MR. PIKETTY AND THE “NEOCLASSICS”:
A SUGGESTED INTERPRETATION

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This essay is an attempt to build a bridge between Thomas Piketty’s arguments in Capital in the Twenty-First Century and modern neoclassical economics. This is done by deconstructing the variables and mathematical expressions used by Piketty to define specific economic phenomenon, examining the historical periods that Piketty has focused on in Capital, and using the results from the previous analyses to critique Piketty’s arguments in Capital in the Twenty-First Century within a modern neoclassical economics framework.

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JEL Codes: E2, E6

I. INTRODUCTION

Like John Maynard Keynes’s (1936) General Theory of Employment, Interest, and Money, Thomas Piketty’s (2014) Capital in the Twenty-First Century is an excellent, sprawling, discursive, and cranky book. While in the end Piketty (2014) is unlikely to have the influence of Keynes (1936),¹ and even though Keynes (1936) has fallen short of what he hoped its influence would be,² Piketty (2014) is nevertheless likely to stand in history as the most important book of economics published in 2014 — the most important single work for economists to grapple with and understand.³

¹ Keynes intended and expected the book to revolutionize economics. “I believe,” he wrote to George Bernard Shaw on January 1, 1935, “myself to be writing a book on economic theory which will largely revolutionize — not, I suppose, at once but in the course of the next ten years — the way the world thinks about its economic problems. I can’t expect you, or anyone else, to believe this at the present stage. But for myself I don’t merely hope what I say — in my own mind, I’m quite sure…” (Cassidy, 2011).
² Modern macroeconomics, as practiced by professional Ph.D. economists at least, owes — or at least until 2010 owed, for perhaps it is once more uncertain — more to Milton Friedman than to John Maynard Keynes (DeLong, 2000).
However, *Capital in the Twenty-First Century* is not an easy book for professional economists to read. Like *The General Theory of Employment, Interest, and Money*, it appears to be an attempt to reorient economists’ discussions of issues rather than a contribution to the already-ongoing economic discussion. In 1937, the economist John Hicks wrote what became his most important and influential paper by asking himself, “What if Keynes had tried to convey his ideas not by writing a book to reorient but rather by writing a paper to contribute to the ongoing professional economic discussion?” What he produced was the classic Hicks (1937) “Mr. Keynes and the ‘Classics’: A Suggested Interpretation.” That paper has been much-criticized — not least by Hicks himself — for taking the ideas of Keynes’s *General Theory* and distorting, mangling, and dumbing-them-down by fitting them into the Procrustean bed of economists’ standard theories of equilibrium-with-selected-market-imperfections (Leijonhufvud, 1968).

Nevertheless, Hicks accomplished, brilliantly, the task he had set for himself; after Hicks, it was no longer possible for economists working in the previous “classical” macroeconomic tradition to claim in good faith that they could not make heads or tails of what Keynes was talking about, or fall victim to misinterpretations like Jacob Viner’s (1936, p. 149) that Keynes wanted merely to set up “a constant race between the printing press and the business agents of the trade unions, with the problem of unemployment largely solved if the printing press could maintain a constant lead, and if only volume of employment, irrespective of quality, is considered important.”

I want to see if I can do for Piketty what Hicks did for Keynes. This article is thus an exercise in bridge-building. If you are a devotee of Piketty and think that I have misrepresented and bastardized *Capital in the Twenty-First Century* to an unforgivable degree, my answer is simple: go build a better bridge between Piketty and modern neo-classical economics yourself. If you think that Piketty does not, after all, have much to say, my answer is: Think again, for *Capital in the Twenty-First Century* is, as Robert Solow (2014) wrote, “a serious book”:

[Standard explanations] do not seem to provide a thoroughly satisfactory picture … A forty-year [rising-inequality] trend common to the advanced economies of the United States, Europe, and Japan would be more likely to rest on some deeper forces within modern industrial capitalism … Thomas Piketty … fill[s] those gaps and then some. I had a friend, a distinguished algebraist, whose preferred adjective of praise was “serious.” “Z is a serious mathematician,” he would say, or, “Now that is a serious painting.” Well, this is a serious book.

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4 Keynes (1936, pp. 375–376) wrote “I feel sure that … it would not be difficult to increase the stock of capital up to a point where its marginal efficiency had fallen to a very low figure … the return from [capital] would… just cover their labour costs of production plus an allowance for risk and the costs of skill and supervision … This state of affair … would mean the euthanasia of the rentier … of the cumulative oppressive power of the capitalist to exploit the scarcity-value of capital. Interest today rewards no genuine sacrifice, any more than does the rent of land. The owner of capital can obtain interest because capital is scarce, just as the owner of land can obtain rent because land is scarce. But whilst there may be intrinsic reasons for the scarcity of land, there are no intrinsic reasons for the scarcity of capital ….”
In order to well-anchor the bridge, people trying to understand Piketty’s book need to begin understanding five things:

1. The book is primarily about the decline in wealth concentration, inequality, wealth-to-income ratios between the Belle Époque (1815–1914) and 1970, and their subsequent rise in France. It is not a book about the rise in inequality in the United States over the past 40 years.

2. The book is secondarily about the likely state of the United States and the rest of the North Atlantic economies in 50 years or more, around 2070 and beyond, when and if the processes highlighted by Piketty work their logic without interruption.

3. The book is not about the growth of real GDP, which by all indications will continue over the next 50 years although it may perhaps slow down (Gordon, 2012), or about material standards of living, which may well rise at a faster rate even if measured real GDP growth slows (Brynjolfsson and McAfee, 2014).

4. The book is about how rising wealth inequality trends may well drive an enormous wedge between our economy’s productive capabilities and its ability to turn those capabilities into human and societal well-being.

5. The book is about how our political-economic institutions would function were we to go to a place where France was in the Belle Époque or Britain in the Regency days that Jane Austen wrote about — a place where nearly every institution and position of power is in the hands of people who got their jobs primarily the way that in our day people like Arthur Sulzberger, Jr., of the New York Times got his — by picking the right parents.

Piketty’s central argument is simple. It has three stages. The first stage is to note that before the 20th century the salience of wealth and the wealthy in North Atlantic economies was very high. Peace and prosperity induced little destruction of wealth, demography and the limited pace of technological progress produced little growth of income, and so accumulation dominated and led to an economy in which the rich wielded enormous economic and political power and in which choosing the right parents and marrying the right heiress were the dominant roads to relative wealth and its associated power. The second stage is to note that with the coming of the chaotic 20th century population growth in the North Atlantic increased, technological change accelerated, the destruction of wealth via war, revolution, creative destruction, and taxation became a major factor, and so the salience of wealth and of the wealthy in North Atlantic economies ebbed to create the middle-class societies that flourished until the past generation. The third stage is to note that we are now in an era of zero population growth and (likely) slower technological progress, coupled with less progressive taxation and continued peace and prosperity, coupled with more wealth in the form of inheritances and related trusts. The factors that reduced the salience of wealth and the wealthy in the North Atlantic economies are thus now operating in reverse — and when they have had time to work out their logic, the North Atlantic is likely once again to see economies in which wealth and the wealthy are salient, and in which choosing the right parents and
marrying the right heiress are once again the dominant roads to relative wealth and its associated power.

Everyone seeking to understand the book needs to keep in their mind and answer for themselves these three big questions:

1. Between 1870 and 1970 the societal wealth-to-income ratios and wealth concentration in Northwest Europe fell dramatically. But have the forces that produced that fall ebbed, and are the North Atlantic economies returning to relative-inequality social-economic patterns like those of Belle Époque in 1870 Northwest Europe? Thomas Piketty says “yes.” I say “to some degree.”

2. If the century 1970–2070 does see wealth-to-income ratios move to levels like those of Northwest Europe as of 1870, does this mean a society of greatly unequal wealth? Piketty says “yes.” I say “probably.”

3. If 2070 sees the North Atlantic with a very high wealth-to-income ratio and a very concentrated distribution of wealth, is this a bad thing for the rest of us? Thomas Piketty says “yes.” I say “perhaps.”

II. THE ANALYTICAL FRAMEWORK

Thomas Piketty’s analytical notation throughout *Capital in the Twenty-First Century* is different from that used by most macroeconomists taking their variable names from sources like Romer (2011). Piketty, for example, uses “g” for the growth rate of real GDP in the economy, but most macroeconomic analysts use “g” for the growth rate of labor-augmenting technical progress and, along the steady-state growth path, labor productivity. They use “n + g” for the trend growth rate of the economy, with “n” being the rate of labor force growth. I am going to drop Piketty’s notation and, instead, use one as close as I can to what I regard as standard.

Begin, therefore, with an equation for the trend growth rate of real GDP in the economy $g_y$ as the sum of the demographically-determined labor-force growth rate and the technologically-determined pace of labor-augmenting technical change

\[ g_y = n + g. \]

Add an equation for the trend rate of growth $g_w$ of the economy’s stock of wealth; Piketty calls it “capital,” but “capital” in the United States has more of a connotation of useful and productive machines and buildings than it does in France, and I think that there will be less confusion from calling it the wealth stock rather than the capital stock. The trend rate of growth $g_w$ of the economy’s wealth stock will be equal to the average net rate of profit on wealth $r$ minus a wedge term $\omega$ that drives a wedge between the average net rate of profit $r$ and the economy-wide rate of accumulation $g_w$.

\[ g_w = r - \omega. \]
There are many pieces to this wedge $\omega$. People who save out of their labor income lower the wedge, tending to make the rate of accumulation higher relative to the net rate of profit. Progressive income and wealth taxes decrease wealth holders’ resources and increase the wedge. The costs of wars, revolutions, and regime changes, plus emergency taxes to finance hot or cold wars increase the wedge; war and revolution may well be the health of the state, but they are certainly not related to growing the wealth of established wealth holders. Conspicuous consumption by the rich increases the wedge. “Liturgies” by the rich — money given away for public or other purposes to advance their vision of what the world should become, or to win an in-group status game — increase the wedge. Schumpeterian creative destruction of wealth increases the wedge.

In this very simple framework, the economy’s wealth-to-annual-income ratio $W/Y$ will be stable as long as the rate of GDP growth $g_y$ is equal to the rate of accumulation $g_w$. If $g_y > g_w$, the economy’s wealth-to-annual-income ratio $W/Y$ will be falling. If $g_y < g_w$, the economy’s wealth-to-annual-income ratio $W/Y$ will be rising. For any set of average values of $n$, $g$, $r$, and $\omega$, the economy’s wealth-to-annual-income ratio $W/Y$ will tend to converge toward a steady-state balanced growth-path value at which

$$r - \omega = n + g.$$  

Piketty makes this point in two steps: first, by arguing that when the rate of profit $r$ is greater than the economy’s growth rate (what he calls “$g$”, and what I call “$n + g$”), then the ratio of wealth-to-annual-income tends to rise; second, by asserting that the steady-state balanced growth-path value of the ratio of wealth-to-annual-income is $s/g$, where his “$s$” is the net savings rate out of net income, and his “$g$” is, again, what I call “$n + g$.” This is, I think, a presentational mistake on Piketty’s part. He wants to draw a close link between the net rate of profit, the ability of wealth to influence the political-economic system to keep the net rate of profit from falling far as accumulation proceeds, and the steady-state balanced growth-path wealth-to-annual-income ratio. But none of that comes through in his expression $s/g$. The expression $W/Y = (r - \omega)/(n + g)$ seems to me to contain much more of what Piketty means to say.

The value of the net rate of profit $r^*$, where

$$r^* = n + g + \omega$$

is thus the warranted rate of net profit; the rate of net profit at which the wealth-to-annual-income ratio is stable. If the current actual rate of net profit $r$ is greater than the warranted rate of net profit $n + g + \omega$, the wealth-to-annual-income ratio $W/Y$ will grow. If the actual rate of net profit satisfies $r < n + g + \omega$, the wealth-to-annual-income ratio $W/Y$ will shrink.

The economy’s wealth-to-annual-income ratio $W/Y$ will tend to converge to a steady-state value if, as $W/Y$ grows or shrinks, the actual rate of net profit $r$ tends to shrink or
grow. To say anything more quantitative requires modeling the dependence of the rate of profit $r$ on the wealth-to-annual-income ratio $W/Y$. Specifically, assume the rate of net profit $r$ depends on:

1. The parameter $\rho$, which captures the raw socio-political-economic strength of wealth in earning or extracting returns;
2. The parameter $1/\lambda$, which captures the extent to which greater wealth accumulation both enhances workers’ bargaining power, or, under a marginal productivity theory of distribution, reduces capital’s marginal product; and
3. $W/Y$, the current wealth-to-annual-income ratio.

\[
(5) \quad r = \rho \left( \frac{W}{Y} \right)^{-1/\lambda}.
\]

Then substituting (5) into (4) and solving yields

\[
(6) \quad \left( \frac{W}{Y} \right)^\ast = \left( \frac{\rho}{n+g+\omega} \right)^\lambda,
\]

that is, the economy’s steady-state balanced growth-path wealth-to-annual-income ratio $(W/Y)^\ast$. An economy with a high population growth rate $n$ — one wealthy enough to have escaped Malthus’s “positive check” on population growth but that has not yet completed the demographic transition to two births per potential mother and thus to zero population growth — will tend to have a lower $(W/Y)^\ast$. An economy with a high rate of labor-augmenting technological progress $g$ will tend to have a lower $(W/Y)^\ast$. An economy with a larger wedge $\omega$ between the rate of profit and the rate of accumulation will tend to have a lower $(W/Y)^\ast$. An economy in which wealth holders have more rights and power — and one in which capital is more useful — will tend to have a higher $(W/Y)^\ast$. How much higher or lower depends on the value of $\lambda$, which characterizes how rapidly the rate of profit $r$ tends to diminish as the wealth-to-annual-income ratio increases.

This wealth-to-annual-income ratio is one obvious measure of the salience of wealth in an economy. A second measure would be the share of income in the economy that is received by wealth holders. Call the wealth holders’ share of income $S$

\[
(7) \quad S = \rho \left( \frac{\rho}{n+g+\omega} \right)^{\lambda-1}.
\]

A third measure of the salience of wealth would be the share of income in the economy received by those who have inherited their wealth. Call this $I$, and approximate it by the
ratio of what income from wealth was a 30-year generation ago to what total income is today, or

$$I = e^{-30(n+g)} p \left( \frac{p}{n + g + \omega} \right)^{\lambda - 1}.$$

The same considerations that applied to the wealth holder income share apply here, with one added consideration: a low $n$ and $g$ have a cumulative effect in generating Piketty-type inequality. Not only does a low $n$ and $g$ raise the share of income that goes to wealth in Piketty’s framework, but it also makes the base of wealth inherited from a generation ago loom larger relative to today’s economy.

The variables $(W/Y)^*$, $S$, and $I$ are all long-run quantities. They are steady-state balanced growth-path values for an economy with constant values of $n$, $g$, $\omega$, $\lambda$, and $p$. The slow pace of growth-theory convergence dynamics means that it will take a better part of a century for an economy that starts with a value of wealth-to-annual-income far from the steady-state to approach anywhere near the steady-state $(W/Y)^*$. Thus, Piketty has not written a book to explain why the salience of wealth in the economy today is what it is; rather, he has written a book to forecast what the salience of wealth will be in the economy of 50 or 100 years in the future if the factors he identifies continue to dominate.

This very simple framework does, I believe, capture the core of Piketty’s argument, at least as I outlined it in Section I above. The transition from the pre-20th century Gilded Age/Belle Époque to the mid-20th-century social democratic era saw a rise in the rate of population growth $n$, a rise in the rate of labor-augmenting technological change $g$, and a steep rise in the wedge $\omega$ between the rate of profit and the rate of accumulation. The consequence was a dramatic decline in the steady-state wealth-to-annual-income ratio $(W/Y)^*$, and in the wealth holder shares and inherited shares of income $S$ and $I$. But now the rate of population growth $n$ has fallen to near-zero, there is less confidence in the continued rapid pace of technological progress $g$ seen in the 20th century, and the factors that produced a large wedge $\omega$ have vanished. Thus, as far as the salience of wealth is concerned, the North Atlantic economies are now returning to patterns like those of the Gilded Age/Belle Époque era before the 20th century.

However, the book is a 696-page book. Critics of this paper could complain — rightly — that I have simply picked out one particular analytical thread from a much more complicated argument and proclaimed that it is “the core of Piketty’s argument.”

### III. USING THE ANALYTICAL FRAMEWORK

The three features of economic history on which Piketty focuses most in *Capital in the Twenty-First Century* are:

1. The high and relatively stable ratio of wealth-to-annual-income in the pre-World War I Belle Époque and Ancien Régime — a value of about 7 for $W/Y$ — in
contrast to what appears to be a lower wealth-to-annual-income ratio in the Middle Ages.

2. The steep and sharp fall in that wealth-to-annual income ratio with the coming of the chaos of the post-World War I 20th century, continuing though the social democratic age of the Trente Annees Glorieuses after World War II.

3. The subsequent climb in the salience of wealth in the economies of the North Atlantic.

In the analytical framework of Section II, interpreting these shifts is straightforward.

The Middle Ages: The economies of Northwest Europe before 1500 appear to have relatively low wealth-to-annual-income ratios for there was relatively little other than stone cathedrals that was durable and valuable, coupled with extremely low rates of technological progress and population growth, on the order of 0.1 percent per year in total. The rate of invention and innovation was low because not much was known — there were few giants on whose shoulders one could stand — because poor societies had low literacy rates, because market economies were limited and hobbled, and because it was much more attractive to try to make one’s way in the world in the church, the army, or the bureaucracy than with invention. Population growth was low because the economy was Malthusian or near-Malthusian. And war, famine, plague, disease, arbitrary confiscation by the powerful, the requirement of major donations to the church, and other factors all drove a large wedge $\omega$ between $r$ and $n + g$. Moreover, in such a society a large proportion of wealth was inherited, and what was not was simply stolen in one form or other.

The Ancien Régime and the Belle Époque: The Ancien Régime (1500–1815) and the Belle Époque (1815–1914) were the eras of the Commercial and Industrial Revolutions. Society acquired much more law-and-order and much more in the way of protection of property. Population growth and then productivity growth increased gradually, but to low levels. During the 19th-century Belle Époque, European economies grew at a rate of about 1.2 percent per year and, because of the decline in the wedge $\omega$, attained wealth-to-annual-income ratios on the order of 7. Moreover, the great sectoral shift from agriculture to industry and the opening-up of the Atlantic to imports, especially of North American grain, caused a huge relative realignment as landed property lost and commercial and industrial property gained salience. But at the level of Piketty’s analysis, the important thing is that the increase in the growth rate $g$ was overwhelmed by a reduction in the wedge $\omega$ between the rate of profit and the rate of accumulation.

The Social Democratic Era, 1914–1980: This period included World War I, the Bolshevik Revolution, the Great Depression, World War II and the rise of Stalin’s Empire, as well as the coming of social democracy. Technological advance, the borrowing of technologies from America, and rapid post-WWII recovery produced an average growth rate of 3.0 percent per year in western Europe despite of all the disasters of 1914–1945. Those factors, however, would not by themselves be enough to drive the huge reduction in $W/Y$ down to three stressed by Piketty. Also needed are wartime destruction,
wartime progressive taxation — the conscription of wealth to match the conscription of labor in the interest of the state — and the postwar changes in taxes, raised either to create either a land fit for the heroes who had won World Wars I and II or rebuild from catastrophe. A much smaller share of income thus flowed to wealth holders in this era. An even smaller proportion flowed to heirs and heiresses. Economists take this situation as normal and permanent — a Kuznetsian middle-class dominated, social democratic society.

It is Piketty’s main thesis that all of this has been upset by the political-economic shifts of a generation ago. The exhaustion of the social democratic model, the end of the Soviet Empire and thus of perceived needs on the part of the powerful to moderate economic power, a shift away from progressive taxation, peace and thus the absence of wartime destruction and wartime taxes, and the return of security and property are all reducing the wedge \( \omega \). The attainment of zero population growth and a possible slowdown in technological change (Gordon, 2012) are reducing the economy’s growth rate as well. And the consequence will be, over a 50- to 100-year forecast horizon, a return by 2060–2110 of the wealth-to-annual-income ratio and the wealth holder share of income to their Belle Époque proportions. That, and not the pattern of the Social Democratic Era, is the “normal” to which we are returning. And a world in which 30 percent of income flows to heirs is a very different world from the roughly 12 percent that characterized the social-democratic era.

Of course, we are not there yet — we are at most one generation along the road.

IV. ASSESSING THE ANALYTICAL FRAMEWORK

How plausible is this argument?

A glance at (6), (7), and (8) instantly reveals that a value of the parameter \( \lambda = 1 \) has important implications for Piketty’s argument. If \( \lambda = 1 \), (7) becomes \( S = \rho \). Thus if \( \lambda = 1 \), Piketty’s argument simply collapses. In that case, any increases and decreases in population growth \( n \), in the rate of technological progress \( g \), and in the wedge between accumulation and profit \( \omega \) simply do not drive shifts in the share of income received by wealth holders. An economy with a high \( n, g \), and \( \omega \) is not one in which the wealthy and wealth are more salient — at least in terms of the share of total income that flows to them — than in one with a low \( n, g \), and \( \omega \).

And if \( \lambda < 1 \), things work in the opposite direction than Piketty posits: an economy with a low \( n, g \), and \( \omega \) will have a high steady-state balanced growth-path wealth-to-annual-income ratio \((W/Y)\)*, but its wealth holders will receive a smaller share of the economy’s total income than if \( n, g \), and \( \omega \) were higher. We thus obtain what Keynes, writing in 1936 as the anti-Piketty, termed the euthanasia of the rentier: yes, the wealth-to-annual-income ratio would rise, but who cares how wealthy the wealthy are if their income share is low, and if they are punished rapidly via wealth losses from turning their wealth away from its use as part of the efficient allocation of societal capital?

From the standpoint of standard American neoclassical economics, this is a large potential flaw in Piketty’s argument. The case \( \lambda = 1 \) is the default Cobb-Douglas
production-function case traditionally assumed as the baseline in aggregate growth economics (e.g., Mankiw, Romer and Weil, 1992). Moreover, it is not the net but the gross output production function that is assumed to be Cobb-Douglas (Rognlie, 2014). A value of $\lambda = 1$ for the gross output production function produces a value of $\lambda < 1$ for the net output production function — which means that as the wealth-to-annual-income ratio grows, the net rate of profit on capital shrinks faster and so the share of income going to wealth holders falls. The size of the rock that Piketty-as-Sisyphus must roll uphill to convince neoclassical economists is further increased if we focus not on net income shares but on real wages. The coming of the plutocrats and a very high societal wealth-to-annual-income ratio appears to be an unmitigated boon to the working class: more owners of capital competing to rent their capital to workers, managers, and their productive organizations can only increase workers’ well-being — unless, of course, the spite of the rich and the envy of the poor are first-order considerations for individual economic utility and societal economic welfare.

More generally, even if the net profit rate-concept $\lambda > 1$ — even if increases in the wealth-to-annual-income ratio are not offset in their effects on net income shares by decreases in the rate of profit — the parameter $\lambda$ cannot be close to 1 without making the mechanisms that Piketty adduces unimportant in their effects on the economy, at least if those effects are measured by income shares. And it is difficult to see how $\lambda$ could be driven far from 1 as long as we remain within the conceptual framework of supply-and-demand, with supply determined by the costs of producing capital goods and demand determined by the marginal product of an extra machine. Thus it would appear that in order for Piketty’s arguments to be first-order factors rather than second-order corrections, he must abandon production-function economics and stress the importance of politics, sociology, and institutions. Behind Piketty’s arguments there must be some rent-seeking-society sociological and political arguments that a high wealth-to-annual-income ratio shapes political economy in ways that retard the erosion of rates of profit from higher accumulation than expected by neoclassical economists.

Piketty does not believe that the requirement that $\lambda > 1$ for his argument to be valid is a significant difficulty. Perhaps this is because the case he thinks is typical is, after all, that of the history of France, and especially the history of the late Belle Époque French Third Republic. That reference case is thus a universal (male) suffrage democracy with a strong egalitarian, anti-aristocratic, and anti-clerical ethos that had gone through the demographic transition — $n$ was low — and that did not yet have the industrial research lab; the pace of industrialization and thus $g$ was relatively low as well. Peace, good order, and the absence of a culture of philanthropic liturgies among the rising bourgeoisie kept $\omega$ low. And the memory of the suppression of the Paris Commune meant that the police could be relied on to keep $\rho$ high in industry. In such a baseline case it is almost a matter of course that the wealthier the wealthy happen to be, the more they successfully manage the politics of the political system — even one that is in constitutional-legal terms radically (male) egalitarian and democratic — to enhance the bargaining power of wealth holders. From Piketty’s perspective, neoclassical economists may claim that
theory dictates that increasing wealth-to-annual-income ratios $W/Y$ must exert strong downward pressure on the net rate of profit $r$ — but experience demonstrates that it does not. The neoclassical assumption that $\lambda = 1$ was adopted to make sense of a world in which the labor and the wealth holder shares of gross income were roughly constant, but that is not the world in which we live. And, again from Piketty’s perspective, it is profoundly counterproductive to assume as a baseline case that the wealth holder share of gross income is constant — or that nothing can alter it — when clearly it is not. As he writes (pp. 218–221),

The Cobb-Douglas hypothesis is sometimes a good approximation for certain subperiods or sectors and, in any case, is a useful point of departure for further reflection. But this hypothesis does not satisfactorily explain the diversity of the historical patterns we observe … as the data I have collected show … There is nothing really surprising about this … economists had very little historical data to go on when Cobb and Douglas first proposed their hypothesis ...

In textbooks published in the period 1950–1970 (and indeed as late as 1990), a stable capital-labor split is generally presented as an uncontroversial fact, but unfortunately the period to which this supposed law applies is not always clearly specified. Most authors are content to use data going back no further than 1950, avoiding comparison with the interwar period or the early 20th century, much less with the eighteenth and nineteenth centuries. From the 1990s on, however, numerous studies mention a significant increase in the share of national income in the rich countries going to profits and capital after 1970 ...

It is obviously quite difficult to predict how much greater than one the elasticity of substitution of capital for labor will be in the 21st century. On the basis of historical data, one can estimate an elasticity between 1.3 and 1.6. But not only is this estimate uncertain and imprecise. More than that, there is no reason why the technologies of the future should exhibit the same elasticity as those of the past …

But it is, in American neoclassical economics at least, not enough to say that the default baseline model is not accurate; one must explain why it is not accurate and what will replace it if one is to have a large permanent intellectual influence. Piketty does not set forth such an argument. Thus I believe that in the long run Capital in the Twenty-First Century will have only a limited impact on the thinking of American neoclassical economists. The neoclassical presumption is Cobb-Douglas — that $\lambda = 1$ for the gross output production function, and thus that $\lambda < 1$ for the net output production function. And as long as that presumption is not disrupted, Piketty’s argument fails to convince, and his long-term intellectual influence will be small.

If there is a route for Capital in the Twenty-First Century to have a durable and important impact on American neoclassical economics, it comes via Piketty’s (p. 221) observation that “there is no reason why the technologies of the future should exhibit the same elasticity as those of the past…” That is Piketty’s most powerful point as
long as the argument remains on the terrain of aggregate production functions and the marginal product of capital; that is, even if capital and labor have been complements and not substitutes in the past — so that \( \lambda \) has been equal to or less than 1 — they may well become substitutes in the future.

To paint with the broadest possible brush, humans have, historically, created economic value in five ways: (1) by using their backs and other large muscles; (2) by using their fingers as fine manipulators; (3) by using their brains as routine cybernetic controls of animals and machines or routine processors and sorters of information; (4) by incentivizing cooperation via social interaction — with smiles; and (5) by acts of creative insight. As technology has evolved, capital has been a substitute for human labor in the form of backs and fingers and a complement to human labor in the form of brains-as-information-processors, both in the form of blue-collar cybernetic controls and white-collar software routines. But with the advance of technology this last relationship is changing: workers on assembly lines and workers processing documents in standardized ways are increasingly no longer people whose productivity is amplified by machines, but rather people whose jobs are eliminated by machines.

V. ISSUES OF POLITICAL ECONOMY

If Piketty is right in his forecast of slowing growth, and if he is right in his hope that we will not again see the wealth destruction of the chaos and catastrophes of the 20th century, then his forecast is supported by the model I have outlined — if the rate of profit does not fall proportionately with a rising wealth-to-annual-income ratio, if \( \lambda > 1 \). The possibility that the rise of machines will turn capital and labor into substitutes is intriguing, but would for a convincing evaluation require much more insight into our future technologies than we currently possess. Without such a shift in the character of technology, the necessary step in Piketty’s argument via which an increase in \( W/Y \) does not lead to much of a reduction in the net profit rate \( r \) is implausible. It rests on globalization and the world market somehow increasing the parameter \( \lambda \), and the nature of that mechanism is left unclear.

If Piketty’s argument is not to rest on the rise of machines, it must rest on mechanisms of political economy. Greater wealth must able to buy legal protections against economic changes and forces that might erode the return on wealth, especially of inherited wealth, and thus keep the net rate of profit \( r \) high in the economy even as the wealth-to-annual-income ratio more than doubles. One possibility would be to view the rate of profit as sociological-, norm-, and institution-based rather than determined by the marginal product of capital, as Naidu (2014)

\[ ... \text{much more by institutions, norms and expectations than by supply and demand of the capital market. Keynes writes that “But the most stable, and the least easily shifted, element in our contemporary economy has been hitherto, and may prove to be in future, the minimum rate of interest acceptable to the generality of wealth-owners.” Keynes footnotes it with the 19th century saying that “John Bull can stand many things, but he cannot stand 2 percent ...”} \]
The argument would then be that productive capital — the kind that combines with labor in a neoclassical production function to produce output — is only one of the forms in which the rich accumulate and inherit wealth. Wealth accumulation can take the form of constructing useful buildings and making productive machines and thus boosting total economic output. Wealth accumulation can also take the form of investing in rents — investing in intellectual property to create temporary monopolies, investing in restrictions on entry and competition to create quasi-rents, investing in regulatory policies that boost the value of currently centrally-located land, and, more generally, investing in the political system to make sure that existing wealth holders are always represented when decisions are to be made, with a veto on any political measure that would threaten the value of their income streams. These rent-seeking political-economy investments create wealth in Piketty’s schema. They are, however, dissipative and negative sum. And the individual wealth they create is not part of society’s true capital, as Stiglitz (2015) stresses.

The argument that concentrated wealth creates the political and institutional conditions for its own flourishing, profitability, and continued growth are in Piketty’s *Capital*. But they are scattered, and are the single thread in the book not developed at sufficient length. This argument is restressed in Piketty’s (2015, p. 69) article for the *Journal of Economic Perspectives*, in which he quotes his book as to how,

… one should be wary of any economic determinism in regard to inequalities of wealth and income ... The history of the distribution of wealth has always been deeply political ... shaped by the way economic, social, and political actors view what is just ... as well as by the relative power of those actors ...

and reminds readers that in the book the rate of profit is not just the derivative of an aggregate neoclassical production function with respect to the physical capital stock — that he (p. 70) “certainly [does] not believe that such grossly oversimplified concepts can provide an adequate description of the production structure and the state of property and social relations for any society”— but also depends on (pp. 69–70):

… educational institutions ... equal access ... fiscal institutions ... progressive taxation of income, inheritance, and wealth ... the modern welfare state; monetary regimes, central banking, and inflation; labor market rules, minimum wages, and collective bargaining; forced labor (slavery); colonialism, wars, and revolutions; expropriations, physical destruction, and privatizations; corporate governance and stakeholder rights; rent and other price controls (such as the prohibition or limitation of usury); financial deregulation and capital flows; trade policies; family transmission rules and legal property regimes; fertility policies; and many others ...
the rate of profit and the rate of accumulation or other factors — is concentrated in positive-sum worker-empowering accumulation of useful physical capital as opposed to negative-sum rent-extracting expropriations of income streams. But the book is a historical narrative of inequality trends in the North Atlantic. It seems rather excessive that it also builds and applies a general theory of distribution in rent-seeking societies.

The future that Piketty sees is indeed in many dimensions a dystopia. A society with a very high wealth-to-annual-income ratio is likely to be a society in which entrepreneurial energy is misdirected into zero- or negative-sum games. We like the Gilded Age novels of Horatio Alger, but recall how much of his hero’s rise is based not on his pluck but on his luck. One needs to catch the eye of a plutocrat who needs a special assistant, and who has a son or daughter. A world in which the road to wealth, power, and influence involves marrying the right spouse, or tricking heirs and heiresses into bearing financial risks they do not understand, is not one in which human entrepreneurial energy is properly directed. Moreover, such a society has a lack of meritocratic opportunity, and becomes one in which key decisions are made not by people who have demonstrated any skill in decision-making other than their original success at choosing the right parents. And in such a society, the second level of authority is held by people whose core competence is a successful ability to properly flatter and manage the plutocrat.

Piketty’s forecast is of a society with immense utilitarian waste, and a very large gap between the wealth society has at its disposal and the human utility it generates. When the distribution of income is massively concentrated, a great deal of income is spent on those whose marginal utility of income is by definition extremely low. It is possible to think that tournaments with very big prizes awarded to those who combine both luck and skill produce either high social welfare or are in some libertarian sense just. But even for such inequality optimists there remains the additional enormous philosophical leap of justifying massive inheritance.

Moreover, a society dominated by a wealthy nobility — whether it is the noblesse d’epee, the noblesse de robe, or the noblesse d’ivy — with a low degree of porosity and thus of upward and downward mobility is dominated by a self-absorbed ruling class. Of such ruling classes are things like the French Revolution made, and such ruling classes are not terribly interested in promoting the Schumpeterian creative destruction that is the core of economic growth, because their inherited wealth is the thing that is creatively destroyed.

I believe that such a future would be worth avoiding. That then leaves the task of determining how to avoid it. The obvious way is to increase the wedge \( \omega \) between the rate of profit and the rate of accumulation, but to do so via some positive-sum rather than a negative-sum process. Progressive taxation, more regulatory fluidity to increase in the speed of creative destruction, and making it profoundly anti-social for plutocrats not to give away almost all of their wealth are all possibilities. The alternative is to look forward to a long Second Gilded Age.

*Capital in the Twenty-First Century* is an excellent — as Robert Solow said, a serious — book. It ought to have more long-run influence than I think it will.
DISCLOSURES

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REFERENCES


