CAPITAL TAXATION IN THE 21ST CENTURY

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In producing *Capital in the Twenty-First Century* (hereafter, *Capital*) Thomas Piketty has taken a large step beyond the customary turf of economists' debates, presenting to a much broader readership a compelling story of the ascendency of capital and the powerlessness of the market forces of capitalism to arrest the growing threat to democracy from growing wealth and its increasing concentration in the hands of the few. Piketty prescribes a global, coordinated tax on wealth as the antidote to this dystopian trend, arguing that only such a direct assault on wealth concentrations will succeed where the other policies of governments that already play large roles in their respective economies have failed.

Piketty's book has three main components: a sweeping historical analysis of data on the evolution of capital shares and concentration, a theoretical framework intended to explain this apparently inexorable rise of capital and concentration of income, and policy recommendations to put economies like ours on an alternate path. While adopting the same logical division of topics in our presentation, we recognize that there have been very many excellent contributions since the book's publication, focusing particularly on Piketty's explicit and implicit theoretical assumptions regarding capital's income share and concentration. Thus, although we find many of the points in these recent contributions compelling, we are selective in our discussion and concentrate particularly on the role of the taxation of capital income and wealth in promoting economic well-being.

I.   A Note on Data and Data Sources

Piketty's empirical analysis covers the sweep of western history from the 18th century onward. While the discussion of data and contemporaneous European literature from earlier eras is among the book's more appealing aspects, postwar trends have received the most attention from economists and are the most immediately relevant in evaluating Piketty's theory and policy

recommendations. Piketty's approach is to document trends in a number of series, and then

discuss the implications of these trends for tax policy. Adopting that approach, we begin by

evaluating the evidence regarding trends in capital and wealth, and then turn to discussing the

lessons of tax policy. Others have raised a variety of issues concerning the sources and

construction of the data, and we will not attempt to review all of these issues here. However, we

do feel some attention is merited by the possibility that the translation of the data from original

sources into the series used in the book may have overstated the extent of the recent growth in

the wealth-output ratio and the increasing share of wealth received by the top 1 percent of the

wealth distribution, at least in the United States.[1] In addition, the relevance of the relationship

between the growth rate and the rate of return on capital, capital's share in national income, and

the wealth share at the top merits reconsideration.

A. *The Trend of the Wealth Share of the Top 1 Percent*

Piketty's presentation of US wealth data gives the impression of a strong deterministic

postwar trend in the wealth share of the top 1 percent. The data sources cited by Piketty in his

online technical appendix and the accompanying US data file[2] offer many more points of

observation than the graphs featured prominently in *Capital* suggests. The original sources cited

by Piketty contain observations for the years 1962, 1983, 1989, 1992, 1995, 1998, 2001, 2004,

and 2007.[3] If one couples each of these observations with the 1970 and 1950 US observations

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[1] It is worth noting that the original publication to raise questions about Piketty's treatment of data, Giles (2014), raised questions about the data used for a number of the countries analyzed, not just the United States.

[2] The specific file in question is the "Chapter10TablesFigures.xlsx" file, as last modified on May 26 2014 and available for download on Piketty's website at: http://piketty.pse.ens.fr/files/capital21c/en/xls. The relevant sheet within that Excel file is entitled "TS10.1DetailsUS".

[3] Specifically, Wolff (1994) and Kennickell (2011) both contain observations for the year 1962. Wolff (1994) contains observations for 1983. Kennickell (2009) and Kennickell (2011) both contain observations for 1989, 1992, 1995, 1998, 2001, 2004, and 2007. All sources contain both top 1% and top 10% for the years in which they contain either.

imputed by Piketty from the estate tax data series of Kopczuk and Saez (2004), this generates a total of eleven observations for the post-war time period in both the top 1 percent and top 10 percent time series. The relevant figure in *Capital*, Figure 10.5, shows only seven observations for the post-war United States, one on the decennial year of each decade from 1950 to 2010. This reduction in displayed observations and the pattern they represent stems from adjustments to the source data made by Piketty.

According to the annotations in Piketty's dataset, these values appear to have been averaged in a way that seems difficult to reconcile with the way in which they are presented in some of the key charts in the book. For instance, an annotation in the dataset implies that the 1980 value is the average of the 1983 value in Wolff (1994) and the 1989 value from Kennickell (2009). Likewise, the annotation for the 1990 value implies that it is the average of the 1992, 1995, and 1999 values from Kennickell (2001). These averaging schemes yield, respectively, average years of observation of 1986 and 1995. A representation of the values generated by this averaging scheme as point-in-time values for 1980 and 1990 thus seems highly-stylized.

Though the disparity between the actual year of observation and the depicted year of observation is smaller than for 1980 and 1990, the same phenomenon also occurs in the most recent data shown by Piketty. His spreadsheet indicates that the average of observations from the years 2001 and 2004 form the observation for the year 2000 in his book. A single value from the year 2007 serves as the most recent 2010 observation. The latter choice creates the impression that the chart includes data after the recent financial crisis, but it does not.
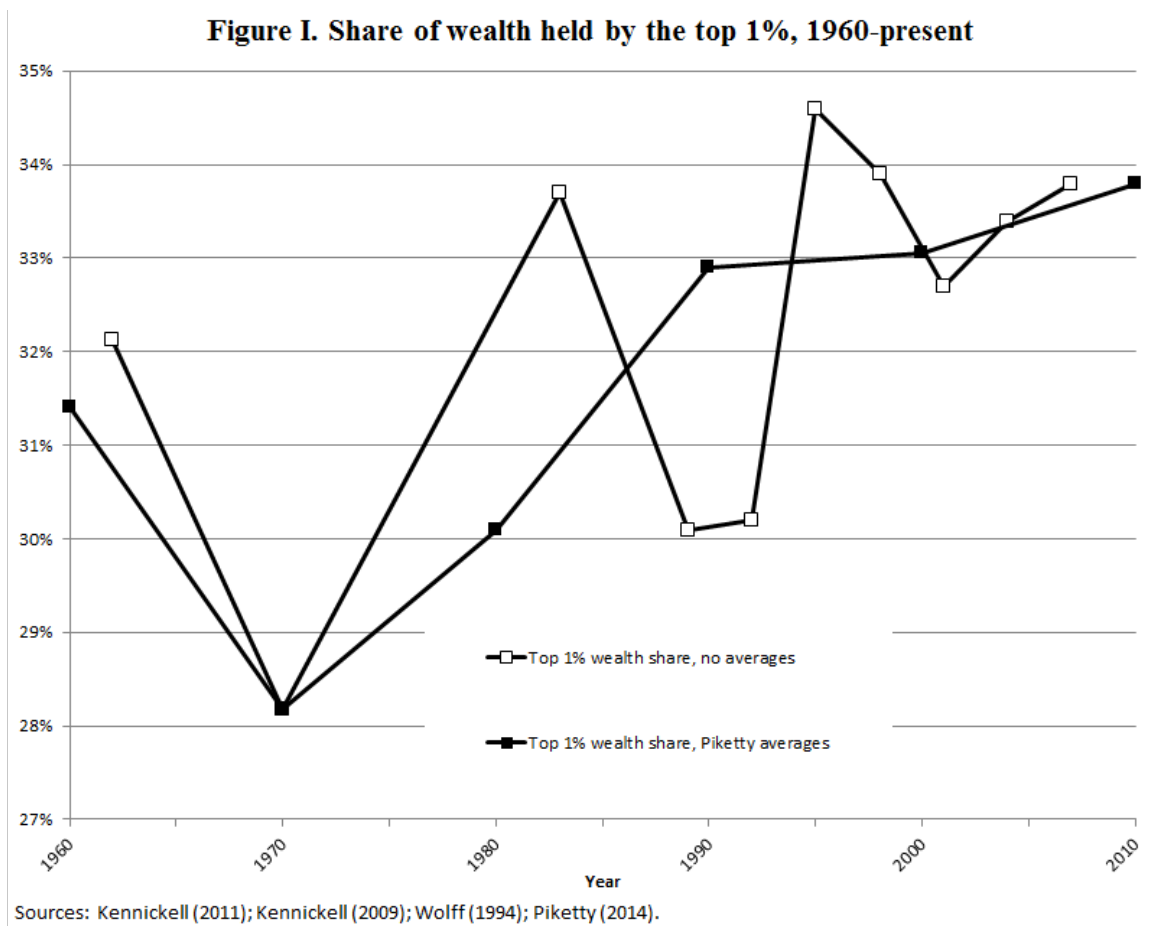
The values in the book do not always appear to be generated according to the methodology his spreadsheet's annotations describe. In contrast to his spreadsheet's annotation, the 1980 value in *Capital* is simply the 1989 value from Kennickell (2009), for both the share of

wealth held by the top 1 percent and the share held by the top 10 percent. As does Piketty's

chart for the year 1980, Table 4 of Kennickell (2009) shows the top 1 percent's share in 1989 at

30.1 percent and the top 10 percent's at 67.2 percent. The 1983 values in Table 4 of Wolff, by

contrast, are 33.7 percent for the top 1 percent share and 68.1 percent for the top 10 percent

share. These two sets of values were not averaged. The result is that what appear to be point-in-

time values for the year 1980 are in fact point-in-time values for 1989.

A similar discrepancy emerges in the case of 1990. Piketty cites "Kennickell (2001)" as

the source of the data. We were unable to identify such a publication using standard search

techniques, although Kennickell (2009) and Kennickell (2011) do contain data for the years in

question. As his annotations indicate, Piketty obtains a value for the top 1 percent in 1990 by

averaging observations from 1990, 1992, and 1995. But this changes in the case of the top 10

percent calculation. Kennickell decomposes the top 10 percent share of wealth into the share

held by the top 1 percent and the share held by the 90th-99th percentiles. The formula that

Piketty uses to calculate the share of wealth held by the top 10 percent in 1990 adds the average

of the share of wealth held by the 90th-99th percentiles only for the years 1992 and 1998 to the

average of the share of wealth held by the top 1 percent in each of the years 1992, 1995, and

1998. No explanation for this exclusion of 1995's 90th-99th percentile value from the top 10

percent calculation given. The effect of including 1995's value for the top percentile but not

percentiles 90 through 99 is to bias the reported level of wealth inequality upwards: the 1995

value for the top 1 percent is the highest of the three years 1992/1995/1998, but its value for the

90th-99th percentiles is the lowest of the three.

To clarify the data construction issues relevant for assessing trends in the wealth share,

we constructed a version of Piketty's figures drawing on his source data, but without averaging

or other manipulation. Rather than averaging values from different points in time to generate a single decennial value, we simply graphed the values in the year of their observation, without imposing any analytical transformation or statistical judgment. Figure I shows these data alongside the series Piketty constructed. The chart includes the 1983 top 1 percent observation excluded from Piketty's series despite his annotation's indicating that it was averaged with the 1989 value to generate the reported 1980 observation. Beyond that, however, the figure simply depicts the data used in Piketty's constructed series, but without averages and in the observation's actual year (e.g., 2007 is shown in 2007 rather than in 2010).

Figure I. Share of wealth held by the top 1%, 1960-present

Sources: Kennickell (2011); Kennickell (2009); Wolff (1994); Piketty (2014).

When presented in the manner depicted in Figure I, the post-WWII trend in American wealth inequality does not look as stark as in the comparable chart in *Capital*. Indeed, inequality appears to be declining at the end of his sample. The series no longer rises without interruption

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in an apparently deterministic trend from 1970 onward, and appears too "noisy" to provide

evidence of the working of a "fundamental law of capitalism." Though the 1 percent's share of

wealth rose from 1970 to 1983, it then dropped through 1992 before reaching a post-war peak in

1995 that preceded yet another decline through 2001.

While Piketty does not report estimates of trends in his data, a natural question emerges

whether the source data exhibit a statistically significant trend. In his discussion, Piketty favors

discussion of the trend in the data since 1970. Trend estimates suggest, however, that the

observed trend in wealth inequality is sensitive to the choice of 1970 as the starting year.[4] With

the raw observations, the trend is positive and significant if estimated from 1970 through 2007. If

estimated beginning in 1960, 1980, or 1990, the trend loses statistical significance and the

coefficients become smaller, though they always remain positive. If one focuses on the very end

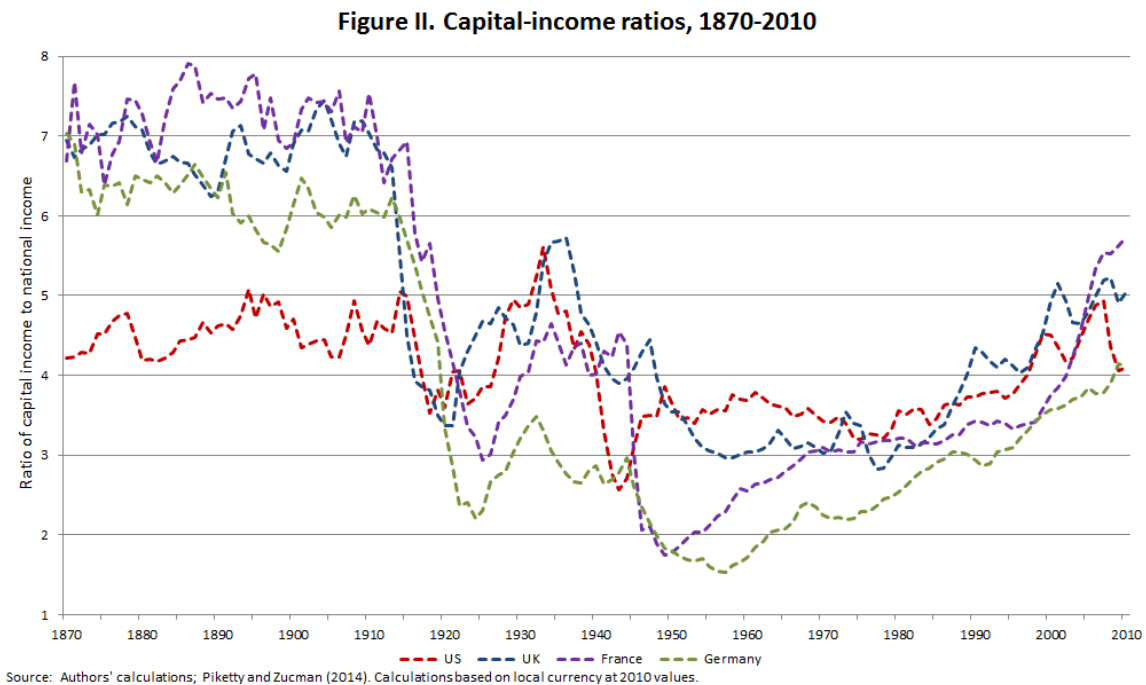of the sample, the trend estimate becomes negative.[5]

Piketty similarly reduced the variation in the data in his analysis of longer time series.

While averaging and displacing of the dates of the source data can create the appearance of

steady trends in the data, the statistical confidence one might have in such trends is much lower

than his discussion implies. This low confidence follows naturally from the fact that stock

market wealth is such an important determinant of the value of overall wealth. This component

varies enormously even over short periods of time, and the most recent fluctuations can have a

large impact on a trend estimate.

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[4] The specifics of the trend estimates are available upon request.

[5] This is not to suggest that there is no evidence in favor of an increasing recent share of wealth at the top. For example, Saez and Zucman (2014) find an increasing share from estimates based on capitalizing flows of capital income. Such a trend is much less evident when one uses alternative approaches based on estate tax returns or survey evidence. The sources of these differences and a consideration of which approach might be most accurate are considered by Saez and Zucman as well as Kopczuk (2014).

II.   *r* vs. *g*

A key to effective communication is one's ability to distill complex issues into simple ones. In *Capital*, the relationship between the return to capital, *r*, and the economic growth rate, *g*, is presented as a fundamental relationship determining our economic path, and both theory and historical evidence are mustered to bolster the claim that $r > g$ is an inevitable outcome. The basic syllogism is (1) the rate of return exceeds the economic growth rate; (2) saving generated by this high rate of return causes capital and wealth to grow faster than the economy; and (3) capital *income* grows as a share of income because the rate of return does not fall sufficiently fast with capital deepening to offset this growing capital-output ratio.

Figure II. Capital-income ratios, 1870-2010

Source: Authors' calculations; Piketty and Zucman (2014). Calculations based on local currency at 2010 values.

But what measure of *r* should one use for such a calculation? To motivate this question, consider Figure II, constructed using data from Piketty and Zucman (2014), showing the evolution of capital-income ratios since 1870 for key economies. One interpretation of this figure is that the capital-income ratio is very high in normal times, and that the major disruptions of the

20th century – two world wars and the worldwide Great Depression – were important but temporary disruptions to the normal economic process. But another interpretation is that part of the normal process is that bad things happen to capital on occasion, and that one shouldn't ignore such outcomes any more than one should count only the heads from a series of coin flips.

The analogy to this distinction from standard financial theory is between the safe rate of return, r^f, and the market rate of return, R. Absent fundamental risk or capital taxation, the expected return would equal the safe return in market equilibrium. But with market risk and risk-averse investors, the expected market return should include a risk premium, so that markets will outperform safe investments on average, but will do worse in bad states of nature where resources are particularly highly valued. Thus, excluding returns in bad states is certainly not the way to measure r, and even including all returns misses the point that one shouldn't weigh good and bad outcomes equally.

As an illustration, consider the performance of equity markets during the 20th century. According to Jorion and Goetzmann (1999), global equity markets returned an asset-weighted real return of about 4 percent over the 75-year period 1921-96; excluding the United States, the return was 3.4 percent. These relatively low returns (which do not incorporate the negative shocks during World War I) are averages, and thus presumably incorporate an equity premium. How large an equity premium one can justify has been a central topic in finance, although as recent research (e.g., Barro 2006) has emphasized, even a small likelihood of rare catastrophic events helps rationalize a sizable equity premium, meaning that average observed asset returns may exceed the safe return by a sizable amount.

Further, the rate of return to investors relevant to Piketty's comparisons with the rate of economic growth is an after-tax return, even though in some places Piketty's analysis seems to

presume that the historical tax on capital income is zero, an odd choice given that the taxation of capital and wealth is Piketty's solution to the problem of wealth accumulation. While countries following Piketty's recommendations might pursue such policies much more aggressively, capital income and wealth are taxed under current policies. Thus, perhaps the most relevant rate of return to compare with the economic growth rate is the safe, after-tax rate of return.
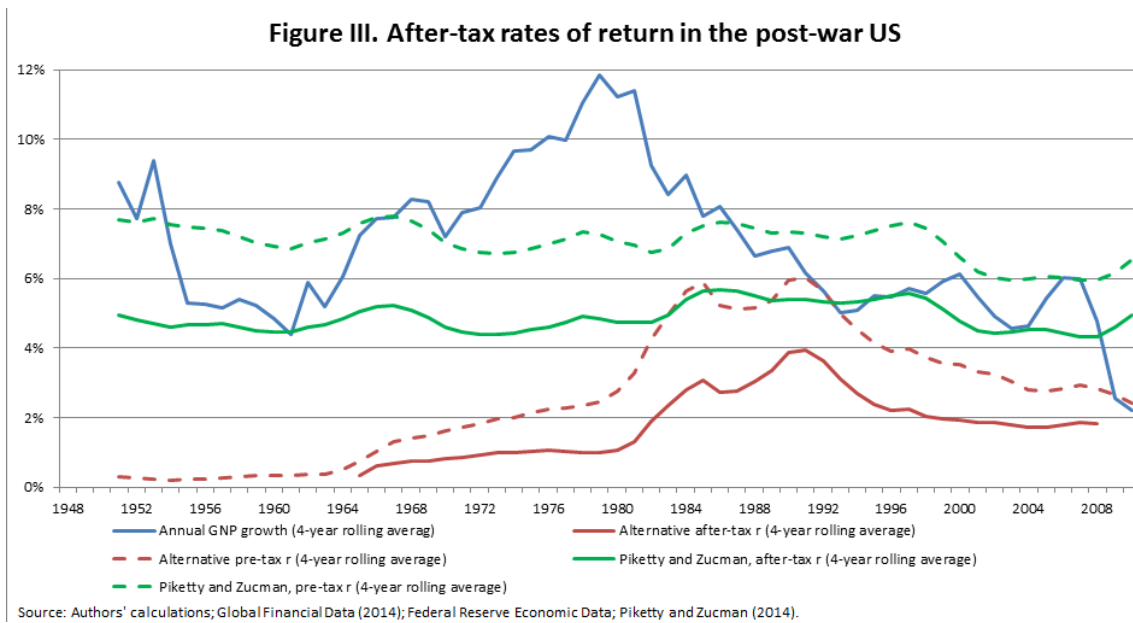
In keeping with the broad historical sweep of the book, Piketty offers a panoramic view of the long-run evolution of the global return on capital from the year 0 through 2100. This extraordinarily long choice of time frame gives the appearance that r, even his after tax measure, is almost always greater than g. It is worth noting, however, that the modern tax system as we know it did not exist for much of the time period shown in his graph. For instance, though it may be hard to imagine a world without it, the US federal income tax system came into existence only in 1913, a little more than a century ago. While Piketty's data seem to show $r > g$ as a condition that prevailed for much of human history, the fact much of that history also predates the modern tax system in the United States and elsewhere seems to undermine its relevance for contemporary considerations. Moreover, the data after 2012 are projections rather than observations per se. The charts in the book, however, fail to make this crucial distinction between observation and forecast clear. In fact, the book's series for g appears to cross below that for after-tax r only after 2012, the last year of observation. For every year in the chart for which there are both data and a modern tax system, the after-tax rate of return is lower than the rate of growth. It is only during the 2012-2050 time periods and the 2050-2100 periods that are projections rather than observations that g moves below the after-tax rate of return.

Piketty's time series on after-tax rates of return faces two additional shortcomings. First, the tax rates used to calculate the after-tax returns on capital in Piketty and Zucman (2014) are

average tax rates. But the policy discussions engendered by the book tend to focus on the share

of wealth held by the top 1% and even the top 0.1%. It seems very likely that the majority of the

income of individuals in the right-tail of the wealth distribution falls into the highest tax bracket

and therefore pays the top marginal rate. As a result, the relevant tax policy parameter in which

to situate the discussion generated by Piketty's work seems to be the top marginal tax rate rather

than the average tax rate. Second, Piketty calculates the return on capital based on national

accounts data and does not adjust for risk. As discussed above and noted by others as well (e.g.,

King 2014), failure to adjust returns for the level of risk taken to generate them may lead to an

overly generous assessment of the circumstances faced by the owners of capital. We rely on an

alternative time-series on the after-tax rates of return in the US that takes into account these two

criticisms.

To derive the after-tax rate of return from the pre-tax rate of return, we simulated using

NBER's TAXSIM the increase in tax liability that would result from an increase of 1% in the

interest income accruing to the top 1% of income earners in each year, and then calculated the

effective tax rate that would be paid on the average dollar of that additional income.[6] To proxy

for the "risk-free" return on capital, and following the use of long-term government bond yields

to proxy for *r* in Acemoglu and Robinson (2014), we use historical time-series data on 10-year

Treasury bond yields to proxy for the pre-tax rate of return. Figure III graphs both this

alternative series and the series on pre and post-tax returns on capital from Piketty and Zucman

(2014).

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[6] That is, the calculation is done by first calculating the initial tax liability of the taxpayers who are in the top 1% of income earners. Then every taxpayer's interest income is multiplied by 1.01 and tax liability is calculated again. That recalculated tax liability is then divided by .01 times interest income and becomes the "average marginal rate" that is here used as the tax rate. We are grateful to Dan Feenberg for performing these calculations.

Figure III. After-tax rates of return in the post-war US

Legend:
- Annual GNP growth (4-year rolling averag)
- Alternative pre-tax r (4-year rolling average)
- Piketty and Zucman, pre-tax r (4-year rolling average)
- Alternative after-tax r (4-year rolling average)
- Piketty and Zucman, after-tax r (4-year rolling average)

Source: Authors' calculations; Global Financial Data (2014); Federal Reserve Economic Data; Piketty and Zucman (2014).

As one can see, the pre-tax rate of return using the alternative specification is substantially lower than when calculated by Piketty and Zucman (2014), who use a national accounts based procedure. Likewise, the post-tax rate of return on capital using the top marginal tax rate is substantially lower than the post-tax rate derived in Piketty and Zucman (2014). Indeed, the post-tax rate of return in the alternative series remains consistently lower than GNP growth. From this perspective, the apocalyptic $r > g$ "exploding wealth inequality" scenario does not look especially likely.

III. If a Global Wealth Tax is the Answer, then what is the Question?

The essence of Piketty's theory is that societal inequality arises from a combination of unequal capital ownership, a high rate of saving from capital income, and a high degree of substitutability between capital and labor that allows capital to accumulate without causing the rate of return to fall enough to offset the growing share of capital income. From such a theory, the jump to recommending a global wealth tax as a key government policy instrument is understandable, if not without its problems. But there are gaps between theory and reality that lead one to question the logic underlying the wealth tax prescription.

A. *Sources of Recent Increases in Income Inequality*

There is little argument that the distribution of pre-tax income has become more unequal, around the world and perhaps especially in the United States. There is also little dispute that capital income is more concentrated at the top of the income distribution than labor income. But Piketty's own evidence suggests that the recent growth in before-tax income inequality is to a large extent attributable, in a simple accounting sense, to the growing inequality in wage and salary income. As discussed by Furman (2014), it is helpful to decompose changes in the share of income going to a top quintile into three components, associated with changes in the labor income share, changes in the capital income share, and changes in the economy's share of income going to capital, which would be associated with higher inequality because capital income is more unequally distributed than labor income. That is:

$$(1) \qquad d\left(\frac{y_i}{Y}\right) = (1 - \kappa)d\left(\frac{l_i}{L}\right) + \kappa d\left(\frac{k_i}{K}\right) + \left(\frac{k_i}{K} - \frac{l_i}{L}\right)d\kappa$$

where κ is the overall capital income share, l_i and L are quantile i's and overall labor income, and k_i and K are quantile i's and overall capital income. Based on the data provided by Piketty and Saez (2013a), Furman (2014) reports that (excluding capital gains), roughly two-thirds of the increased share of income going to the top 1 percent since 1970 (and roughly half of the increased share of the top 0.1 percent) is attributable to increases in labor-income inequality.
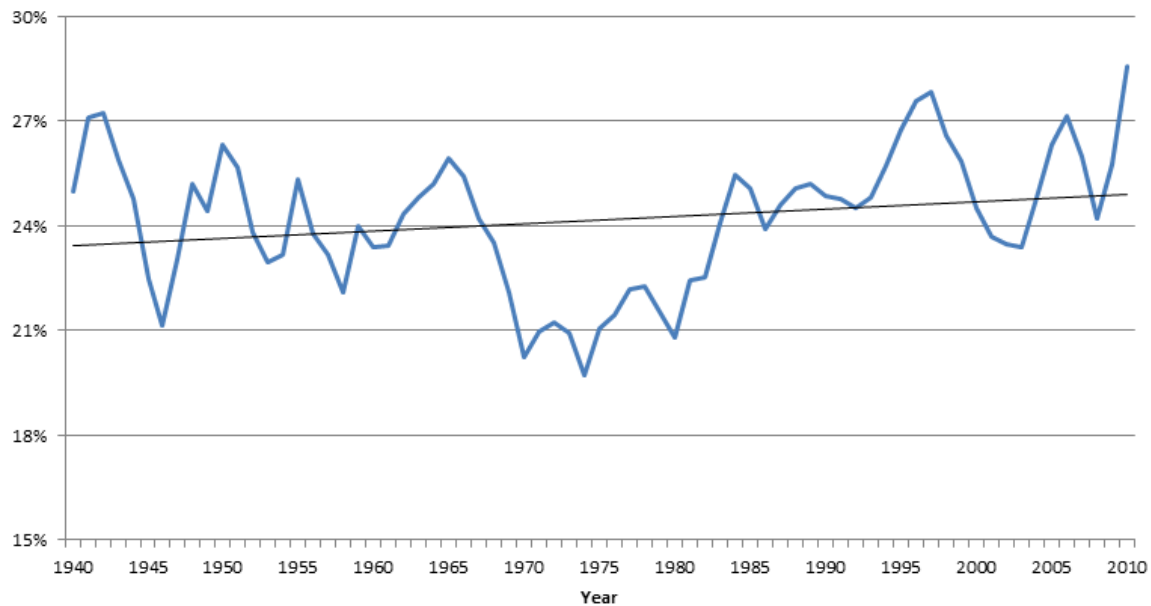
To the extent that labor income inequality is the underlying source of overall inequality, it is hard to see why the appropriate policy response is a wealth tax, rather than, for example, an increase in the progressivity of labor income taxes, as indeed Piketty and his collaborators have proposed in other work (e.g., Piketty, Saez, and Stantcheva 2014). It may well be true that the growing inequality of labor income is leading to a growing concentration of capital ownership, and even possible that this process is accelerated by differences in saving rates among income

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classes, as suggested by recent estimates by Saez and Zucman (2014). Even so, the underlying

factor driving inequality would be the dispersion of labor income.

B. *The Growth of Housing Capital*

While Piketty's theory may evoke the image of a steady process of workers being

displaced from their jobs by an expanding stock of productive capital, much of the postwar

growth in capital income shares and capital-output ratios, in the United States but particularly in

other countries, has come through increases in the stock of housing capital as well as increases in
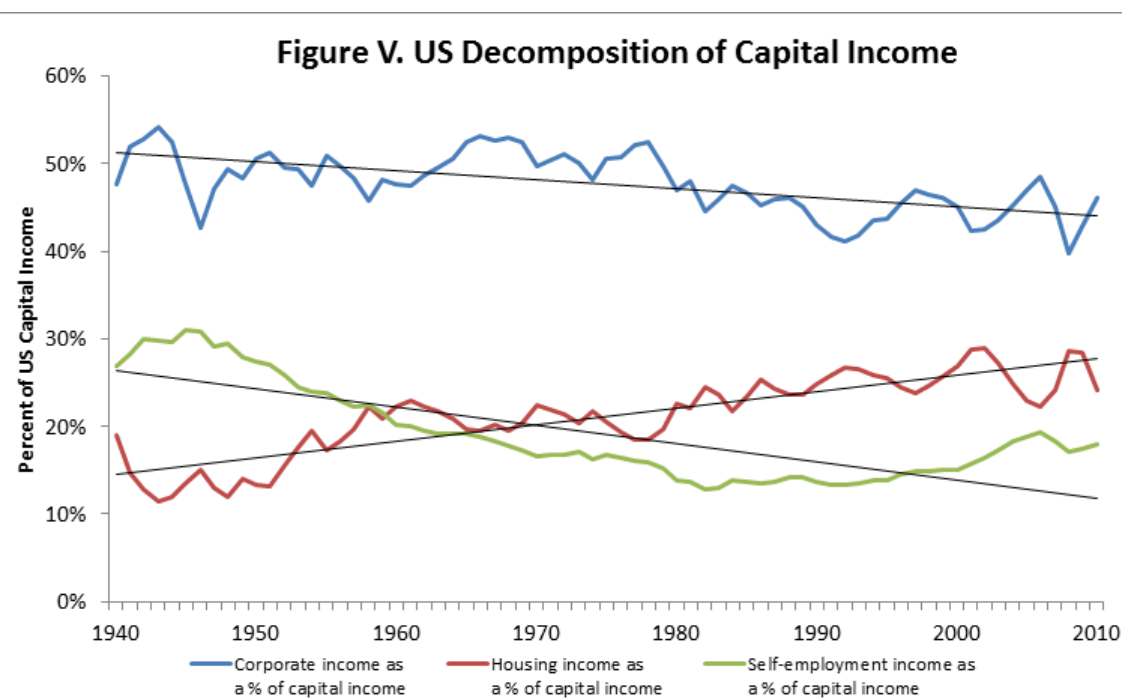
the value of existing houses.

Figure IV. Capital Income as a Percent of National Income

Source: Authors' calculations; Piketty and Zucman (2014).

As Piketty notes, capital's share of national income has indeed risen over the decades

since 1970. Figure IV shows the trajectory of US capital income since 1940. However, as

Figure V suggests, the increasing share of capital income in national income reflects an increase

in housing's share of capital income. Though the chart focuses on the case of the United States,

others have found that some of the upward trends that are central to Piketty's argument appear

relatively stable if one removes the influence of housing capital for other countries (Bonnet et. al. 2014).

Figure V. US Decomposition of Capital Income

Source: Authors' calculations; Piketty and Zucman (2014).

The distinction between housing and other types of capital is consequential: a key factor determining whether it is plausible that the capital income share will increase as the capital stock increases is the substitutability of capital for labor. Piketty argues that this substitutability is very high. The traditional production function intuition that he relies upon, however, is suspect with respect to housing capital, which presumably is a very poor substitute for labor.

If the growth in the capital-output ratio and capital income's share of overall income is attributable to the growth in housing capital, focusing on a general wealth tax again seems like a missed opportunity. This is particularly the case for the United States, where the tax benefits for both owner-occupied and rental housing have long been recognized as the source of a major distortion in the allocation of capital. Indeed, there have been many proposals over the years to reduce the tax benefits for owner-occupied housing in a progressive manner, for example by

lowering the ceiling on mortgage amounts qualifying for an interest deduction or converting the

interest deduction to a tax credit. Like increases in marginal tax rates on labor income, such

changes would discourage labor supply by those affected by effectively reducing the real after-

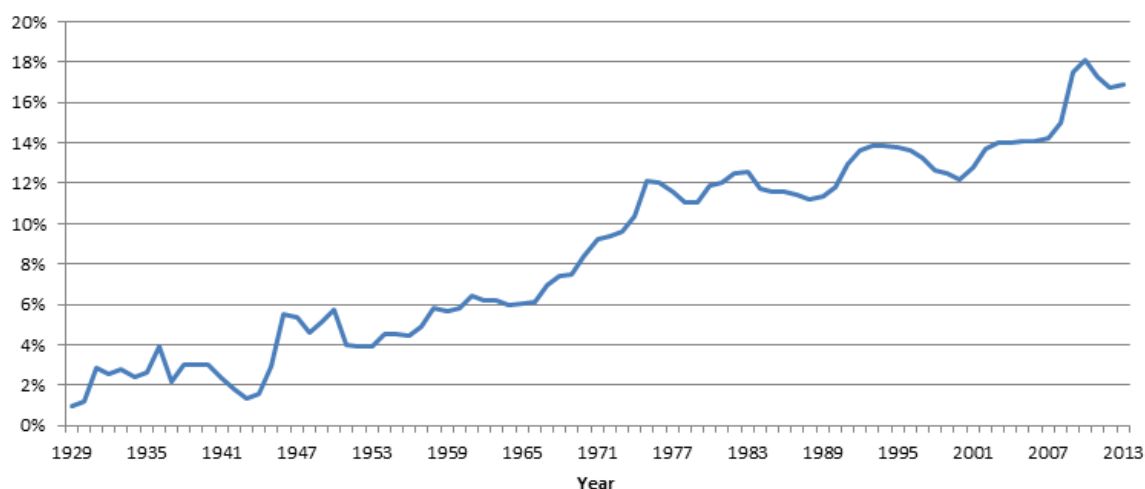tax wage, but they would also improve the efficiency of overall capital allocation.

There is also evidence that markets with high housing costs may have those high costs in

part because of building codes and land use regulations that create conditions of artificial scarcity

(Glaeser, Gyourko, and Saks 2005; Quigley and Raphael 2005). As others have also noted, this

implies that land use regulations, rather than wealth taxation, may be a more direct tool for

addressing the high value of housing capital (Rognlie 2014; Summers 2014).

C. Post-Tax Inequality

The distinction between after-tax and transfer inequality and pre-tax and transfer

inequality is also lost in Piketty's framework. This is not a trivial distinction. According to the

Bureau of Economic Analysis, government transfer payments as a fraction of GDP have more

than doubled between 1970 and 2009, rising from 6.7% to 14.7% during that time period. By

contrast, according to Piketty's data, the top decile's share of income in the US increased by

about 43%, rising from 32.6% to 46.5% over that same time period (Piketty 2014). The pre-tax

and transfer measures analyzed by Piketty therefore tend to overstate to the extent of the

differences in the economic welfare of those at the top versus those at the bottom. Burtless

(2014) also notes that government social benefits as a percentage of total US personal income

has steadily trended upwards for the time period that spans 1929 to 2012. Figure VI, a

replication of a chart originally found in Burtless (2014), shows how government social benefits

as a share of total US personal income have steadily increased over the time period. Moreover,

many economists would agree that consumption is a better measure than income of economic

welfare. Hassett and Mathur (2010) show that the difference between the consumption of those

at the bottom and those at the top remained relatively stable from 1984 to 2010. Though the

market income data cited by Piketty appears to show a surge in inequality, this measure alone

therefore overstates the extent of inequality in economic welfare. A more thorough analysis of

trends in economic well-being instead leaves one with the impression that government transfer

programs may have largely ameliorated the tendency of the pre-tax trends in income documented

by Piketty to widen welfare inequality.

Figure VI. Government Social Benefits as a Percentage of Total US Personal Income, 1929-2013

Source: Authors' calculations; Bureau of Economic Analysis; Federal Reserve Economic Data.

D. Capital Prices vs. Quantities

Wealth accumulation occurs not only because of increases in the amount of capital, but

also because of increases in asset prices, as Piketty (2014) himself discusses (see, for example,

the discussion on pages 187-191). But the implications for Piketty's theory and his prescriptions

for tax policy differ according to the decomposition of increases in wealth between prices and

quantities and the causes of price increases. First, as discussed by Rognlie (2014), calculations

of the elasticity of substitution between capital and labor, which plays a key role in Piketty's

argument about the persistence of $r > g$, require adjustment when capital-output ratios are based

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on market values. Second, to the extent that asset prices do not reflect increases in the productivity of capital, but are attributable to other factors such as a decline in discount rates or increasing scarcity of land, one would not necessarily want to include capital gains as a measure of the returns to capital in assessing trends in capital income. As shown by Saez and Zucman (Figure 3), excluding capital gains significantly moderates the increase in the estimated taxable capital income share of the top 0.1 percent of households between 1962 and 2012.

Finally, capital taxation itself can play an important role in determining asset prices, working through two channels. First, to the extent that new capital receives more favorable treatment (e.g. for depreciation allowances) than otherwise equally productive existing capital, the difference should be capitalized into the value of existing assets (Auerbach 1983). Second, to the extent that firms use internal funds as the source of equity finance, corporate equity values should capitalize deferred taxes on dividend distributions (Auerbach 1979). Both of these factors can be significant, and changes over time can produce trends in asset values. Indeed, McGrattan and Prescott (2005) find that such changes due to tax policy can explain an important part of the movement in US equity values over the period 1960-2001, including the fall during the 1970s and the sustained rise in the 1980s and 1990s, during which time there was relatively little change in the capital-output ratio itself; the same factors appear important in the United Kingdom as well.

IV. Global Wealth Taxation and its Alternatives

Moving from theory and evidence to policy recommendations, Piketty argues passionately for a substantial annual wealth tax, with a progressive rate structure exempting low levels of wealth and with marginal tax rates of 2 percent, 5 percent, or even 10 percent on the highest wealth levels (*Capital*, pp. 528-530). To make such a tax more enforceable, Piketty

envisions it as applied as a coordinated policy, for example as a European wealth tax, rather than by individual countries.

Putting forward such a proposal is truly a bold step, taking place as it does against a backdrop of intense international tax competition and declining corporate tax rates, in which the major current attempt at international tax policy coordination, the OECD project on "Base Erosion and Profit Shifting," is aimed at trying to preserve the existing system of capital taxation, not at expanding it. It is a bold step, also, in terms of the logical support one can find for it elsewhere in the book, or for that matter in the substantial literature on the design of optimal tax systems, to which Piketty himself has contributed.

Recent literature has taken several steps back from the strong conclusions from two key strands in the literature, associated with papers by Atkinson and Stiglitz (1976) and Chamley (1986) and Judd (1985), suggesting that capital income tax rates should be zero.[7] But this literature has not produced results that capital income taxes should be as high as would be needed to produce the equivalent annual wealth taxes that Piketty recommends.[8] [9] Indeed, Piketty turns a key insight from this literature on its head.

One of the important developments in the literature on taxation and saving is a fuller understanding of the relationships among different tax bases, in particular consumption taxes, labor income taxes and capital income taxes. While simple models often equate taxes on labor

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[7] Banks and Diamond (2010) and Auerbach (2013) provide surveys of this recent literature.

[8] Piketty and Saez (2013b) argue for tax rates on *inheritances* as high as 50 percent in the United States, but these results come from a model in which there are no other capital income taxes and no saving except for bequests. In a working paper version (Piketty and Saez 2012), they do argue in favor of lifetime capital income taxes as an alternative when there is (1) uninsurable rate-of-return risk; or (2) a fuzzy borderline between labor income and capital income. But the insurance that capital income taxes (as opposed to *wealth* taxes, which Piketty and Saez do not consider) can provide is also provided by consumption taxes, without the intertemporal distortion associated with capital income taxation; consumption taxes eliminate the second argument for capital income taxation as well by obviating the need to distinguish between labor and capital income.

[9] See DeBacker et al. (2014) for a recent attempt to explore the impact of income and wealth taxes on steady-state inequality.

and consumption, a major difference, implicit in some of the early arguments for consumption

taxation (e.g. Kaldor 1956/1957), is the ability of consumption taxes to hit existing sources of

wealth, attributable to rents, inheritances, disguised labor income, etc. The broader consumption

tax base can provide a tax system that is more efficient (e.g., Auerbach and Kotlikoff 1987) than

a labor income tax and, with a progressive rate structure, a reasonably progressive distribution of

the tax burden, as measured on a lifetime basis (Altig et al. 2001). As is now also well

understood, a consumption tax differs from a capital income tax in its treatment of capital

income only by its exemption of the safe rate of return on investment.[10] Thus, consumption

taxes hit wealth without interfering with the incentive to save associated with the intertemporal

terms of trade. Wealth taxes, on the other hand, effectively tax the safe rate of return on

investment because they do not depend on actual rates of return, thereby incurring the

intertemporal distortion but forgoing tax on other components of the rate of return.

Indeed, when consumption taxes are implemented via a combined tax on labor and

business cash flows, as in Hall and Rabushka (1995), rather than being imposed at the individual

level, the capital levy would be explicit rather than implicit, being capitalized into share values

according to the logic discussed earlier in the context of explaining trends in US and UK share

values. Thus, any potential benefit seen in reducing the market value of existing wealth would

favor such an approach, which has also recently been seen as a path toward reforming the

existing approach to corporate taxation, through application of the destination basis characteristic

of consumption taxes (Auerbach, Devereux and Simpson 2010).

Finally, there is an irony in arguing in favor of taxing capital income or wealth and also

that the elasticity of substitution in production is very high. While the latter attribute is a key

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[10] See the extended discussion of the tax treatment of savings under different tax bases in Mirrlees et al. (2011).

part of Piketty's dark scenario of the consequences of capital deepening, it also exacerbates the efficiency costs of capital income or wealth taxation. A low elasticity of substitution in production would limit the decline in saving in response to capital taxation, as the initial decline in the capital-labor ratio would bring forth a large increase in the before-tax return to capital, thereby muting the substitution effect discouraging saving. Hence, efficiency costs of capital taxation (or efficiency gains from removing capital taxes) would be smaller, as discussed in Auerbach and Kotlikoff (1987, chapter 5) or Engen, Gravelle, and Smetters (1997). On the other hand, this same general equilibrium response would cause more of a shift in the incidence of capital taxes from capital to labor. Thus, the policy is damaging from an efficiency perspective to the extent that it is effective from a distributional perspective.

In summary, tax policy can play an important role in addressing inequality, but we find little support for Piketty's particular approach either in *Capital* or elsewhere in the literature of recent decades.

V.   Conclusions

The sources of economic inequality should be a major concern to economists and policy makers, as should the most effective policies to deal with inequality. In the context of our review of Thomas Piketty's book, we have argued that the tax system occupies an important place in this endeavor, in particular (1) in the analysis of the extent to which returns to capital exceed the growth rate of the economy; (2) as a factor behind the role of housing growth in capital accumulation, which further modifies one's assessment of the growth rate of productive capital; and (3) most importantly, through tax reform, as a means of improving the equity-efficiency trade-off. Serious problems call for serious solutions. But policy can only succeed by addressing actual problems with effective solutions.

References

Acemoglu, Daron and James A. Robinson. "The Rise and Fall of General Laws of Capitalism."
August 2014. http://economics.mit.edu/files/9834

Altig, David, Alan J. Auerbach, Laurence J. Kotlikoff, Kent A. Smetters, and Jan Walliser.
"Simulating Fundamental Tax Reform in the United States." *American Economic
Review* (2001): 574-595.

Atkinson, Anthony B., and Joseph E. Stiglitz. "The Design of Tax Structure: Direct versus
Indirect Taxation." *Journal of Public Economics* 6, no. 1 (1976): 55-75.

Auerbach, Alan J. "The Optimal Taxation of Heterogeneous Capital." *The Quarterly Journal of
Economics* (1979): 589-612.

Auerbach, Alan J. "Corporate Taxation in the United States." *Brookings Papers on Economic
Activity* (1983): 451-513.

Auerbach, Alan J. "Capital Income Taxation, Corporate Taxation, Wealth Transfer Taxes and
Consumption Tax Reforms." Paper presentation, the Empirical Foundations of Supply-
Side Economics, the Becker-Friedman Institute, Chicago, September 27
2013. https://bfi.uchicago.edu/sites/default/files/file_uploads/P2%20AUERBACH.pptx

Auerbach, Alan J., Michael P. Devereux, and Helen Simpson. "Taxing Corporate Income." In
Dimensions of Tax Design, edited by James Mirrlees et al. Oxford University Press,
2010. 837-893.

Auerbach, Alan J., and Laurence J. Kotlikoff. *Dynamic Fiscal Policy*. Cambridge: Cambridge
University Press, 1987.

Banks, James and Peter Diamond. "The Base for Direct Taxation." In *Dimensions of Tax Design*,
edited by James Mirrlees et al. Oxford University Press, 2010. 548-648.

Barro, Robert J. "Rare Disasters and Asset Markets in the Twentieth Century." *The Quarterly Journal of Economics* (2006): 823-866.

Bonnet, Odran, Pierre-Henri Bono, Guillaume Chapelle, and Etienne Wasmer. 2014. *Does Housing Capital Contribute to Inequality? A Comment on Thomas Piketty's Capital in the 21st Century*. Sciences Po Department of Economics Working Paper No. 2014-07, April.

Bureau of Economic Analysis. 1929-2013. "Government current transfer payments: Government social benefits (W063RC1A027NBEA), Gross Domestic Product (GDP), and Personal income (A065RC1A027NBEA)." United States Department of Commerce. All series accessed through the Federal Reserve Economic Database ('FRED') through the Microsoft Excel interface in November 2014.

Burtless, Gary. "Has Rising Inequality Brought Us Back to the 1920s? It Depends on How We Measure Income." *Brookings Institution Up Front*, May 20 2014. http://www.brookings.edu/blogs/up-front/posts/2014/05/20-rising-inequality-1920s-measuring-income-burtless

Chamley, Christophe. "Optimal Taxation of Capital Income in General Equilibrium with Infinite Lives." *Econometrica* (1986): 607-622.

DeBacker, Jason, Richard W. Evans, Evan Magnusson, Kerk L. Phillips, Shanti P. Ramnath, and Isaac Swift. "The Distributional Effects of Redistributional Tax Policy." BYU Macroeconomics and Computational Laboratory Working Paper #2014-08, October.

Engen, Eric, Jane Gravelle, and Kent Smetters. "Dynamic Tax Models: Why They Do the Things They Do." *National Tax Journal* (1997): 657-682.

Furman, Jason, 2014, "Global Lessons for Inclusive Growth." Delivered lecture, the Institute of International and European Affairs, Dublin, Ireland, May 7 2014. http://www.whitehouse.gov/sites/default/files/docs/global_lessons_for_inclusive_growth_iiea_jf.pdf

Glaeser, Edward L., Joseph Gyourko, and Raven Saks. "Why is Manhattan So Expensive? Regulation and the Rise in House Prices." *Journal of Law and Economics* 48, 2 (2005): 331-370.

Giles, Christopher. "Data problems with Capital in the 21st Century." *Financial Times*, Money Supply blog. May 23 2014. http://blogs.ft.com/money-supply/2014/05/23/data-problems-with-capital-in-the-21st-century/

Global Financial Data. "USA 10-year Bond Constant Maturity Yield (IGUSA10D)." https://www.globalfinancialdata.com. Accessed on November 14 2014.

Hall, Robert Ernest, and Alvin Rabushka. *The Flat Tax*. Vol. 423. Stanford: Hoover Institution Press, 1995.

Hassett, Kevin A. and Aparna Mathur. "A New Measure of Consumption Inequality." Washington, D.C.: American Enterprise Institute, June 2012.

Jorion, Philippe, and William N. Goetzmann. "Global Stock Markets in the Twentieth Century." *The Journal of Finance* 54.3 (1999): 953-980.

Judd, Kenneth L. "Redistributive Taxation in a Simple Perfect Foresight Model." *Journal of Public Economics* 28, no. 1 (1985): 59-83.

Kaldor, Nicholas. *An Expenditure Tax*. London: George Allen and Unwin, 1956. New York: the Macmillan Company, 1957.

Kennickell, Arthur B. 2009. "Ponds and Streams: Wealth and Income in the U.S., 1989 to 2007."

    Finance and Economics Discussion Series 2009-13. Board of Governors of the Federal

    Reserve System (U.S.).

Kennickell, Arthur B. 2011. "Tossed and Turned: Wealth Dynamics of U.S. Households 2007-

    2009." Finance and Economics Discussion Series 2011-51. Board of Governors of the

    Federal Reserve System (U.S.).

King, Mervyn. 2014 "Capital in the Twenty-First Century by Thomas Piketty, review." *The*

    Telegraph. May 10.

Kopczuk, Wojciech. 2014. "What do We Know about the Evolution of Top Wealth Shares in the

    United States?" NBER Working Paper 20735, December.

Kopczuk, Wojciech, and Emmanuel Saez. *Top Wealth Shares in the United States: 1916-2000:*

    Evidence from Estate Tax Returns. No. w10399. National Bureau of Economic Research,

    2004.

McGrattan, Ellen R. and Edward C. Prescott. 2005. "Taxes, Regulations, and the Value of U.S.

    and U.K. Corporations," *Review of Economic Studies* 2(3), July, pp. 767-796.

Mirrlees, James, et al., eds. *Tax by Design: The Mirrlees Review*. Oxford University Press, 2011.

Piketty, Thomas. *Capital in the Twenty-first Century*. Harvard University Press, 2014. Technical

    appendix available

    at: http://piketty.pse.ens.fr/files/capital21c/en/Piketty2014FiguresTablesLinks.pdf.

Piketty, Thomas, and Emmanuel Saez. 2012. "A Theory of Optimal Capital Taxation." NBER

    Working Paper 17989, April.

Piketty, Thomas, and Emmanuel Saez. 2013a. "Top Incomes and the Great Recession: Recent

    Evolutions and Policy Implications." *IMF Economic Review* 61, no. 3 (2013): 456-478.

Piketty, Thomas, and Emmanuel Saez. 2013b. "A Theory of Optimal Inheritance Taxation."

   Econometrica 81, no. 5 (2013): 1851-1886.

Piketty, Thomas, Emmanuel Saez, and Stefanie Stantcheva. 2014. "Optimal Taxation of Top

   Labor Incomes: A Tale of Three Elasticities." *American Economic Journal: Economic*

   Policy, 6(1): 230-71.

Piketty, Thomas, and Gabriel Zucman. 2014. "Capital is Back: Wealth-Income Ratios in Rich

   Countries, 1700-2010." *The Quarterly Journal of Economics* 129:1255-1310. Data

   appendix available at: http://piketty.pse.ens.fr/en/capitalisback.

Quigley, John M., and Steven Raphael. "Regulation and the High Cost of Housing in

   California." *American Economic Review* (2005): 323-328.

Rognlie, Matthew. 2014. "A Note on Piketty and Diminishing Returns to

   Capital." http://www.mit.edu/~mrognlie/piketty_diminishing_returns.pdf.

Saez, Emmanuel, and Gabriel Zucman. 2014. "Wealth Inequality in the United States Since

   1913: Evidence from Capitalized Income Data." NBER Working Paper 20625, October.

Summers, Lawrence. 2014. "The Inequality Puzzle." *Democracy: A Journal of Ideas*, issue #33.

Wolff, Edward N. "Trends in Household Wealth in the United States, 1962–83 and 1983-89."

   Review of Income and Wealth 40, no. 2 (1994): 143-174.