

Is Inequality Inescapable?

On Piketty's *Capital in the Twenty-First Century**

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Over the past two decades, **Thomas Piketty** of the Paris School of Economics has built up a body of empirical research into income and wealth inequality that has hardly any parallel and has led some economists to nominate him for a Nobel Prize. Piketty's research with varying co-authors has established new and important facts about the evolving share of different types of incomes, derived from labor, businesses, and other forms of investment. The data he uses draw on decades of individual income tax returns in numerous industrialized countries. Even though Chris Giles of the Financial Times succeeded in identifying some clear data errors, it is noteworthy how remarkably similar Giles' adjusted time series are to those of Piketty when it comes to the evolution of *wealth* inequality in the United States, Britain, France and Sweden. Piketty's work on *income* inequality has gone unchallenged so far. In short, Piketty has credibly moved forward our empirical knowledge about inequality.

Piketty's book *Capital in the Twenty-First Century* summarizes that data for a wide audience. But the book also attempts to be much more. As its title says, it is not meant to look back and trace the evolution of economic inequality. Instead, it aims to preview the future. Piketty places himself in a direct line with David Ricardo (the inventor of the principle of comparative advantage), Karl Marx (the inventor of Marxism), and Simon Kuznets (the inventor of gross domestic product, or GDP). His main critique of these three predecessors is that their findings have been challenged by the economic history that followed. At least in that regard, Piketty shares their fate: even now, data series have the unfortunate habit of ending in the present. That means it takes more than collecting data to predict the economic future.

Will income inequality rise or fall? For an explanation, we need two elements: discernible patterns in the data that we can expect to extend into the future, and a theory that connects the facts to an explanation. Piketty elicits two main tenets from his historic work. His first tenet states that the real return on physical capital (r) will exceed the economy-wide growth rate of output in the future (g), expressed as $r > g$. His second tenet holds that the ratio between physical capital K and annual output Y is now back at its historic peak level and the upward trend may continue: The

*This article shares main points with my slightly more technical note entitled "Piketty's 'Capital in the Twenty-First Century' under the Lens of a Simple Economic Model." The note is available at econweb.ucsd.edu/muendler. I thank Peter Gourevitch, Stephan Haggard and Valerie Ramey for insightful comments on the technical note. Of course, any mistakes are only mine.

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capital-output ratio, expressed as $\beta = K/Y$, has reached factors of 6 to 7, meaning that it would now take six to seven years to reproduce our entire physical capital stock if we consumed none of our income but saved it all to invest in capital, and the ratio seems to keep rising.

As Piketty documents himself, the two tenets are projections based on relatively recent developments. In some earlier decades the real return to physical capital (r) fell short of the economy-wide growth rate (g), and the capital-output ratio (β) used to be considerably lower. Under what conditions can we expect Piketty's main two tenets to be right? If they hold, what do these conditions imply for growth and the distribution of income between capital and labor? Piketty is quite clear about his take: output growth g is doomed to drop to a small rate, so $r > g$ will happen, while β will keep rising. What is more, Piketty argues that both tenets will interact to aggravate income and wealth inequality

Well, not so fast. There are at least four reasons to pause. **First**, there is an aura of inevitability about Piketty's two tenets but it is not a foregone conclusion that inequality will worsen, even if we end up with $r > g$ and β keeps rising. **Second**, as a society we may aspire to advancing economy-wide income, to lifting the poor out of poverty, and to accelerating social mobility, while inequality need not contravene any of those three objectives. **Third**, gazing at our own economies is a good start but perhaps just as important is whether we are likely to find a wider or a narrower income disparity when we randomly pick two persons from anywhere on the globe rather than from inside any single economy. **Fourth**, the division of society into two groups—those with capital and those who derive their income from labor—may miss part of the main points about recent changes in inequality. *It is the super-top 1 percent within the top 1 percent who got most income gains, and for those super-top income earners neither capital accumulation nor disparate capital returns are likely the full story.*

To figure out how **Piketty's two tenets** relate to income inequality, we need one more Greek letter: α , the share of capital owners' incomes in national income. I promise that will be it for Greek letters. The definition is $\alpha = rK/Y$. Piketty likes to call the capital-output ratio $\beta = K/Y$, so we can also write $\alpha = r \cdot \beta$. Why bother with α ? Quite simply, α is all we need to know for inequality. In a society with only two groups—capital owners and workers—inequality will worsen only if α increases.¹

We don't need much math to figure out how precarious the relationship between Piketty's two tenets and income inequality is. Here comes a simple thought experiment. Suppose that Piketty's two tenets are right: $r > g$ from now on and the capital-output ratio β keeps rising indefinitely, because the wealthy accumulate capital faster than output grows. But then, for any given real return on capital $r > g$, as the capital-output ratio β rises and rises, $\alpha = r\beta$ must be rising and rising, too, until it reaches a level of one and then breaches through that level. Well, hang on, how can the share of capital incomes in total income α be more than 100 percent? Of course, it cannot. Or in other words, at some point in the future, either r must be falling or β must stop rising and inequality won't go up anymore. Put yet another way, the mere mechanics of the definitions mean that Piketty's two tenets must contradict each other at some point, or inequality stops rising. The thought experiment is extreme, I agree, because we may be a long time off the future point when

¹To be precise, inequality will rise if α increases and if capital owners command a larger share of national income than their head count would suggest. I derive this fact and all of my following points in a slightly more elaborate note entitled "Piketty's Capital in the Twenty-First Century under the Lens of a Simple Economic Model." The note is available at econweb.ucsd.edu/muendler.

the contradiction finally kicks in. So let's stay within the near term.

Does $r > g$ really imply that inequality must worsen? It is a funny economic convention about returns to capital that we measure them in percentages, rather than as an absolute annual income per capital owner. A side effect is that Piketty can compare r to g . But that does not mean the comparison is informative. Suppose for a minute people were numbers, too. I know it may be offensive, but just for the sake of clarifying what r means. Suppose you compute the value of a person the same way as Piketty and his co-authors infer the value of assets in their empirical work. Income tax returns of the capitalists do not necessarily state the amount of invested capital, so Piketty's empirical approach is to use rK , combined with what he knows about typical returns for certain asset classes, and to infer the value of the invested capital K . We could apply a similar idea to figure out the value of the asset that generates wages: human capital. Use the same established financial adjustment factors as Piketty does for physical capital K , but combine the wages with it, and that will tell you the value of our human capital. Under that hypothetical convention the return to human capital is now also quoted in percent just like r , whereas K and human capital are both quoted in dollars. So much for the offensive part. What if not only $r > g$ happens but also the percentage return to human capital exceeds output growth g , or even exceeds r ? Could we infer anything about the evolution of overall inequality? Maybe, maybe not. My point is simply that $r > g$ alone tells us little to nothing about the projected evolution of inequality. To rigorously infer how inequality will evolve, we either need to bring in more information on the return to human capital, or we need to do some more theory. I do not have the tax return data to compute the average return to human capital, so let me pursue a final theoretical thought about Piketty's doom scenario that global growth will slow down to a rate g near zero.

There are mainly three sources of economic growth. The first source of growth is productivity change and it is arguably the most lasting source of growth over the past centuries. A plausible long-term guess from looking back in history over the 20th century is that perpetual productivity change actually keeps propelling the global economy at a long-term growth rate of 3 percent or so. The second source of growth is capital deepening: an increase in the ratio of capital per worker means that workers get matched with more equipment, such as tractors and machinery, to help them grow food and produce goods. The third source of growth of total output is simply growth of the working population. In one of Piketty's doom scenarios, productivity change and population growth both come to a standstill and output keeps growing at a small rate g only because of the one remaining source of growth, capital deepening. What does this doom scenario mean for inequality and the change in the income share of capital? As we saw above, $\alpha = r\beta$. If capital deepens relatively fast so that β rises rapidly compared to the likely fall in the interest rate, then α increases and inequality worsens. However, in this doom scenario the one and only source of growth is capital accumulation. Therefore, in this scenario, it is perhaps hard to make the moral argument that capital owners should not receive a relatively large share of income. Their deepening capital provides the only source of growth after all.

One way to measure **poverty** is to ask what fraction of a country's population lives on less than two U.S. dollars and fifty cents a day. A common measure of *extreme* poverty is the fraction of the population that lives on less than \$1.25 a day. In the industrialized countries, we tend to measure poverty not in such absolute terms but with comparisons to the income of a person in the middle of our income *distribution*. We therefore tend to confuse poverty and inequality in the rich world even in our statistics. But poverty and inequality are two conceptually distinct things: poverty is

about the quality of life for the least fortunate, inequality is at least partly about envy. Consider the experience of Colombia in the late 20th century as an example. Extreme poverty dropped from a share of 45 percent of Colombia's population in 1978 to a share of only 23 percent in 1999, but at the same time inequality rose from 54 to 68 percent. How can it be that poverty drops while inequality increases? The answer is that the poor grew richer but the rich grew richer even faster. Should we consider Colombia's economic experience a success or a failure, or both? That depends on whether we mostly worry about the quality of life for the relatively poor, or about envy.

In the late 20th century global poverty fell largely because China lifted around 300 million people out of poverty over the course of two decades. The secret was not redistribution. To the contrary, inequality also rose considerably in China's managed economy under its one-party rule. China's national income grew fast. At an annual output growth rate of ten percent, national income doubles roughly every seven years. Even if China's growth will now slow down to say seven percent per year, then national income will still double roughly every decade. As the tide rises, all boats do get lifted, even if some privileged boats get lifted relatively faster.

North and South America have in common that they lead their respective peers in terms of inequality. Brazil alternates with South Africa at "the top" of the global income inequality ranking, the two countries being the two most unequal societies in the world. The United States has the economy with the highest income inequality ranking among its peers in the group of industrialized countries. How come societies in the Americas tolerate so much inequality? One answer may lie in the fact that they cultivate the idea of rapid social mobility. If citizens feel that who is at the poor end of society changes about every generation, then seeing someone else grow rich is less a cause for envy and more a cause for aspiration.

South America has recently lived up to such aspirations. From Chile to Mexico, and Ecuador to Brazil, inequality has dropped markedly over the past decade-and-a-half, partly because of a rapid expansion in schooling and partly because of successful poverty-alleviation programs. In contrast, the U.S. economy is delivering less on the promise of social mobility than it used to and may no longer be ahead of Western Europe, for example, when it comes to the chance that a person in the highest income quintile today was born to a parent in the lowest income quintile. An important part of Piketty's book to me comes therefore in the chapters that describe the dynastic transmission of financial wealth from generation to generation. However, given Latin America's recent experience of declining income inequality and social mobility in schooling, I miss the complementary analysis of the chance that a person with high educational attainment today was born to a parent with little schooling. Financial wealth matters. But so does human capital.

The economic division of society into the wealthy haves and the working have-nots is perhaps the most limiting when it comes to questions of **global inequality**. Comparing capital owners to workers inside economies is informative, and Piketty and his co-authors have advanced our understanding of the related income and wealth changes in the 20th century arguably more than any other research team. But a two-group perspective on inequality largely confines the approach to a repeated analysis of domestic inequality country by country, obscuring the other main aspect of global inequality, namely the evolving income gaps between countries.

On a global scale, inequality has remained broadly constant since around the end of the First World War, because of two opposing trends (documented by François Bourguignon and Christian Morrisson, also of the Paris School of Economics). Between-country inequality worsened until the mid-20th century, but within-country inequality fell between the two World Wars on worldwide

average, possibly because the wars wiped out much wealth. The two opposing forces kept global inequality roughly stable. In contrast, between-country inequality has largely stopped worsening in the mid 20th century, but within-country inequality has also stopped falling. As a consequence, worldwide income inequality has remained fairly stable since the end of World War I, whereas it used to increase relatively faster during the first wave of globalization prior to the First World War.

There are more capital owners today than just one percent of the overall population. In fact, for a capital-output ratio of β between 6 and 7 and an interest rate r of 6 to 7 percent or so, the capital share in national income $\alpha = r\beta$ is roughly equal to between 36 and 49 percent. In recent years, the 1 percent top earners in the United States pocket nearly one-quarter of national income. To fill the gap between that one-quarter and the 36 to 49 percent, there must therefore be more capitalists than just **the top 1 percent** of income earners. In fact, most workers are also capital owners in their retirement accounts and their home ownership.

The top 1 percent today get close to one-quarter of national income. But that is not even the full story. Much of the recent increase in income inequality in the United States was driven by the performance of the super-top 1 percent within the top 1 percent. If they all faced the same interest rate r as Piketty's main analysis posits, then the division of society into capital owners and labor does not necessarily offer much empirical oomph unless, for some reason outside the two-group theory, asset ownership among the capitalists is extremely diverse. That is in fact the case. But the asset holdings of the super-top 1 percent within the top 1 percent can then not have come about by a simple rule of capital accumulation over generations, which is common to all capital owners in Piketty's world. Can the marked diversity within the top 1 percent plausibly be due to a higher savings rate in the super-top dynasties? Not likely either, for savings rates do not seem to change all that much with income over time and across income groups

My hunch is that human capital, entrepreneurial ability, some mere luck, and perhaps a good network with privileged access to resources or insider knowledge, may matter quite strongly for recent changes in income inequality. My prediction is that those determinants of incomes will continue to shape the evolution of earnings diversity in the 21st century. It will matter for policy to what degree inequality depends on human capital and merit, and to what degree inequality depends on unfairly privileged access to insider jobs or access to insider resources. Those determinants of income inequality will also delineate how acceptable income inequality is for our social consensus. Whatever that emerging consensus will be, the division of society into capital owners and the rest appears quite 20th century.

References

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