. Intuitively, this is because differential mortality effects seem to become stronger around that time (namely, life expectancy rises quite fast among top wealth holders, but much less so for the rest of the population). One can see this explicitly in table A4 of the working paper version of the PPVR AER 2006

article; this is explicitly reproduced in chapter 10 excel file (see sheet "TS10.1DetailsFR", table A4 (2), ratios for top 1% shares). More recent research has also confirmed the changing pattern of differential mortality around that time. See in particular the appendix tables to Piketty-Postel-Vinay-Rosenthal EEH 2014. Differential mortality is a complex issue, and we do not have perfect answers; but we do our best to address this issue in the most transparent way. In particular, we put on line on this web site the large micro files that we have collected in French inheritance archives, so that everybody can reproduce our computations and use this data for their own research. We are currently collecting additional micro files in Parisian and provincial archives, and we will put new data files and updated estimates in the future.

What it find somewhat puzzling in this controversy is the following: (i) the FT journalists evidently did not read carefully the technical research papers and excel files that I have put on-line; (ii) whatever adjustment one makes to correct for differential mortality (and I certainly agree that there are uncertainties left regarding this complex and important issue), it should be clear to everyone that this really has a relatively small impact on the long-run trends in wealth inequality. This looks a little bit like criticism for the sake of criticism.

United States (see figure 10.5)

The FT does point out more substantial disagreements regarding the United States. Their corrected figure actually looks very close to mine regarding the long run evolution, but not for the recent decades, where the FT considers that I overestimate somewhat the rise in wealth inequality (see their figure on United States here). The FT also expresses concerns about some of the adjustments that are made for earlier periods, although they have little impact on the overall patterns.

As I explain in the book (chapter 10, p.347) and in the technical appendix to chapter 10 (available here), there are very large

uncertainties regarding US historical sources on wealth inequality, and I certainly agree that the series that are provided in the book can be improved. I try to combine in the most consistent manner the information coming from estate tax statistics (which unfortunately only cover the top few percents of the distribution, and not the entire population like in France) and the information coming from household wealth surveys (fortunately the SCF is known to be of higher quality than most other wealth surveys). In particular, the estimate for year 1970 tries to combine the estimates available for top 10% and top 1% wealth shares for years 1960 and 1980 and the evolution of very top wealth shares between 1960, 1970 and 1980. This has little impact on the overall long-run pattern, but I agree that this is relatively uncertain, and that this could have been explained more clearly.

I should stress however that the more recent and more reliable estimates that were recently produced by Emmanuel Saez (Berkeley) and Gabriel Zucman (LSE) confirm the pattern that I find. See Saez-Zucman 2014. For the recent decades, they actually find a larger rise of top 10% wealth shares and especially top 1% and top 0.1% wealth shares than what I report in my book. So, if anything, my book tends to underestimate the recent rise in US wealth inequality (contrarily to what the FT suggests).

This important work was done after my book was written, so unfortunately I could not use it for my book. Saez and Zucman use much more systematic data than I used in my book, especially for the recent period. Also their series are constructed using a completely different data source and methodology (namely, the capitalization method using capital income flows and income statements by asset class). Now that this work is available, the Saez-Zucman series (which unfortunately the FT article seems to ignore) should be used as reference series for wealth inequality in the United States. In a recent survey chapter that will be published in the Handbook of Income Distribution (HID), we choose to use the

Saez-Zucman series (rather than the series reported in my book) in order to describe the long-run evolution of US wealth inequality. See Piketty-Zucman 2014 (see in particular supplementary figure S3.5, p.91 for a comparison between the two series; as one can see, they look very similar).[6]

Britain (see figure 10.3)

The FT does point out substantial disagreements regarding the recent evolution in Britain. Their corrected figure actually looks very close to mine regarding the long run evolution, but not for the recent decades, where the FT considers that there was no rise at all in wealth inequality, and possibly a decline, whereas I report a rise (see their figure on Britain here). The biggest disagreement comes from the latest data point (c.2010): the FT considers that the right estimate for the top 10% wealth share is around 44% of total wealth (this comes from a recent household survey based upon self-reported data, namely the "wealth and assets survey", which I believe underestimates top wealth groups significantly; see below); whereas I report an estimate with a top 10% wealth share around 71% (this comes from more reliable estate tax statistics). This is a very large difference indeed.

Let me make clear that although I think my estimate is more reliable and rests on better methodological choices, I also believe that this large gap reflects major uncertainties and limitations in our collective ability to measure recent evolution of wealth inequality in developed countries, particularly in Britain. As I explain above, I believe this is a major challenge for our statistical and democratic institutions.

The estimates that I report for wealth inequality in Britain rely primarily on the very careful estimates that were established by Atkinson-Harrison 1978 and Atkinson et al 1989 using estate tax statistics from the 1920s to the 1980s. I updated these series for the 1990–2010 period using official HMRC data that are also based

upon estate tax records. I find a rising inequality trend, although a more modest one than for the United States. I think this is the most reasonable estimate one can obtain given available data, but this certainly should be improved in the future.

What is troubling about the FT methodological choices is that they use the estimates based upon estate tax statistics for the older decades (until the 1980s), and then they shift to the survey based estimates for the more recent period. This is problematic because we know that in every country wealth surveys tend to underestimate top wealth shares as compared to estimates based upon administrative fiscal data. Therefore such a methodological choice is bound to bias the results in the direction of declining inequality. For instance, as I note in the technical appendix to chapter 10 (available here), the recent wealth surveys undertaken by INSEE in 2004–2010 in France indicate a top decile share just above 50% of the total wealth, whereas fiscal data (inheritance and wealth tax) suggest a top decile share above 60% of the total wealth. The gap seems particularly large for the case of Britain, which could reflect the fact that the "wealth and assets survey" seems particularly bad at measuring the top part of the wealth distribution of the UK. Indeed, according to the latest report by the Office of national statistics (ONS), the response rate for this survey was only 64% in 2010–2012; this is an improvement as compared to the response rate of 55% that was observed during the 2006–2008 wave of the same survey (see ONS 2014, Table 7.1); but it is pretty clear that with such a low response rate, it is hard to claim that one can adequately measure wealth inequality, particularly at the top of the distribution. Also note that a 44% wealth share for the top 10% (and a 12.5% wealth share for the top 1%, according to the FT) would mean that Britain is currently one the most egalitarian countries in history in terms of wealth distribution; in particular this would mean that Britain is a lot more equal that Sweden, and in fact a lot more equal than what

Sweden as ever been (including in the 1980s). This does not look particularly plausible.

Of course the estate records based estimates also raise significant methodological concerns, and I do not claim that the resulting estimates are perfectly reliable. In particular, they might also underestimate top wealth levels (because top wealth holders sometime escape the estate tax through sophisticated trust funds or offshore assets). But they definitely seem more plausible than the estimates based upon self- reported survey data.

Note also that in recent years more and more scholars and statisticians have started to recognize the limitations of household wealth surveys and to upgrade the top segments of survey based wealth distributions using other sources. For instance, a recent study undertaken at the research department of the ECB attempts to upgrade in a systematic manner the top tail of the wealth surveys undertaken in Eurozone countries by using the Pareto coefficients that one can estimate using Forbes rankings and other lists of very high wealth individuals in each country. The results indicate that this can lead to very large increases (more than 10 percentage points) in top wealth shares (see Vermeulen 2014). In the United States, although the SCF wealth survey is generally regarded as a very high quality wealth survey, there has been some important work trying to upgrade the top tail by using Forbes ranking and estate tax data (see Johnson-Shreiber 2006 and Raub-Johnson-Newcomb 2010). This is definitely something that should be done for the British "wealth and assets survey".

Regarding the 19th century estimates, the FT expresses concerns with the way I compute the top wealth shares for Britain in 1810 and 1870. Namely, I borrow the top 1% wealth shares estimates from Lindert (54.9% and 61.1%, respectively), and I assume that the next 9% shares shifted from 28% to 26%. Lindert does report a lower estimate for the next 9% share (about 16%). However this would indicate a relatively unusual pattern of Pareto coefficients

within the top 10% of the distribution (as compared both to the French 19th century inheritance data, which is a lot more comprehensive than the British probate data, and to the British estate tax statistics for 1911–1913). Given that the probate records used by Lindert seem to provide a better coverage of the top 1% than of the next 9%, I use Pareto interpolation techniques to estimate the next 9% share. This is an issue that should have been explained more clearly and that would definitely deserve further research. This has a limited impact for the long run patterns analyzed here (the pre-World War 1 rise in wealth inequality would be even larger without this adjustment).

European average (see figure 10.6)

Finally, the FT also expresses the following concern: the European average series, which I computed by making a simple arithmetic series between France, Britain and Sweden, should have been computed using population weighted averages. I do agree that population (or GDP) weighted averages are generally superior to simple arithmetic averages. However I should stress that it really does not make much of a difference here, because all three European countries that I use follow fairly similar long run patterns. Namely, all three countries display high and rising top wealth shares during the 19th century and up until World War 1 (with about 90% of total wealth for the top 10% around 1910); then a sharp decline until the 1960s-1970s (with top 10% wealth shares down to 50–60%); and finally a modest rise since the 1980s-1990s. So whether one weights the three countries with equal weights or according to population or GDP does not make a big difference. But in case Britain did follow a markedly different pattern than the other countries in recent decades (with a decline in wealth inequality rather than a rise), then putting more weight on Britain than on Sweden becomes a significant issue. So we are back to the previous question: what happened to wealth inequality in Britain in recent decades? The FT seems to

believe it has become more equal; however the way they use self-reported wealth survey data is not convincing. This is nevertheless an interesting debate for the future, and we should all agree that we know too little about it.

7. Income Inequality is Falling, Globally

Matt Ridley

Originally published in *The Times* 5 June 2014

There was a row last week between the "rock star economist" Thomas Piketty and Chris Giles of the Financial Times over statistics on inequalities in wealth – in this country in particular. When the dust settled, the upshot seemed to be that in Britain wealth inequality probably did inch up between 1980 and 2010, but not by as much as Piketty had claimed, though it depends on which data sets you trust.

Well, knock me down with a feather. You mean to say that during three decades when the government encouraged asset bubbles in house prices; gave tax breaks to pensions; lightly taxed wealthy non-doms; poured money into farm subsidies; and severely restricted the supply of land for housing, pushing up the premium earned by planning permission for development, the wealthy owners of capital saw their relative wealth increase slightly? Well, I'll be damned.

My point is that a good part of any increase in wealth concentration since 1980 has been driven by government policy, which has systematically redirected earning opportunities to the rich rather than the poor. Look at our energy policy: thanks to the allegedly left-wing energy secretaries Ed Miliband and Ed Davey, we pay double or treble the going rate for land-hungry projects such as wind, wood and solar energy, all of which results in rewards going to the owners of property. Try getting through a dinner party in the shires these days without somebody waxing lyrical about the subsidised "payback" on wood-chip boilers or solar panels. The upper class has a welfare dependency problem as well as the underclass.

Yet even Piketty's figures show that British wealth inequality is only back to where it was in the mid-1960s, when the top 10 per cent of people held about 70 per cent of the wealth. The figure dipped to about 60 per cent in 1980, having peaked at 90 per cent in 1910. So it is not true that we are back to Edwardian levels of wealth inequality. One reason for this modest change is that government has at the same time systematically redistributed money from the rich to the poor by taxing the rich at higher rates and by handing benefits to the poor.

"Once you take into account tax and benefits, the Office for National Statistics confirms that the Gini coefficient of inequality in this country is actually lower now than it was 25 years ago"

And in doing so it has reduced income inequality. Yes, the widespread assumption that income inequality has also been shooting upwards is plain wrong: in this country, in terms of disposable income, the gap between the well paid and the poorly paid has been going down. Top salaries have certainly rocketed, but so has the turnover of people getting them – as has the turnover of people in the lowest income bracket. And once you take into account tax and benefits, the Office for National Statistics confirms that the Gini coefficient (an income distribution index) of inequality in this country is actually lower now than it was 25 years ago (though it's higher than it was 35 years ago in the confiscatory tax regime of the 1970s).

I was startled when I learnt this fact, which seems to be missing from the entire debate, the assumption of which is that income inequality is getting worse right now. It is not. In chapter and verse, the recent ONS bulletin entitled The Effects of Taxes and Benefits on Household Income, 2011/12 finds that the highest-earning 20 per cent of British households earned 14 times as much as the lowest earning 20 per cent before tax and benefits – but just four times as much after tax and benefits. These measures cut the average income of the top 20 per cent from £78,300 to £57,300, while they raise the average income of the bottom 20 per cent from

£5,400 to £15,800. Thus, even though government may enact policies that help the wealthy to increase their wealth, it does at least redress the balance through the tax system. As it should.

Remember too that global inequality is not going up: it is plunging downwards. Nobody knows quite how fast – there's a similar row about the numbers of the Spanish economist Xavier Sala-i-Martín on this question – but every economist I speak to agrees that global income inequality is falling, even before you take into account tax and benefits.

It has to be. For a quarter of a century people in poor countries have been getting rich faster than people in rich countries have been getting richer. In the past five years that discrepancy has exploded, thanks to recession in rich countries and continuing rapid growth in poor ones. Mozambique's economy is 60 per cent larger than it was in 2007; Italy's is 6 per cent smaller. Isn't this redistribution of growth from the rich world to the poor world the big story about inequality? In countries such as Mozambique, inequality means some people going without adequate food, shelter, running water or medicine.

It is worth remembering that nowhere in the world, with the possible exception of North Korea and Somalia, are the poor getting poorer. The percentage of the world's population living on $2 a day (corrected for inflation) has halved since 1990 – a truly unprecedented change (see here). Any increase in wealth inequality or pre-tax income inequality in Britain or America is caused by the rich getting disproportionately richer, not by the poor getting poorer. This is the point made forcefully by the economist-philosopher Deirdre McCloskey in Saturday's Times, and in her trilogy of books on the bourgeois virtues. The gaps that are opening up in the West are mostly in luxuries, not in necessities.

Yet I have to admit that arguments such as these fall mostly on deaf ears. People genuinely seem to mind about the unfairness of unequal income as much as or more than they mind about poverty.

They think in terms of relative wealth, not absolute, which is why inequality reduction is an end in itself. As Margaret Thatcher said in response to Simon Hughes in one of her last appearances as prime minister: "He would rather that the poor were poorer, provided that the rich were less rich."

Neither Britain nor the world is especially unequal right now compared with most of the past two centuries. If you want to reduce wealth inequality in Britain, then the quickest way is to liberalise the planning laws to bring down house prices. If you want to make poor people less poor, then raise the growth rate of the economy and keep on redistributing.

8. Apocalypse Soon? Thomas Piketty's Intricate Doomsday Scenario

Scott Winship

Adapted from "Inequality and the Fate of Capitalism," from the May 19, 2014 issue of *National Review*

In recent polling by the Pew Research Center, Americans were asked which of four economic issues was most important. Inequality ranked third, way behind unemployment but also significantly behind the national debt (and ahead only of inflation, which has been at fairly typical levels). But driven by the obsession with inequality that has gripped progressive elites in the US, Thomas Piketty's *Capital in the Twenty-First Century* climbed to the top of the Amazon.com chart upon its release in America. Many of those elites heralded Piketty's tome as definitively showing that inequality is a crisis for the developed nations of the world. But the theoretical apparatus and empirical trends underlying this conclusion are riven with ambiguities.

Capital is an important book, the bulk of it devoted to describing and explaining very long-run trends in wealth and income. These estimates were mostly developed by Piketty and his colleagues during the past 15 years and represent an invaluable contribution to the economics profession. But missing from *Capital*'s 700 pages is a serious argument about when and why inequality should be worrisome. Piketty's wealth- and income-concentration trends are ambiguous as indicators of rising inequality. And the dire scenario that Piketty emphasises as "possible" is an extremely rough guess. In short, the parts of the book that won it so much attention are the least rigorous and are (or should be) wholly unpersuasive.

Piketty argues that in capitalist countries, the return to wealth (r) tends to exceed the rate of growth (g) of the economy. In the most basic sense, this improbably famous "r>g" tendency means that the share of national income workers receive as compensation ("labour income") falls and the share of income going to owners of wealth ("capital income") rises. Because capital income is less equally distributed than labour income, these dynamics will increase the share of income received by the top 1%. Finally, if the wealthy reinvest most of their returns, wealth inequality will also rise. It's a triple-whammy.

How does Piketty reach these conclusions? He has a simplified model of how the economy works that, if we accept all of the assumptions entailed in it, produces the result mathematically. If the economic growth rate g falls relative to the savings rate, then wealth will become a bigger multiple of national income (savings rates are assumed not to adjust as people accumulate more and more wealth). Unless the return to wealth r falls more than the wealth-to-income ratio rises, then by definition the share of national income going to wealth rather than workers will rise. And unless inequality in capital income falls enough, income concentration will increase. Lastly, if consumption using the additional income produced by wealth is sufficiently low, then wealth holders will reinvest enough of their returns to increase wealth concentration further.

The basic problem in Piketty's argument lies in those ifs and unlesses and in the infirmity of his assumptions. Piketty thinks economic growth rates will be low because population growth has declined and because productivity growth will remain sluggish. Of course, others, such as Erik Brynjolfsson and Andrew McAfee, believe we are on the cusp of a productivity breakthrough, which would push the economic growth rate up and reduce wealth as a multiple of national income (barring a corresponding increase in savings).

Piketty believes that if the wealth-to-income ratio rises, as he suspects it will, then the return to wealth, r, won't fall enough to offset it, leaving capital's share of income to grow with wealth. For this argument, he appeals to the theoretical possibility that the so-called "elasticity of substitution" between capital and labour – the extent to which firms' relative use of capital and labour changes as the relative productivities of using more of each changes – might be greater than one. That would prevent the return to wealth from falling at all, even as the amount of wealth increased. But as economist Kevin Hassett pointed out, mainstream estimates of the elasticity of substitution are generally below one. Furthermore, as economist Matthew Rognolie noted, because Piketty's model entails gross quantities (amounts of wealth before replacing worn-out capital) while the estimates from the literature apply to net quantities, Piketty needs the elasticity of substitution to be well over one to prevent r from falling.

"Piketty concedes that the return to wealth may have declined slightly over the long run – and by more after taxes are taken into account"

Even if the return to wealth falls modestly, however, capital's share of income might grow if the wealth-to-income ratio rises enough. Ultimately Piketty defends his assumption that the return to wealth won't fall by enough to prevent this by showing that trends in the capital share of income in France and the U.K. have historically moved in the same direction as the wealth-to-income trends. He presents no evidence on returns to wealth in the US.

Piketty emphasises that r can be affected by political and institutional factors. For instance, he attributes the fact that r has been less than g since the mid-twentieth century to the historical accidents of the Depression and World War II and the high tax rates and physical destruction they spawned. In fact, Piketty concedes that the return to wealth may have declined slightly over the long run – and by more after taxes are taken into account. But he nevertheless

says we "cannot rule out the possibility" that it will rise, and rise above the rate of economic growth.

Agnosticism about an increase in the return to wealth is one thing; slipping such a rise into one's projections is another. One of Piketty's charts projects that after capital taxation, r will rise and once again exceed g, as it has for most of modern history, inspiring Piketty's fear of exploding wealth concentration. However, a less-celebrated chart projects that the pre-tax r will be lower in the future than today. Piketty's post-tax projection leads to exploding wealth concentration only because he has assumed that taxes on capital will disappear in the 21st century. Take away that assumption, and economic growth rates will still exceed the after-tax return to wealth mid-century. (And that does not even take into account the fact, left unmentioned by Piketty in his discussion of these charts, that taxes and transfers will also work to make the disposable incomes of the middle class and poor grow faster than pre-tax labour income. Inequality looks worse when you fail to take into account the ways in which democratic capitalism ameliorates it.)

What about the assumption that inequality of capital income will grow? We lack very good data on trends in capital income inequality, partly because of difficulties measuring capital gains (the appreciation in the value of tradable assets) and losses. The tax return data used by Piketty for the ubiquitously cited income inequality estimates he has developed with Emmanuel Saez count capital gains only if they are reported on tax returns, which generally means only when they are taxable and realised. Excluding non-taxable capital gains means that most wealth accruing to the middle and working class, which comes in the form of home sales not large enough to trigger capital gains taxes or 401(k) and IRA investments, is invisible in Piketty's data. Moreover, because tax returns count all gains when they are realised and members of the top 1% strategically time the sale of their assets after holding them for years, all of the gains accruing over time are counted on a single

tax return in years close to asset-market peaks. This increases the share of capital income accrued by the top of the income strata, since it's concentrated in one year.

The issue of measuring capital gains affects the broader income-concentration estimates used by Piketty. There are other problems with his measurements: Tax filing by dependents with after-school, summer, or college jobs makes the bottom ranks of the income ladder look much poorer than they are. Residences with unmarried cohabiting couples or with roommates are counted as multiple (and poorer) "tax units" rather than as single (better off) households. Employer-provided health insurance – a rapidly rising share of worker compensation – is missing from the data. And as with the capital-share-of-income estimates, Piketty's income-inequality figures do not account for the primary ways in which we address income inequality: through progressive taxation and transfers. Research by Richard Burkhauser and his colleagues suggests that once we account for many of these issues, income concentration may have actually fallen somewhat between the business peaks of 1989 and 2007. To be sure, this result stands in contrast to most research on income concentration, but it is one of only a few papers to grapple seriously with capital gains.

Piketty also presents evidence on wealth-inequality trends. In the US., according to estimates from Saez and Wojciech Kopczuk, wealth concentration peaked in 1930 and fell through the early 1980s. From about 1980 onward, new estimates by Saez and Gabriel Zucman indicate a steady rise in wealth inequality, but that contradicts the flat trend reported by Saez-Kopczuk and the only-slight rise shown by Piketty. At this point we don't really know whether wealth concentration among the top 1% has grown in the US. or not (though it appears to have among the rest of the top 10%).

Piketty's fans have ignored criticisms of his data and mocked critiques of his model by saying that in fact the model predictions align with what countries have experienced, so the model has

proven its worth. But the model is consistent with the facts only in a very broad sense. Wealth has risen as a multiple of income in some places and times (but it was pretty flat in the US. over the 20th century). *Capital*'s share of income has increased since the 1960s, and capital-income concentration and income concentration generally have probably grown since the 1970s (though by less than Piketty believes).

These quantities often follow each other in the ways predicted by Piketty's model, but not always, and there are other explanations for the rise in these inequalities. In his research with Zucman, Piketty finds that asset prices have increased faster than consumer prices (a possibility ruled out by his model), and that can account for anywhere from none of the rise in wealth as a multiple of income between 1970 and 2010 to 58% of it, depending on the country. My favourite alternative puts cultural factors front and centre. The rise and fall of the widely endorsed male-breadwinner ideal in developed nations in the 20th century may have directed over-payments to male workers and away from top earners and capital. As married women began working more after World War II, the rationale for these "economic rents" disappeared, and through a societal recalibration, income may have been redirected upward to the top (as well as sideways to women).

Why should we care about the inequalities Piketty highlights? It is a question that to a remarkable extent goes unanswered by Piketty and by American elites who want to make inequality a national priority. Piketty ultimately falls back on assertions and speculations based on popular theories of how economic inequality affects democracy. Wealth inequality, he fears, will "radically undermine the meritocratic values on which democratic societies are based." He goes so far as to evoke the nineteenth century Haymarket Square riot over labour issues in Chicago and wonders: "[Will] this sort of violent clash between labour and capital belong to the past, or will it be an integral part of twenty-first century history?" Piketty even

worries about increasing total wealth in a world with stable wealth inequality because "the owners of capital … potentially control a larger share of total economic resources". "In any event," he says, "the economic, social, and political repercussions of such a change are considerable".

Inequality mongers are so hung up on income and wealth gaps that they lose sight of how much better off the middle class – and even the poor – are today than in 19th-century Chicago. Piketty describes the dramatic long-term improvement in living standards experienced around the developed world in Chapter Two of *Capital*, but by Chapter Six's discussion of the capital-labour split, it has long been forgotten.

Perhaps because Americans live in a world where deprivation is rare by historical standards, research on policy preferences across income groups tends to find similar positions and priorities among rich, middle class, and poor. Workers are not so desperate that they will take bullets to advance their supposed class interests. As noted at the beginning of this essay, they do not even emphasise inequality as a policy issue.

Inequality doesn't appear to have hurt the incomes of the poor or middle class in the way Piketty claims. Income growth in the US. began to slow in the 1970s, even for the richest taxpayers, and years before the top 1%'s share started rising. Piketty's tax-return data may in fact have misled him into thinking that incomes have actually been in decline over the long run – they indicate a drop of $3,500 for the bottom 90% of taxpayers in the US. between 1979 and 2012.

"Inequality doesn't appear to have hurt the incomes of the poor or middle class in the way Piketty claims"

That drop stems from the inclusion of retirees in the tax data but the exclusion of their Social Security benefits, from the omission of other government transfers and the failure of the data to account for falling taxes, from the conflation of tax returns with households, from overstatement of inflation, and

from a neglect of declining household size. My own estimates from household-survey data (the work-horse Current Population Survey) indicate that middle-class incomes for a family of four rose by more than $10,000 after taxes and transfers (without even considering the value of health insurance). Among families with a non-elderly head, middle class incomes rose by nearly $10,000 before taking into account taxes or transfers

Research on whether rising inequality translates into slower economic growth generally finds that in rich countries, higher inequality is associated with higher GDP per capita. The best research that looks at whether increases in income concentration across countries are associated with diminished middle-class incomes or higher poverty, by sociologist Lane Kenworthy, finds no relationship. Inequality can promote income growth below the top by enlarging the size of the economy. Conversely, income concentration can come at the expense of the upper-middle class and the "rest of the rich" rather than out of the pockets of the poor and middle class.

As noted by several economists commenting on *Capital*, because returns to wealth will remain robust only if productivity growth does, Piketty's own model suggests that rising inequality will be accompanied by improved living standards for workers. It follows that his proposals to mitigate the increase in inequality would narrow economic gaps but leave real worker compensation lower than it would have become otherwise. This is a tradeoff Piketty and the Left do not recognise, do not acknowledge, or somehow prefer.

What is striking about the pre-eminence that progressive elites and Piketty have given economic inequality is not that they must necessarily be wrong about its social and economic costs. Rather, it is that they are so confident that they are right despite the absence of strong evidence. There is very little evidence that rising inequality has had or will have harmful consequences, let alone the catastrophic effects Piketty fears. Using the worst-case scenario as

a guide to policy by, for instance, setting a top tax rate of 80% for incomes above $500,000 or instituting a global wealth tax – both proposed by Piketty – would likely have great, potentially unnecessary, costs.

"Where there is no structural growth," Piketty writes, echoing Karl Marx, and "productivity and population growth … is zero,"

> *Capitalists do indeed dig their own grave: either they tear each other apart in a desperate attempt to combat the falling rate of profit … or they force labor to accept a smaller and smaller share of national income, which ultimately leads to a proletarian revolution and general expropriation. In any event, capital is undermined by its internal contradictions.*

In regard to predictions of capitalism's demise by Marx, Thomas Malthus, and David Ricardo, Piketty writes, "In retrospect, it is always easy to make fun of these prophesies of doom." Piketty has written a landmark work describing the past, but his predictions about the future are as unlikely to transpire as were those of his predecessors.

9. A Banker's Reaction to Thomas Piketty's *Capital in the Twenty-First Century*

Barrie A. Wigmore

No one in the USA can fail to raise questions about the recent growth in income and capital inequality, or the proportion of income growth that has gone to very few people since the financial crisis of 2008–2009. However, one needs to ask whether Piketty has contributed to dealing with these issues. He claims to develop a theory linking historic capital returns and economic growth rates to inequality, but in fact he has written a political manifesto in which his insistence on equal outcomes diverts attention from the practical tax and socio-economic issues affecting US inequality:

- the tax rates for capital gains and dividends;
- US money managers' ability to treat income as capital gains and (frequently) off-shore;
- whether the US should have a value-added tax;
- the pros and cons of free market entrepreneurial opportunity;
- the impacts of rapidly advancing technology;
- the impacts of free/unfair trade;
- the pros and cons of large-scale uneducated immigration;
- and the baneful effects of 20% of US children failing to graduate from high school on time and less than 40% of graduates being proficient in reading and arithmetic.

Even within Piketty's narrow objective, *Capital* has the following weaknesses:

- He ignores social security, Medicare, and defined benefit pensions (the last being over half of individual net worth);
- He gives no recognition to entrepreneurship in the creation of capital;
- His calculations of return on capital make no distinctions among the imputed returns on home ownership (50% of his "capital"), the actual returns on business capital, and interest rates;
- His historical revelations are commonplace and have gaps which appear to suit his politics;
- He provides no basis for the capital and income projections that justify his proposed wealth tax, no tests of his projections, and no consideration of the broader implications of his policy recommendations, particularly their unsuitability for developing countries and economic growth generally.

The book basically has 3 segments – (1) an outline of historical capital and its distribution among land, homes, and business; (2) historical capital and income inequality; and (3) projections and policy recommendations to "control" income and capital distribution in the future.

1. Historical capital

In the first part on capital, there is a frustrating lack of definition unless the reader is an academic who has followed the lifetime publications of Piketty and his fellow workers. The reader is left in the dark as to how he assembles the constituents of capital – homes, real estate, business enterprise, financial instruments, pension assets, and government capital. In the USA, he ignores social security, Medicare, and the $11 trillion of defined benefit pension assets, the last of which amounts to over 50% of household net assets. He defines all accumulation of capital as either saving or in-

heritance, ignoring entrepreneurial creation. It is as if Schumpeter never existed. In *Forbes* latest list of the 400 wealthiest Americans, 32 of the top 50 were entrepreneurs and only 9 inherited their wealth. Piketty misses that the explosion in wealth in the last 30 years has occurred as new companies have gone public or experienced a few years of rapid stock market appreciation.

His naiveté in securities markets shows up in many misconceptions – that bank officials are wealthy (it's private money managers that have the great wealth); that Tobin's Q explains business investment (it's profits); that the rate of return on capital devolves from technology and supply (not in housing, and in business it's scale, management, and first movers that really matter); that a perfect portfolio earns an average return while being risk free (ludicrous); and that off-shore investment accounts are tax dodges (they are required by US laws governing many investments by not-for-profit endowments).

> "Piketty's theme of income inequality has bite, but his arguments fail"

He also ignores how often the great business fortunes are given away (for example Carnegie, Rhodes, Rockefeller, Ford, Nuffield, Wellcome, Getty, Gates, and Buffet) or dissipated (Astor, Vanderbilt, Kennedy).

His returns on capital are also mixed up. We never know whether he is dealing with pre- or after-tax returns and he never clarifies the returns on debt, equity, and residential capital. Since residential real estate constitutes half of his measure of capital stock, the difference between the imputed return on homes and the actual returns in business is important. This is especially true in the last decade (the decade which he emphasises so strongly for future trends) when US residential real estate returns have been negative, interest rates 0–4%, and corporate return on equity around 20%.

2. Historical Inequality

Piketty's theme of income inequality has bite, but his arguments fail. The journalistic approach is to blame corporate executives for income inequality, but Piketty points out that the top 5 corporate positions for which SEC filings provide income data only account for a small share of top taxable incomes. However, he doesn't follow up the obvious implication. He insists that the difference must be due to the incomes of undisclosed lower ranking officers despite that executives below the top two rarely earn notably high incomes. Instead, the answer surely lies in the returns to successful entrepreneurs. 20% of the highest incomes are in finance where the high returns are to recently founded (i.e. entrepreneurial) private money managers. Entrepreneurs in technology, health care, retailing, real estate, and communications constitute most of the balance. To a lesser degree entertainers and sports figures are among the highest paid (accounting for 5%), reflecting that they have been freed from previous contract constraints and are capitalising on the expanded media world.

In looking at the weak recent income growth for the lowest income quintiles in the USA, Piketty ignores the income growth of poorly educated immigrants coming from low wage, high unemployment countries. In the mid-1970s, 1 in 16 US workers was foreign born. Today 1 in 6 is foreign born. Immigrants typically improve their income by 400–500% when they come to work in the USA even though they begin some 50% below the US average. Income growth calculations that ignore this are simply inaccurate.

Paul Krugman in the *New York Review of Books* (May 8, 2014) claimed that Piketty had produced "… a revolution in our understanding of long-term trends in inequality", but Piketty emphasises four well-known shifts in capital and income in the last 150 years:

1. One only has only to read Henry James, or Matthew Josephson's classic, *The Robber Barons*, to know that there was outsized capital

and income growth among the rich in the last quarter of the 19th century due to dramatic technological growth in railroads, steel, mining, telegraphy, retailing, combustion engines, oil, and electricity;
2. There is massive documentation of how the Depression destroyed capital;
3. It is not news that the USA had high equality following WW II when it had a world-wide monopoly in the basic industries where unions were strong, while income tax rates remained at historic heights;
4. And the growth in inequality since 1980 matches the inversion of top tax rates from over 90% to 40% (see graph on p. 499) and the surge in entrepreneurial fortunes.

Piketty never mentions the historic decline of the British landed aristocracy in the nineteenth century documented in David Cannadines' *The Decline and Fall of the British Aristocracy* (Yale University Press, 1990) at the same time as British industrial wealth was sky-rocketing. Land values were decimated by rent controls, compulsory sales to tenants, declining commodity prices, and punitive taxes.

Piketty also ignores the destruction of capital in the USA from 1966 to 1982 when the policies of the post-war period led to high inflation, misguided welfare policies, and government controls over interest rates, energy, wages, prices, and foreign investment. The real value of the S&P 500 declined 50% in that period before being reversed by the lower taxes and free market policies of the Reagan Administration. At the same time there was a precipitous fall in real estate values in large cities as people and businesses fled to the suburbs (contrary to Piketty's claim of inexorable prime city property growth). In 1974, I experienced the sale of a large apartment overlooking Central Park in one of New York's most famous buildings for $1.00.

These two periods are uncomfortably at odds with his outline of capital growth.

3. Projections and Policy Recommendations

Capital is of little interest when it comes to its third task of projections and policy recommendations. Who trusts projections based on a formula that relies on two variables – the rate of return on capital and the rate of economic growth – when the tax and socio-economic issues cited at the beginning of this review are so important and so obvious?

Piketty is oblivious of the negative implications of his policy recommendations for developing countries. He suggests that they will end up with social problems unless they generate the necessary capital for development internally rather than accept foreign capital. He ignores that the US is the most successful example of initial development with foreign capital, that Canada and Australia also required it until several decades ago, that Europe would have foundered after World War II without the Marshall Plan, that China started its recent development with large infusions of foreign capital, and that India and Turkey still require it. His emphasis on equality over growth sounds more like discredited Communist regimes than successful free market economics. His proposal for a universal tax on capital would mean lower saving and less growth in all countries. He never compares his wealth tax with a value-added tax (in the USA) that would have more favourable impacts on saving, investment, and entrepreneurial incentives.

Conclusions

Thomas Piketty has produced a book that many have bought, few will read, and only those already in his camp will appreciate. *Capital* is disappointing in its narrow theoretical focus when there are many practical tax and socio-economic issues to be faced to improve gen-

eral well-being. He makes an unsuccessful effort to model the dynamics of wealth and growth (especially compared to Schumpeter), he pays no attention to entrepreneurship, he doesn't understand financial markets, and he distorts history by ignoring periods when his general approach produced disasters. *Capital*'s policy recommendations for developing countries are pernicious and he makes no comparison of a wealth tax with a value-added tax for the USA. For some readers the book may be a clarion call to tax the wealthy, but my guess is that it is out of tune with modern decision makers except perhaps in France.

10. Thomas Piketty's 'Central Contradiction of Capitalism'

Dick Sargent

In the Conclusion to *Capital in the Twenty-First Century* (page 571), Piketty contends that, in a market economy based on private property, "The principal destabilising force has to do with the fact that the private rate of return on capital, r, can be significantly higher for long periods of time than the rate of growth of income and output, g". Even without the benefit of his exhaustive researches, it would be difficult to dispute what he observes about the relative size of r and g in the past experience of leading market economies;and he may well be right in his expectation that "r>g will again become the norm in the twenty-first century". But he continues "The inequality r>g implies that wealth accumulated in the past grows more rapidly than output and wages". Having claimed this implication, he uses it as the basis for his view that during the 21st–century economies like France, the UK and the USA will become destabilised by growing inequality, as capital grows faster than income as a whole, leaving a diminishing share of the latter for those whose income, such as wages and salaries, is not derived from ownership of capital. But is the implication correct?

Let us begin by noting Piketty's definitions of r and g, which on page 25 he gives as follows: "r stands for the average annual rate of return on capital, expressed as a percentage of its total value" and: "g stands for the rate of growth of the economy, that is, the annual increase in income and output".

We may also presume, as would be normal, that when he speaks of "wealth accumulated in the past", it is to be taken as synonymous with what he labels "capital".

What, then, determines the rate of growth of the stock of capital? For the economy as a whole, the absolute amount that is added each year to the existing stock of capital (to wealth accumulated in the past) will be the absolute amount that is saved each year in the economy as a whole. An obvious and important source of saving is the "profits, dividends, interest, rents and other income from capital" which enter into Piketty's r. If the whole of this source is saved, and nothing at all is saved from wages, salaries or any other kind of income, then clearly the rate of growth of capital, expressed as a percentage of the existing stock, is the same as the percentage rate of return on capital. So in that case a situation in which the inequality r>g holds must also be one in which capital grows more rapidly than total income and output, implying growing inequality between those who own capital and those who do not.

However, it would be highly unusual to find an economy in which savings followed the simple pattern described above. Normally, the flow of income which emerges as the return on capital is not simply re-invested by being added to the existing stock of capital; some of it is spent. Dividends and interest, for example, are part of that flow, and to a non-negligible extent are paid to individuals who do not save them all but spend part of them on consumption. Or they are distributed to pension funds and other savings media, through which they are passed on to individuals who consume part of what they receive. So normally one would suppose that what is added to capital in absolute terms each year will be less than one hundred per cent of "profits, dividends, interest, rents and other income from capital". In that case the percentage rate of growth of capital, as a percentage of the existing stock, would be less than the percentage rate of return on capital. Consequently the extent to which the rate of growth of capital exceeds the rate of growth of output will be less than the extent to which the return on capital exceeds the rate of growth of output. That is to say, the ratio of capital to output will increase by less than

the extent to which Piketty's r exceeds his g. The condition r>g, in other words, is not sufficient to establish that "wealth accumulated in the past" is rising faster than current output.

That may still be the case, of course. Imagine an economy in which the rate of growth of output (g) is 2 per cent and the stock of capital, measured as 1000 units, earns a rate of return (r) of 5 per cent, so that r>g. Then the annual flow of "profits, dividends, interest, rents and other income from capital" amounts to 50 units. If half of this is saved and added to the existing stock of capital, the latter grows by 2.5 per cent, or faster than the economy's output. But in the same economy, if only 30 per cent of "profits, dividends, interest, rents and other income from capital" were saved and added to the stock of capital, the latter would be growing by 1.5 per cent, or less than the economy's growth rate, notwithstanding that r was greater than g. The situation in which the condition r>g *must* imply a rising ratio of capital to output is the highly special one, namely where saving in the economy as a whole is identical with "profits, dividends, interest, rents and other income from capital". But in other cases when r>g, it is logically possible for the capital-output ratio to be either rising or falling. Evidently what Piketty does is to rest his argument about increasing inequality on the special case which identifies the rate of growth of capital with the rate of return on capital.

The mere fact that r exceeds g cannot itself be taken as a harbinger of inequality. Nevertheless, while the presence of r>g does not in itself imply a rising capital-output ratio in the way that Piketty suggests, the chances of that becoming so will be enhanced to the extent that g is reduced for a given value of r. This is shown in equation (6) in the Appendix below. One of the developments that Piketty foresees is that g, having begun to sag towards the end of the 20th century, will remain at a relatively low level for the 21st. He is not the only economist for whom the near future seems likely to see "faltering innovation".[1] So it is possible that a reduction in g,

by raising the extent to which it is exceeded by r, will be sufficient either to induce or to accentuate a rising capital-output ratio. It is questionable, however, whether a reduction in g of any significant size could occur without also reducing the size of r.

The issue is further complicated by the possibility that some of the year's addition to the capital stock may have come from savings out of non-profit incomes, such as wages and salaries. To the extent that that is the case, the accumulation of capital will be supplemented from sources other than the returns from the existing stock. That will certainly make it more likely that a situation in which $r>g$ will be associated with a capital-output ratio that is increasing. But it will not necessarily ensure that that is the case. In any event, to the extent that additions to the stock of accumulated capital come from non-profit incomes, it is less likely that they will entrench the "patrimonial society" and support the growth of inequality in the way that Piketty fears.

Appendix

Piketty complains (on page 32) that: “The discipline of economics has yet to get over its childish passion for mathematics ...”. Mathematics is often more effective in improving clarity than in satisfying a passion, and it is hoped that this will be borne out by what follows.

Let us write p_kK for the value of the existing stock of capital, pY for the value of output and wL for non-profit incomes, where the upper-case letters stand for measurements in “real” or “volume” terms, and the lower-case letters for notional unit values or “prices”. So Piketty’s r, the rate of return on capital, can be written as:

1. $$\frac{(pY - wL)}{p_kK}$$

For simplicity, we assume constant values for p, w and pk.

The annual amount added to the stock of capital, p_kdK, will be provided from current savings, which can be represented as: dt

2. $$s_{\Pi}\ (pY - wL) + s_w wL$$

where s_{Π} and s_w stand for the proportions saved out of profits and non-profit incomes respectively. (“Profits” here include everything that features in the numerator of Piketty’s r). So for the rate of growth of the stock of capital we can write:

3. $$\frac{dK}{dt}\frac{1}{K} = s_{\Pi}\frac{(pY - wL)}{p_kK} + \frac{s_w wL}{p_kK}$$

Now there is a special case, namely when all profits are saved ($s_\Pi = 1$) and nothing is saved from non-profit incomes ($s_w = 0$), in which (3) reduces to:

$$4. \qquad \frac{dK}{dt}\frac{1}{K} = \frac{pY - wL}{p_k K}$$

That is, the rate of growth of capital is identical with the rate of return on capital. This is the special case which Piketty appears to embrace.

Similarly, (3) can be expanded to show the rate of change of the capital-output ratio:

$$5. \qquad \frac{dK}{dt}\frac{1}{K} - \frac{dY}{dt}\frac{1}{Y} = s_\Pi \frac{(pY - wL)}{p_k K} + \frac{s_w wL}{p_k K} - \frac{dY}{dt}\frac{1}{Y}$$

Using Piketty's notation, this becomes:

$$6. \qquad \frac{dK}{dt}\frac{1}{K} - \frac{dY}{dt}\frac{1}{Y} = s_\Pi r + \frac{s_w wL}{p_k K} - g$$

and can be re-arranged as:

$$7. \qquad \frac{dK}{dt}\frac{1}{K} - \frac{dY}{dt}\frac{1}{Y} = s_\Pi (r - g) - (1 - s_\Pi)g + \frac{s_w wL}{p_k K}$$

In the special case where $s_\Pi = 1$ and $s_w = 0$, (7) reduces to:

$$8. \qquad \frac{dK}{dt}\frac{1}{K} - \frac{dY}{dt}\frac{1}{Y} = r - g$$

So in this special case it also follows that capital will be increasing faster than output if the rate of return on capital exceeds the

rate of growth, or $r>g$ in Piketty's notation. But what of the general case in which the saving propensities s_Π and s_w can take on values other than 1 and 0 respectively ? Consider the general expression for the rate of change of the capital-output ratio which is given by the right-hand side of (7) above. It is clear that the condition $r>g$ is not in itself sufficient to ensure that this expression will be positive. Since s_Π lies between 0 and 1, the bracketed coefficient of g in the second term on the right-hand-side is positive, and the term has a negative sign. So it is quite possible that it may offset the effect of a positive value for the first term $(r - g)$, so that the capital-output ratio is falling. Yet that could itself be reversed by the last term on the right-hand-side, which is unequivocally positive. What happens to the capital-output ratio cannot be resolved by observation of $(r - g)$ alone.

What of the effect of a lower g, which Piketty traces for the recent past and expects for the 21st century? It is evident from equation (6) that this will work towards raising the capital-output ratio – for given values, that is, of r, s_Π, s_w and wL/p_kK.

Thomas Piketty's *Capital in the Twenty-First Century* is easily the most talked about economics book of the last year, if not the decade.

At its heart is the idea that capitalism contains a central contradiction: without government intervention to address the gap, the higher savings of the rich will lead to the wealthy getting ever wealthier. Nearly every major economist has weighed into debates on the book's infamous central equation ("r>g"), data and policy implications.

This essay collection collates some of the most thought provoking assessments of Professor Piketty's work, and publishes some new ones for the first time.

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