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Understanding Thomas Piketty's *Capital in the 21st Century*

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Academic thinkers routinely identify flaws in capitalism, and propose reforms. That process is important, even healthy, as society thinks about what commercial society does and how it sustains itself.

To date, however, the most breathless forecasts of capitalism's demise have been too pessimistic, and in some cases damaging. There is a cycle of early excitement, media attention, faddish, poorly considered policy responses, and then a retreat back into obscurity. Examples – including commotions over conspicuous consumption, population explosion, and peak oil, to name just a few[1] – have shown that capitalism is more robust, and adaptive, than its critics have been willing to admit.

In the past decade, the theoretical and empirical arguments of French economist Thomas Piketty have attracted widespread attention.[2] Piketty's critique is fundamentally important, if it is correct, because it harnesses a "two rates contradiction," a model of analysis that claims that a system becomes more and more out of balance over time. In simple terms (explained below), Piketty argues that the degree of inequality in capitalist nations, especially in the United States, has been growing rapidly, and further that this problem will continue to get worse because the rate of return to "capital" exceeds the return to the rest of the economy. Workers, in particular, are given the short end of the stick in capitalism, as an inherent feature of the system.

Is the argument correct? It turns out to be partly correct, at least about affluence at the very top of the distribution, but the mechanism Piketty identifies as causing these disparities is misleading, at best. The larger story, that the increase in wealth inequality is across the range of the population, however, is not supported either by the facts or by the theory that Piketty lays out. Regardless of the particulars, however, the focus on inequality spurred by work by Piketty and coauthors has been a useful nudge for the economics profession.[3]

It is important to identify the core issues at the outset. Piketty's central empirical claim is that there are very large, and still increasing, degrees of wealth inequality in the US. The primary theoretical explanation offered is that the rate of return to capital is much larger than the return to other productive parts of the economy. Thus, the income earned by capital owners is greater in every time period, and this difference in income rates results in vast inequalities in the accumulation of income over time, which is of course wealth.

Piketty (and a changing set of collaborators, including Lucas Chancell, Arthur Goldhammer, Steven Rendall, Emmanuel Saez, and Gabriel Zucman) recalculate the previous work on inequality – much of which had been based on surveys, or less-reliable sources – using official measures of income for tax purposes. This is a more accurate measure, in principle. But using pre-tax income ignores transfers and tax credits, a substantial portion of how governments reduce inequality. Further, the American tax system is progressive, meaning that the wealthy pay more, as a percentage, than the poor. In fact, more than 45 percent of Americans pay no net income tax at all, once government transfers are factored in. Using pre-tax income thus underestimates the substantial redistribution already present in the tax code, and exaggerates actual inequality.[4]

A number of scholars have reacted to Piketty's empirical claim that inequality has persistently and rapidly increased, and the claim seems to be incorrect or, at best, exaggerated. Mechler, Miller and Konechny argue that much of the measured increase is due to "tax shifting" induced by the 1986 Tax Reform Act.[5] Armour, Burkhauser, and Larrimore show that Piketty's measure does not properly measure unrealized

capital gains, perhaps most importantly in housing; when this error is corrected there is no difference in equality since 1989, a finding corroborated by subsequent re-estimates.[6] One of the most glaring, and discrediting, findings is that Piketty and his group of coauthors failed adequately to account for Social Security transfer payments; when accounted for, these adjustments again indicate that inequality has been essentially constant, not sharply increasing.[7]

Further, Piketty's theoretical model oversimplifies the relationship between two variables: the overall rate of return, and the rate of return to "capital." The nature of capital, what counts and doesn't count, and how much, is an old controversy.[8] But Piketty uses the simplest possible definition, lumping together liquid capital, existing factories that may be obsolete or inactive, and housing. These have very different functions in the economy, and the supposed "rate of return" that drives Piketty's results is largely an artifact of skyrocketing housing costs.

A Closer Look

Piketty's work — both his central empirical claims, and the causal model he cites to support those claims — was debunked almost immediately after it was published.[9] Attempted revisions and "fixes" have not addressed the critiques in any important way.[10] Yet the empirical claim about growing inequality has become more, not less, widely cited; worse, the "solutions," a variety of permanent confiscatory wealth taxes, have become Beltway orthodoxy.[11]

Why should this be true? People feel (correctly, broadly speaking) that inequality is increasing in developed nations. The reasons are complex, but simplistic, apparently systemic explanations are attractive, especially if those "theories" imply the kind of redistributive policies that powerful elites already favor for ideological reasons.

It is useful to step back for a moment, and examine the main threads of trends in income and wealth.

- By most measures, general inequality has not increased. The Gini coefficient (a statistical measure of economic inequality) of the US was .38 in 1963, and .40 in 2021, the most recent year for which data are available.[12] The Gini measure has been as high as .42, and as low as .35, over that period of nearly 60 years, but there is no evidence of any widespread concentration of wealth in the US.
- On the other hand, public perceptions of increased concentration of wealth at the very top of the income distribution are supported by the evidence. That may be why Piketty's thesis is attractive. The top one-tenth of one percent of the income distribution held 3.4 percent of US private income in 1980, and today that proportion approaches ten percent, a near tripling of the share of the very wealthiest elites.[13]

That does, superficially at least, look as if "the rich are getting richer." The flaw in that logic is that the "very wealthiest elites" are *constantly changing*. A PLOS One study published in 2015 found that:

> Empirical results suggest high mobility associated with top-level income. For example, 11 percent of the population is found to occupy the top one percentile for one or more years between the ages of 25 and 60. The study findings suggest that many experience short-term and/or intermittent mobility into top-level income.[14]

That means that 11 percent of the US population is, or has been, in "the one percent." A static picture of wealth, based on paper values of financial assets, will fail to identify the churn, the constant moving in and out of the ranks of the super-wealthy.[15]

The real explanation for the change in the wealth distribution, and the surprising result that 11 percent are or have been part of the "1 percent," is the change in the way that value is created and distributed in the modern economy. The short version comes to a distinction made by UCLA's Ed Leamer: *forklifts vs. microphones*.[16]

In the manufacturing economy (which many of us conflate with "capitalism") generating significant value created a lot more jobs. If you wanted to double the number of televisions you manufacture, you had to hire about double the number of workers. If you wanted to move twice as many televisions out of your warehouse, in particular, you would need twice as many forklifts. Each forklift driver was skilled and made a good wage. We made televisions, boom boxes, calculators, and physical items. Every one of them had to be manufactured, and shipped, separately, creating many opportunities for employment.

Now, however, much of the value of creativity is more like a microphone (increasing returns) technology than a forklift (linear) technology. And a person who wants to distribute music, or video content, or written words, doesn't have to make a CD, burn a DVD, or print a book, much less stock it in a warehouse or ship it in a truck. Enormous amounts of content can be distributed almost instantly, and near-zero cost. One person who makes content others want can now take all the value that is created for themselves. No forklifts are involved.

In the new model, we need far fewer forklift operators, and in fact we need very few microphone operators, because the handful get the lion's share of the attention, and the income, from each new activity. Since the accumulation of income over time is wealth, the size of the effect becomes exaggerated, with the rich growing quickly richer. The (relatively) poor workers do not not get poorer in absolute terms, but in relative terms the inequality in wealth grows rapidly.

But this has nothing to do with capitalism *per se*. The change reflects an evolution in the very way that we communicate, and distribute value. Unsurprisingly, microphones concentrate wealth where once forklifts distributed wealth widely. To the extent inequality has actually increased, concentration is driven by rapid changes in technology. Those changes benefit consumers by reducing the costs of producing and distributing value.

Critics, including the unemployed forklift driver, might easily see these changes as features of capitalism itself, and that is what Piketty and his followers have tried to portray. But Piketty's activism is best contextualized in a historical tradition of "two rates" arguments.

The Tradition of "Two Rates" Fallacies to Justify State Control

Arguments for state action have traditionally rested on the mistakes and contradictions of private choices. The logic is superficially compelling: private choices are uncoordinated, even chaotic; people will consistently choose wrongly, and over time the divergence between the good society and actual society will increase, until there is revolution or civil war.[17]

These contradiction claims take many forms, but they frequently involve "two rates," where differences start small but become unsupportable. One of the best known examples is the Malthusian "two rates" argument, which holds that resources grow (at best) linearly, but birth rates grow exponentially.[18] That argument resurfaced in the 1970s with Paul Ehrlich (who called it an "even money" bet that "England would not even exist in 2000"), and resulted in China's "One Child" rules and attempts to reduce family size in other countries.[19] The theory was personified into villain Thanos in a Marvel *Avengers* movie, and has expanded into "degrowth" restrictions on production, consumption, and energy use.[20]

Karl Marx also argued for a "two rates" contradiction. He claimed that the rate of profit must decline over time, forcing business owners to cut costs, including wages.[21] But the consequent reduction in consumer demand will cause consumption rates to fall even faster, resulting in collapse and revolution.

Marx was simply mistaken about secular decline in the rate of profits for commercial firms, and later abandoned the claim when it became clear it was empirically false.[22] Profits certainly fluctuate over time and variations in the macroeconomy, but those are often caused by distortions introduced by monetary policy and regulations from the government itself. Marx's theory that the contradictions in capitalist economies would lead to communist revolutions in developed nations has simply not been borne out by history.

In fact, profits have risen, in a succession of new industries, and wages continued to rise in developed nations and less-developed nations alike. The spread of capitalism has resulted in an almost unimaginable reduction in poverty over the last 75 years.[23] To be clear, the world's population has more than doubled in the last 50 years, just as the Malthusians feared. Other things have happened, though, that should make it even more likely that widespread starvation is the rule. First, the child mortality rate has fallen from more than ten percent to less than four percent.[24] Second, the world's average life span has grown from fewer than 55 years to more than 70.[25]

So, where is the famine? How can England "even exist"? The answer is that while the rate of population growth has in fact been high, capitalism's drive toward efficiency has delivered an even larger rate of increase in food: the world per-capita supply of calories has grown from 2,100 kilocalories per day when Paul Ehrlich was writing to nearly 3,000 daily kilocalories now.[26]

Malthus, Erlich, and Marx demonstrate that the apparent strength of "two rates contradiction" models comes from a naive, and usually incorrect, assumption that each of the two rates will remain unchanged, and that human ingenuity plays no role in adjusting to problems.

Piketty: The Details

Which brings us back to Thomas Piketty. Piketty's claim has two parts: 1) an empirical claim of fact and 2) a hypothetical explanation for the claim. The whole apparatus rests on the empirical claim that the *degree of inequality* in western society has increased dramatically; the explanation is a classic "two rates contradiction." For Piketty, the two rates involve the assertion that the return on capital exceeds the growth rate of the economy, simply as a feature of capitalism. Unless the government takes action to correct this disparity in rates of growth, he reasons, wealth will continue to be disproportionately concentrated in the hands of those who own capital.

The empirical claim is exaggerated, and in some ways incorrect. More importantly, Piketty's theoretical explanation is a category mistake, confusing the nature of "capital" and rates of return. The result, as I will discuss at greater length below, is (1) the problem to be solved is not nearly as severe as Piketty makes out, and (2) the supposed solution confuses the average and marginal rates of return to wealth.

PART ONE: INEQUALITY

The degree of inequality in a nation seems easy to agree on, or at least to understand. Average income is an overall measure of the annual contribution to wealth of the nation as a whole, but inequality describes the *differences* in the wealth of individual households. As was noted earlier, wealth is the accumulation of income over time. The Piketty thesis is that the annual rate of return (income) for capital exceeds the same measure for labor, and so the paths of accumulated wealth diverge quickly.

To understand the relation between income and wealth it is useful to consider an example. A society with a per-family average income of $50,000 would appear to be reasonably "wealthy," for example. But consider two societies that both meet that standard:

SOCIETY A:

10%: $410,000 family income/year   90%: $10,000 family income/year

SOCIETY B:

25%: $60,000/year   50%: $50,000/year   25%: $40,000/year

In society B the middle class is substantial, and the difference between the wealthiest and the poorest is modest. The two societies are equally "wealthy", on average, but considering the lives of actual individuals, in the abstract, society B may be "better." In fact, most people in Society A would strictly prefer to live in Society B, even if they didn't know in what income category they would find themselves.

But transforming Society A into Society B is far from straightforward. Income flows originate from assets or sources of production contingent on the efforts of producers. If a decision is made, in Society A, to confiscate most of the annual income of the top 10 percent, that income will simply cease to exist. Taxing something almost always causes there to be less of that thing; consequently, while taxation may indeed reduce wealth, no clear mechanism redistributes that wealth to the poor.[27]

Income distributions are not static, but in fact dynamic, at least in vigorous, high-growth systems like capitalism.[28] In the US it is still true that children are likely to have higher incomes, adjusted for inflation, than their parents, and that this difference is greatest for those born at the bottom of the economic ladder.[29] So while it is perfectly true that the "top X percent," for whatever X you choose, make more money, by definition, the actual identities of the people in that "X percent" are fairly fluid. There will always be a bottom 10 percent, and a top 10 percent, by the mathematical definition of income deciles. But it is not the same 10 percent getting richer, or poorer, over time.[30]

Socialist systems such as North Korea or Cuba are more equal, but that's because most people were poor ten years ago, they are poor now, and they'll be poor as long as socialism survives. Capitalism gives people reasons to create and produce new and better products, and rewards the entrepreneur who improves the lives of her customers in new ways.

Remember, that entrepreneur — let's call her "Penny" — has to line up voluntary contracts just to get started. She has to borrow capital, and then sign agreements with suppliers of land, supplies, labor, energy, and basic materials. The entrepreneur rents or buys machinery, and builds the capital structure to create the new — still nonexistent and so, inherently unprofitable — new product.

Notice that the entrepreneur has already improved people's lives. All those input suppliers, including workers, could have done something else with their supplies, materials, or labor, but they chose to accept the payment offered by the entrepreneur over those other opportunities. The only two entities taking on significant risk are the source of the loans that finance the startup, and the entrepreneur who is responsible for repaying the loans. Everyone else has already come out ahead, as long as contracting is voluntary, even if the product fails.

Penny hires salespeople, and begins to sell the product to consumers in the retail market. Since these exchanges are also voluntary, each consumer benefits from the transaction, or they wouldn't buy the thing in the first place. Economists call the benefit the "consumer surplus," which is the maximum amount the buyer would have paid, minus the price the buyer pays the seller.[31] This amount could be substantial, though it is hard to measure in concrete terms. The point is that the entrepreneur is again creating very substantial social benefits, since literally every item sold creates net value. We know that because the amount paid is less than the value for the consumer, as long as the contracting is voluntary.

Consider a quick example. Suppose Penny is selling bottles of water, on a hot day. The bottles of water cost her $1, from a willing wholesale seller, and she is selling them retail from a sidewalk table for $2. Each buyer would pay a different amount, depending on how thirsty they were but, on average, water buyers value the water at $5 per bottle. Penny sells 1,000 bottles of water for the day. At the end of the day, the distribution of benefits looks like this:

> *The Seller: $1,000 (revenues of $2,000, costs of $1,000)*
>
> *The Many Buyers: $3,000 (total consumer value of $5,000, costs of $2,000, so consumer surplus is $5,000-$2,000)*

Now, stop and take a snapshot of the wealth distribution: Penny has new wealth of $1,000, a large amount compared to everyone else. That inequality seems unfair. But in fact Penny created more consumer surplus value ($3,000) than she took in profits ($1,000) from the transactions. The resulting inequality in money wealth is deserved, as it is the measure of having created a substantial and widely shared social benefit that is measured in happiness, not money.

For other activities, such as an entirely new product, we can use a similar test. The question to be decided is whether an activity is socially beneficial. Just as with selling water, if the entrepreneur is selling a new product she takes the revenue earned — and "earned" is the right word, because the consumers are better off! — and then tries to pay off the loan. Remember, the loan was spent to pay the input suppliers, all of whom are also better off. Now that the products have been sold, Penny determines whether the revenue pays off the costs of production, including the loan. If so, she breaks even.

But what if there is something left over? That is a signal, a piece of information that comes from "the discovery process," as economists such as Ludwig von Mises, Friedrich Hayek, and Israel Kirzner called it.[32] Penny generated socially valuable information by learning people were willing to pay more for her product than it costs to make.

The name of that value signal, the excess of revenues over costs, is profits. Many different people are seeking profits, and taking risks by developing new products and processes of production. If the new product proves to create net social value (makes customers happy), the entrepreneur earns a profit and becomes wealthier. If the new product is a dud, she takes a loss and goes bankrupt, redistributing those resources to higher-value uses.

In this kind of system, then, who becomes very wealthy? People who produce enormous social value, as determined by buyers. Producing social value requires both bidding resources away from supply owners by paying higher prices, and by selling to consumers at a price lower than the value they see in the product. Of course, not everyone is an entrepreneur; some people become wealthy by buying equity shares in large firms that produce social value in the way I just described. In effect, buying stock provides the capital needed to bid for resources and sell products, and committing one's own resources to this socially valuable activity deserves a return. In either case, for producers or for investors, that's what wealth is: the reward for producing social value.

To evaluate Thomas Piketty's claim about the rate of return on capital, and indeed Karl Marx's 19th century work of that name, we must define capital concretely.

PART TWO: THE NATURE OF CAPITAL

Most people frankly don't understand what capital is. And it is confusing, because "capital" refers both to the liquid value — loans — used to create factories and buy machinery, and to the factories and machinery themselves. Capital, as such, has no inherent "rate of return," though it does have an opportunity cost. If I loan you money to invest in a project, I can't invest that sum in some other project. To make it worthwhile, I will charge you a rate of interest that is at least equal to the value that I expected to have earned by investing the money elsewhere.

That's why Penny needed a *loan*. Capital at that start-up stage is loanable, liquid assets, value that can be transferred from one person to another, or around the world, and then used to construct physical capital. The value of liquid capital is its opportunity cost, or the return expected from the next best investment. The value of physical capital, by contrast, depends entirely on the form that it takes. This is what Austrian economists call "capital structure," the (relatively) fixed physical form that liquid capital is converted into.[33]

Liquid capital is not inherently productive; it is just transferable value. The reason liquid capital can produce a return is that it can be easily invested. But then the rate of return on that capital depends entirely on the performance of the specific investment. Once liquid capital is converted into, say, machinery for an assembly line, the capital structure becomes highly specific, and contingent on the use to which the capital is put. If the liquid capital is invested in machinery to make widgets, but widgets aren't profitable and the firm operates at a loss, the rate of return on capital is, at best, zero. Worse, and importantly, it may be very costly, or impossible, to convert that physical capital back into liquid capital, because no one wants to buy that useless factory, or that valueless machinery.

In 2001, Apple had capital, and so did Sony. Apple used its capital to produce the iPod, and Sony kept using its capital to produce the Walkman. Apple's capital was highly productive, and produced a high rate of return for its stockholders. Sony, because it refused for some reason to move into digital music, found that all its large factories that were set up to produce "players" for cassettes or CDs, which customers suddenly didn't want to buy. Sony's factories could not easily be adapted from making the now-unprofitable Walkmanto some other product.[34] Owning specific physical capital is risky: capital may have a low rate of return, or no return at all, if the existing configuration of the physical capital structure is "misaligned."[35]

So the "what is capital?" question is difficult, because capital takes different forms and the profit (or loss) returned by those forms vary based on a variety of factors, including customer demand for portable cassette players and whatever your competitor is doing.

What capital is definitely *not* is what Piketty claims: a homogeneous thing that has a "rate of return." Any theory that talks about the rate of return of capital is a fundamental misuse of basic economic concepts. Considering average return is profoundly misleading, in an environment where returns are risky, and uncertain. Economies with the same average rate of return can have very different effects on the growth of wealth if they differ in the volatility of those returns. Risky investments—a description that characterizes capital investment, in many cases—may have a higher average rate of return, but also a much higher chance of loss, even bankruptcy.

Calculating an average of returns from different investments—in other words, assuming "capital" is homogeneous—over an extended time tells us almost nothing about return to particular investments, at a particular place and time. And particular places and times (consider, for example, the return on investment of a Walkman production facility in the US in 1979 and then in 2010) are where all the "action" in capitalism takes place.

To review: Liquid capital is valuable, but only because it has the potential to be moved and invested anywhere, in anything, very quickly.

Only specific investments generate profit, making capital valuable. Entrepreneurs borrow liquid capital, or raise liquid capital by selling equity shares, but nobody "profits" until a product is produced, and consumers buy it, and the revenue from the sales exceeds the costs of production. None of this may work out, and the capital is wasted, taking a much smaller value, and, under certain conditions, invested capital may be made worthless. In other cases, "capital" may be value that is trapped in the value of a home or other real estate, representing important wealth for a family that has very little income. Ignoring the fact that a lot of wealth is crystallized in the relatively illiquid form of real estate is a problem for a theory that requires that capital be homogeneous, and earn one rate of return.

What this means is that wealth held in the form of real estate, and most other physical forms of capital structure, are not substitutable for labor on almost any margin.[36] Piketty's conclusion relies on the implicit assumption that capital, all capital, is a nearly perfect substitute for labor (otherwise diminishing marginal returns to investment would reverse his predictions of increased inequality).[37] Capital must be able to displace labor, but also somehow capture all of the productivity that labor used to contribute. As numerous refereed articles have pointed out, this assumption is unsupportable based on the empirical evidence.[38] But without that assumption, Piketty's theory implies decreasing, not increasing, inequality over the long term.

The process of investment — turning liquid capital into machines or software — is usually irreversible, or mostly so. If the firm is not profitable, "liquidating" the physical capital will regain at most a small fraction of the original investment. Capital may be highly productive at one point, but it depreciates by being worn out, or loses value because the product or process becomes obsolete. In a surprisingly short period, valuable capital (like your Walkman production facility) can quickly become nearly valueless. Investment involves risk.

This process of "creative destruction" is the key feature of capitalism. Once liquid capital is converted into highly specialized factories and machines, capital structure is not readily adaptable. What value can be recovered after obsolescence or prolonged losses is redistributed into new, hopefully more productive, investments.

The Data and the "Fact" of Increased Inequality

To be fair, Piketty — and coauthors Emmanuel Saez and Gabriel Zucman (hereafter PSZ) — have made an important contribution. They have compiled a comprehensive and potentially more accurate set of data to measure family income, compared to work that has gone before. The PSZ measure is based on tax return data, attempting to use something like Adjusted Gross Income over time. That data set begins soon after the passage of the Sixteenth Amendment imposing a national income tax in 1913.

These data, according to PSZ, show that inequality in the US started out relatively high in the early part of the Twentieth century. Inequality, by this measure, reached a high in the late 1920s, but fell substantially because of the Roosevelt administration's New Deal policies of confiscatory taxation and regulation. Inequality remained low through the late 1970s, according to PSZ, because unions were *raising* wages at the lower end, and progressive taxes were reducing wealth at the top end.

But then, in the PSZ account, the Carter administration began experimenting with deregulation, and substantially cut back management of transportation and other industries. With the election of Ronald Reagan, further deregulation was combined with substantial tax cuts on the top end of the wealth distribution. Inequality, according to this narrative, has steadily increased since the late 1970s. In the 2020s, inequality reached a level not seen since the worst days of the Gilded Age.[39]

This account appeals to those who want to reverse the process of deregulation, and who want to make income taxes more progressive, or (better yet) to impose a wealth tax. The causal story is that inequality fell sharply during the ideal progressive policy phase of high taxes and heavy regulation, but remerged and in fact got worse under Carter's pragmatism, Reagan's conservatism, and Clinton's third-wayism. This empirical pattern is then augmented by the theoretical claim that the "two rates contradiction" in capitalism has made things worse.

But as I have argued in the previous sections, the PSZ data does not show a large increase in inequality, when the errors are corrected. And the "two rates" argument ignores the complexity of the definition of capital, and its wildly changeable rate of return. Finally, though perhaps less significantly given their emphasis on wealth, the PSZ data ignores two key factors in calculating changes in inequality:

Taxes: The PSZ data fail to account for the effect of taxes in reducing personal disposable income of the wealthy by the taxes they pay.

Transfers: The PSZ data leave out the increase in spending power of the poor introduced by the transfers, welfare payments, and subsidies they receive.

The reason this last point is important is that mismeasuring actual adjusted gross income will give a misleading picture of likely changes in wealth, the accumulation of income over time. Consider a simple example. Imagine that one household has an adjusted gross income (AGI, the number that PSZ use) of $150,000, and another has an AGI of $15,000 (below the poverty line for a family of four). The wealthy family, with an income in the top twenty percent of the income distribution, would seem to be ten times as "wealthy" as the poor family.

That conclusion, based on AGI, is misleading. The AGI data are before the taxes and transfers that yield actual disposable income. The wealthy family pays 30 percent of its AGI in taxes. The poor family receives housing subsidies, food subsidies, and other transfers that amount to $12,000.

This suggests the following comparison:

	WEALTHY FAMILY	POOR FAMILY	RATIO
PSZ Data (AGI before taxes and transfers)	150,000	15,000	10 to 1
Disposable Income (after taxes and transfers)	105,000	27,000	4 to 1
Over/Underestimate	Over by 45,000	Under by 12,000	Nearly 4 to 1

As Auten and Splinter pointed out in the prestigious refereed *Journal of Political Economy*, the "shares" of top income earners are much lower, and the degree of inequality is far less, when the correct — that is, post-tax and post-transfer — data are used.[40] The US has a progressive tax system, and programs of welfare transfers, precisely to reduce inequality in the space where people live their lives: actual, spendable income. The reason that PSZ and their followers have found the distorted data so useful is that the real numbers show a fraction of the inequality required to make their case for more-robust redistribution.[41]

The Hypothetical Explanation

Piketty claims to have made a discovery, a "two rates contradiction" which, if valid, would demonstrate that the tendency toward income inequality is no accident, and is, in fact, baked into the very nature of capitalism. In the simplest terms, the cited contradiction is that the rate of return on capital exceeds the rate of increase in wages, such that over time the share of wealth for owners of capital will rise faster than wealth held by workers, increasing the concentration of wealth in the hands of a few. Finally, since capital is often a substitute for labor (when labor costs rise, a fast-food franchise owner invests in robot kiosks and the worker at the fast food restaurant loses her job), this process will accelerate over time.

The claim is certainly interesting, in part because it is the opposite of the old Marxist claim that the return on capital would inevitably decline.[42] Still, it shares with the classical Marxist "two rates" claim that labor will become poorer, and eventually be so immiserated that bourgeois commercial society itself will be endangered. The added twist for Piketty is that a concentration of wealth will create a wealthy plutocracy that may hold out long, maybe forever, against those revolutionary forces.[43]

There is an important potential counterargument that must be considered. The emphasis here has been in part on the claim that inequality in income is less than Piketty's measure, focusing on taxable income, would indicate. A defender of Piketty could object, saying: "Yes, that's all true. But the theory is about the natural tendencies of capitalism. The fact that post-tax and transfer inequality hasn't risen much simply demonstrates the importance of government policy in fixing this flaw in capitalism, and it's still not enough to keep inequality low!"

The problem with this objection is that the pre-tax and transfer data also don't show what the "free-market" distribution of income would be in the U.S., in the absence of pervasive regulation and the distortions of taxation. It is clear that progressive taxation and social welfare programs distort incentives in a variety of ways. These effects differentially reduce work effort among different segments of the workforce;[44] the result could be either more or less inequality in "real" market incomes. So, for the argument to go through, Piketty and his collaborators would need to show that changes in wealth given the policy setting aren't themselves responsible for the rise in inequality, but that instead this rise is somehow natural and inevitable to the market system itself. As a result, both Piketty, and critics of Piketty, must work with the data on income flows and wealth accumulation under the current set of institutions, as I have done here.

Conclusion

Piketty's argument consists of two parts: an empirical claim (vast increases in inequality) and a theoretical explanation (capital has a higher return than labor). Each of the two components has crippling flaws, so the Piketty model fails, *on its own terms*. There are four reasons for this failure:

1. "Capital" is not homogenous. Some capital is invested in new and profitable applications, and some is invested in declining industries. Karl Marx claimed that capital was "barren," and he was wrong about that. But Piketty claims that capital is all the same, and that each investment earns the same average return, regardless of how it is invested. That is wrong, also.
2. Even if capital were (more) homogenous, the *depreciation of capital* is not fully offset by increased saving by the wealthy. Perhaps more importantly, excessive saving is not a problem for the wealthy in the first place. Even the very wealthy, after a generation or two, dissipate their wealth by excessive consumption, and find that the value of investments has fallen dramatically, partly because of depreciation, but also because of simple inattention.[45] No stable "one percent" of individuals owns an increasing share of wealth.[46] But the empirical evidence on both depreciation and the need for higher reinvestment returns turn out to contradict Piketty's conclusion that capital will always have constant or increasing returns. Using plausible definitions of depreciation reverses the predictions of the model.[47]
3. Nearly half of what Piketty calls capital is tied up in the value of dwellings, and the land on which dwellings are placed. The rate of increase in the value of homes, and urban land, has more to do with progressive land use regulations than with capitalism.[48] Housing prices do not factor into the rate of return on capital for entrepreneurs. Importantly, when accounting for the wealth held in homes by middle class people, actual inequality is substantially less than is implied by Piketty's income-based measures.[49]
4. Finally, wealth held as real estate, or other physical forms of capital structure, are complements to labor, not substitute. Piketty's argument relies on notion that capital can be substituted for labor in the production process, because otherwise the diminishing returns to capital investment at the margin would actually predict less inequality, not more. Capital must be able to displace labor, while capturing all of the productivity that labor used to contribute. The problem for Piketty is that the professional literature on this question shows the "perfect substitutes" argument is unsupportable. If, as appears more plausible, capital is generally a complement to labor, Piketty's own theory implies decreasing, not increasing, inequality over the long term.

These counter arguments are varied, complex, and confusing. But taken as a whole, this extensive body of work means that neither component of Piketty's central claim is persuasive. The level of inequality in the US and other developed nations has varied, but it has not shown a large and consistent increase. And the rates of return to capital and labor, when properly calculated, do not indicate that an increase in inequality is inevitable, or even likely in the future.

Thus, while Piketty's work has been heavily employed as a focus of inequality and "social justice" research, Piketty's conclusions are mostly misguided. Any policy responses based on them will be, too. Inequality and poverty are significant problems, and the sense of precariousness felt by many Americans is real. Unfortunately, the exaggerations and excessively pessimistic claims made by Piketty and those whom he has persuaded to follow his arguments have likely made the problems harder, not easier, to solve.

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