What Do We Know about the Evolution of Top Wealth Shares in the United States?[†]

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I n Piketty's (2014) prominent book, *Capital in the Twenty-First Century*, he argues that the concentration of wealth may become increasingly extreme in the future. As Piketty reminds us, the group of rentiers—people living off accumulated capital—has been historically large and politically and socially influential. Because so much of large fortunes end up being inherited, the current concentration of wealth is bound to predict at least weakly, and perhaps strongly, how important rentiers will be. Regardless of whether one buys into depictions such as "the rentier, enemy of democracy" (p. 422), the extent to which the well-off are going to rely on work versus rely on the returns to their wealth in the future is clearly important for assessing the extent to which a society will view itself as in some way a meritocracy.

Given that the US economy has experienced rising inequality in its income and earning distributions (for example, Piketty and Saez 2003; or see the symposium on "The Top 1 Percent" in the Summer 2013 issue of this journal), one would expect that the distribution of wealth would follow a similar path. However, available evidence on this topic is much more scant and conflicting than that on income and earnings. In fact, when Piketty (2014) reports direct estimates of wealth concentration for France, the United Kingdom, Sweden, and the United States in chapter 10 of his book, he finds as yet little evidence of dramatic increase in wealth concentration in any of these countries.

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In this paper, I discuss three different main methods for looking at the US wealth distribution: 1) the survey-based method using data from the Survey of Consumer Finances conducted by the Federal Reserve; 2) the estate multiplier method that uses data from estate tax returns to estimate wealth for the top of the wealth distribution; and 3) the capitalization method that uses information on capital income from individual income tax returns to estimate the underlying stock of wealth. At the time when Thomas Piketty wrote his book, only estimates based on the estate multiplier and the Survey of Consumer Finances were available; the capitalization method has been implemented by Saez and Zucman (2014) since the book was published. I also briefly comment on the usefulness of a fourth method: lists of high-wealth individuals, most notably the annual Forbes 400 list.

I will discuss the strengths and weaknesses of these approaches. I will focus in particular on a central difference in the estimates: the survey-based and estate tax methods suggest that the share of wealth held by the top 1 percent has not increased much in recent decades, while the capitalization method suggests that it has. I will offer some possible explanations for this divergence in findings: for example, questions over whether survey evidence on wealth captures those at the very top of the wealth distribution; varying estimates of the mortality rate of the very wealthy (which are necessary in projecting results from the estate tax to the broader population); sensitivity to rate-of-return assumptions; and changes in tax policy or business practices that would tend to alter the relationship between annual flows of income and accumulated stocks of wealth.

More broadly, as income inequality has grown in recent decades, the nature of wealth inequality has changed. Those in the top 1 percent of the US income and wealth distribution have less reliance on capital income and inherited wealth, and more reliance on income related to labor, than several decades ago. This transition can also help to explain why the methods of calculating wealth reach different results. These changes in the underlying sources and characteristics of high income and wealth must be the building blocks for understanding the connection between income and wealth inequality and whether, as predicted by Piketty (2014), the inequality of wealth and the importance of inherited wealth will dramatically rise in the future.

Basic Patterns in the Concentration of Wealth

There are four methods of measuring wealth at the very top of the distribution. First, one can carry out a survey that oversamples high-net-worth taxpayers. The Survey of Consumer Finances is the only source of that kind in the United States. Second, while the United States does not have an annual wealth tax (a few developed countries do—France and Norway in particular), it does have an estate tax. The estate tax records provide a snapshot of the distribution of wealth at the time of death. Third, while wealth itself is not reported to tax authorities, much of the capital income that wealth generates is taxable and observable, which provides

an opportunity to estimate the underlying wealth distribution based on the annual flows of capital income. Finally, lists of named top wealth-holders exist—Forbes has published the best-known such list since 1982.

The coverage of these data sources varies in specific ways. In principle, the survey-based and capitalization methods allow for characterizing all (or, at least, most) of the wealth distribution. The estate tax approach is limited to drawing inferences based on the population subject to the tax. For most of the 20th century, this method allowed for constructing estimates for the top 1 percent, although changes since 2001 and especially since 2010 significantly reduced the coverage of the tax.[1] The lists of the wealthy are limited to the very small group of top wealth-holders and have nonsystematic coverage.

In terms of the time frames over which the data are available, estate tax and capitalization methods allow for constructing estimates going back to the beginning of the 20th century: the US income tax was introduced in 1913, and the estate tax was introduced in 1916. The Survey of Consumer Finances is available every three years starting with 1989, with precursor surveys available in 1962 (Survey of Financial Characteristics of Consumers) and 1983 (though it was also called the Survey of Consumer Finances, it had methodological differences relative to later surveys).[2] Differences in coverage and sampling suggest that 1962 and 1983 survey estimates should be treated with more caution than those for later years, especially for the top 1 percent. The capitalization series presented here is based on recent work of Saez and Zucman (2014) and covers the period from 1913–2012.

Each of the four methods has benefits and drawbacks that I will discuss in what follows. Before doing so, let us establish the basic facts. Figure 1 shows the evolution of the top 1 percent and top 0.1 percent of the wealth distribution using each of the methods that allow for constructing it. Figure 2 shows the evolution of the top 10 percent of the wealth distribution using the survey-based and capitalization methods and, separately, the wealth of the group from the 90th to 99th percentile—that is, the top 10 percent of the wealth distribution excluding the top 1 percent. Several observations are worth noting.

First, wealth is always highly concentrated. The share of wealth held by the top 10 percent has fluctuated between 65 and 85 percent of total wealth, the share of wealth held by the top 1 percent has ranged between 20 percent and as much as 45 percent of all wealth, and the share of wealth held by the top 0.1 percent ranged between less than 10 percent and as much as 25 percent.

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[1] The estate tax series presented here is based on Kopczuk and Saez (2004a) and stops in 2000. Changes in the estate tax threshold reduced the coverage in subsequent years and will limit the applicability of this approach to groups significantly smaller than the top 1 percent.

[2] The series presented here were compiled by Roine and Waldenström (2015), and are in turn based on the work of Kennickell (2009b, 2011), Wolff (1996), and Lindert (2000). These estimates were extended to 2013 by Saez and Zucman (2014) following the Kennickell (2011) procedure. An unpublished paper by Scholz (2003) contains an alternative way of constructing wealth concentration estimates that generates very similar qualitative patterns. Related surveys are available for a few other years between 1962 and 1982, but they have not been used to estimate top wealth shares due to a small number of high-net-worth individuals.

Figure 1
**Top 0.1% and Top 1% Wealth Shares**
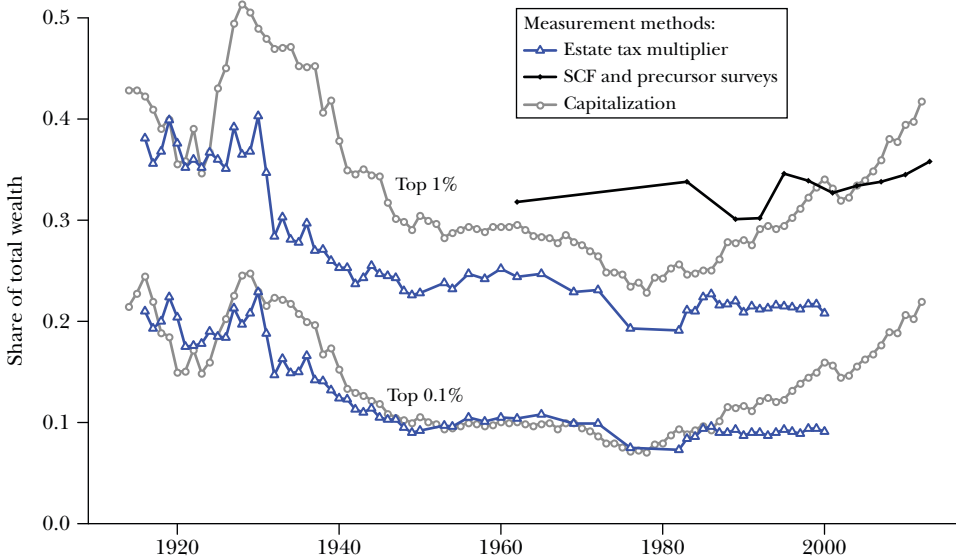
Source: Author using data described in the text.
Note: SCF is the Survey of Consumer Finances.

Second, the methods agree that the US wealth concentration peaked before the Great Depression and declined afterwards, staying relatively low at least until the 1980s. They do not necessarily agree on the timing though: the estate multiplier shows a rapid drop in the aftermath of the Great Depression, while the capitalization method shows more gradual adjustment, with rapid decline only in the late 1930s.

Third, the estate tax approach produces estimates that are lower than the other two approaches for the top 1 percent (estimates for the top 0.1 percent are much closer), but until the 1980s the two series available for that period move in a parallel fashion. There are conceptual differences that may generate different results from these approaches: for example, the estate tax multiplier method assigns wealth to individuals; the Survey of Consumer Finances (SCF) to households; and the capitalization method to "tax units." There are also differences in observability of assets. For example, tax evasion skews tax-based methods but not necessarily estimates from the SCF. Debt is observable on estate tax returns, but hard to capture by the capitalization method (debt is responsible for a reduction in the estate multiplier estimates of the top 1 percent share by more than 1 percentage point throughout and over 4 percentage points in the 1930s). Assets that do not generate taxable capital income have to be imputed in the capitalization approach.

Figure 2

Wealth Shares for Top 10% and 90th–99th Percentiles (P90–P99) in Terms of Wealth
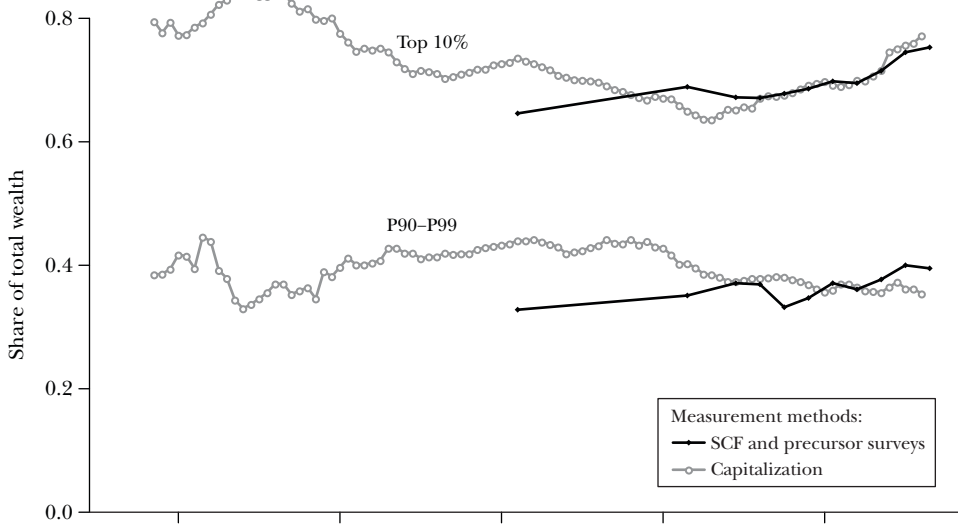
Source: Author using data described in the text.
Note: SCF is the Survey of Consumer Finances.

Fourth, both the survey-based and the capitalization methods paint a very similar picture of the top 10 percent of the wealth distribution. Both indicate that the share of wealth held by the top 10 percent increased since the late 1980s.

Fifth, the different methods give diverging estimates since the 1980s, whether we look at the top 1 or top 0.1 percent of the wealth distribution. The methods that rely on direct measurement of wealth—that is, those based on the surveys and on the estate tax—show at best a small increase in the share of wealth held by the top 1 percent, while the capitalization methods shows a steep increase.

Sixth, given that the Survey of Consumer Finances and capitalization generate similar trends in recent years for the top 10 percent but different trends for the top 1 percent, it follows also that they do not coincide for the lower portion of the top 10 percent. The SCF shows a marked increase in the share of wealth going to P90–P99, while the capitalization method shows a decline.

These different approaches to estimating the distribution of wealth cover different periods of time and different parts of the distribution. They do not always paint the same picture, either. It is important then to understand the assumptions and the sources of data in order to understand weaknesses and strengths of different approaches. The next section discusses each of these four methods in more depth, and the following section then seeks to explain the discrepancies across the data series.

Four Methods of Measuring the Wealth Distribution

Survey of Consumer Finances

In a nutshell, the Survey of Consumer Finances is designed to measure household wealth. Bricker et al. (2014) and Kennickell (2009b, 2011) provide detailed overviews of its design. The definition of wealth in this survey includes all conventional categories of assets. Kennickell (2009b) concludes that the most important omissions are expected payments from defined benefit pension plans (naturally, Social Security wealth is also not accounted for), income streams from annuities or trusts, and human capital. In each case, these omissions are income-generating assets that are difficult or impossible to trade and that also escape the estate tax because they stop at death of the owner.

To cover the full wealth distribution in a way that accurately represents the concentration of wealth at the top end, the Survey of Consumer Finances supplements its random sample of the entire population with a stratified "list sample" derived from individual income tax returns. As a result, the survey significantly oversamples the very top of the wealth distribution. The sample, however, explicitly excludes individuals who belong to the Forbes 400 even if they are otherwise selected. Kennickell (2009a) notes that fewer than expected members of the Forbes 400 were selected and then disqualified, possibly because wealth in the Forbes sample may be held in trusts or by multiple family members, or because of errors in Forbes or issues with the Statistics of Income tax data that is relied on for stratification in the SCF.

A concern with the Survey of Consumer Finances is that the response rate among high-wealth individuals is only about 25 percent. Kennickell (2009a) discusses the response rate issue and the difficulties in reaching the very wealthy individuals, and concludes that the major difficulty in obtaining responses is the length of time that the interview takes. Given that this high-wealth sample is selected based on external income tax information, it is in principle possible to adjust for any potential nonresponse bias that varies systematically with observable characteristics: for example, if those, say, younger or with higher income were underrepresented because of a low response rate, those in these categories who did respond could be weighted more heavily. However, Kennickell (2009a) finds little evidence of nonresponse bias on observables.[3] In particular, he comments that refusal to fill out the survey (and various reasons for it) appears not related to the wealth index derived from income tax information that is relied on in sample design. Of course, one cannot eliminate the possibility that the sample is biased on some unobservable characteristics, but at least as the first pass, the sample does not appear biased in the dimensions that can be captured using income tax data.

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[3] Verifying this point is the subject of ongoing work by the SCF staff, and I have confirmed that they still find that this conclusion holds in most recent surveys (personal communication).

Estate Tax Data

Since 1916—with the exception of 2010 when the estate tax requirement was eliminated for one year—estates of decedents with value exceeding a certain threshold are required to file an estate tax return. The threshold for the estate tax has varied significantly over time, but for most of the 20th century it corresponded to 1 percent or more of decedents being subject to the estate tax. In this way, the estate tax return provides a snapshot of wealth at the time of death for the population of sufficiently wealthy decedents.

A first practical difficulty in the estate tax approach is how to generalize from decedents to the full population. In Kopczuk and Saez (2004b), we provide extensive methodological discussion. The basic idea is to think of decedents as a sample from the living population. The individual-specific mortality rate m_i becomes the sampling rate. If m_i is known, the distribution for the living population can be simply estimated by reweighting the data for decedents by inverse sampling weights $1/m_i$, which are called "estate multipliers." Lampman (1962) was the first to provide such estimates for the US economy, although there are earlier estimates using UK data. In Kopczuk and Saez (2004a), we relied on confidential individual estate tax return data available at the IRS to construct such estimates for all years when they are available (1916–1945, a few years between 1946 and 1981, and 1982–2000) and supplemented it using data for a few other years between 1946 and 1981 for which detailed published tabulations exist.

The critical decision in applying the estate multiplier technique is the choice of mortality rates. While population mortality rates are relatively easy to observe by age and gender, mortality rates for the wealthy are known to be lower than those for the rest of the population, but are much harder to observe. In Kopczuk and Saez (2004a), we use estimated mortality differentials (by age and gender) between college-educated individuals (who are wealthier and longer living) and the full population at a single point in time (Brown, Liebman, and Pollet 2002) to adjust population mortality rates in all other years. The most worrisome feature of this approach is *not* that the mortality differentials for those with college education and for the wealthy are not the same: after all, as a first approximation such a difference would alter the level of the estimated wealth for the top groups, but would not necessarily affect the trend over time. A bigger concern is that the difference between mortality of college-educated and that of the wealthy may have changed over time. I will return to this issue when comparing capitalization and estate multiplier estimates.

Unlike the survey-based and capitalization methods, the estate tax method assigns wealth to individuals, rather than households. Depending on the composition of households (single vs. couple) across the distribution of wealth and on the division of assets within a household, this approach could in theory result in either higher or lower shares of top wealth percentiles relative to estimates based on a household distribution of wealth.

Another set of potential problems arises because the estate of a decedent may be different than wealth of an otherwise similar living person for various reasons.

As one example, an estate may have been diminished by a high level of end-of-life spending on health care. Estate tax data will reflect tax avoidance achieved by many high-wealth individuals through estate planning. The magnitude of the tax avoidance bias is difficult to assess, but some effect is clearly present; in Kopczuk (2013), I discuss available evidence. Certainly, there is a lot of estate tax planning and tax avoidance. At the same time, this phenomenon is not new, and there is no clear argument for why estate tax avoidance would have increased over time. Cooper (1979) dubbed the estate tax a "voluntary tax" in the 1970s, before any evidence would suggest that wealth inequality started growing. He showed that many aggressive estate tax planning techniques were possible at that time. Most of the loopholes he discussed can no longer be used, but new approaches have become available. The main constraint to aggressive tax planning, stressed by Schmalbeck (2001), is reluctance to relinquish control over wealth—effective estate tax planning inevitably corresponds to transfers with at least some irreversible aspects. Indeed, the available evidence suggests that there is too little tax planning in this context relative to what a fully tax-minimizing taxpayer would do (Kopczuk 2013).

Estate tax data that underlies the estate multiplier technique does not cover the full population. Hence, it cannot directly be used to provide an estimate of aggregate wealth, which in turn is necessary for constructing estimates of the share of wealth held by the top 0.1, top 1, or top 10 percent. In Kopczuk and Saez (2004a), we address this issue by constructing estimates of aggregate wealth using the Flow of Funds data. Saez and Zucman (2014) build on the same approach to construct aggregate wealth in their application of the capitalization method.

Capitalization Method

The idea behind the capitalization method of estimating wealth is straightforward. If we can observe capital income $k = rW$, where W is the underlying value of an asset and r is the known rate of return, then we can estimate wealth based on capital income and capitalization factor $1/r$ defined using the appropriate choice of rate of return. Many categories of capital income are subject to income taxation and hence income tax data may be used to implement this approach. Income tax data is "tax unit"–based; the unit may be a married couple or individual, with or without children, depending on tax-filing status selected by the taxpayer. Estimates obtained using this approach are likely closer to household (rather than individual) distribution of wealth. This method has a long history, although it has been rarely used in recent decades. Saez and Zucman (2014) implement and generalize this approach to construct what they refer to as "distributional Flow of Funds"—allocating aggregate wealth and its changes to different segments of the wealth distribution.

As one might expect, some practical difficulties arise in applying this approach. First, not all categories of assets generate capital income that appears on tax returns. For example, defined contribution pension plans do not generate taxable income as the funds accumulate. Owner-occupied housing does not generate annual taxable capital income, although it corresponds to property taxes that may be used to approximate its value in a rudimentary sense. The return on some types of

investments is primarily taxed as capital gains if sold (capital gains are very problematic to deal with adequately, as discussed below) and are often held until death of the taxpayer, in which case they benefit from an increase in basis ("step up") and the underlying gain is never taxed on the individual level. Saez and Zucman (2014) report that capital income on tax returns represents only about one-third of the overall return to capital. The rest has to be imputed based on other information. Regarding capital gains, they either have to be explicitly accounted for, or capitalization factors need to be adjusted for pricing effects that correspond to unrealized returns. Works of art, closely-held businesses, and farm assets are examples of problematic categories with no easy fix. As a way of illustration, these categories account for 4 percent, 10 percent, and 3.7 percent of assets reported on estate tax returns in 2012 for taxpayers with over $20 million of assets (roughly a threshold for the top 0.1 percent of the wealth distribution). Also one needs to impute wealth in an explicit manner for categories of assets, such as personal residence, life-insurance, or pension funds, that do not generate income that is observable on individual tax returns. Saez and Zucman argue that these types of assets are not very important at the top of the distribution.

Second, both realized and expected returns to capital vary by asset, but only a very rough division of capital income is available on income tax returns: specifically, income tax returns include dividends, interest, capital gains, rents and royalties, and business income. Piketty (2014) argues that the rate of return to large portfolios exceeds the rate of return to smaller ones (see his discussion on pages 431 and 449, for example). Saez and Zucman (2014) effectively attribute such differences in rates of return to differences in portfolio composition between major assets classes corresponding to the few income streams that can be separately observed on tax returns, without allowing for correlation of rates of return within an asset class with the position in the income distribution.

Third, the capitalization approach assumes that capital income on tax returns on average represents normal return to wealth. There are a number of reasons for concern about this assumption, although it is hard to assess their importance. For example, some markets may be structured in favor of well-positioned individuals. An extreme example would be insider trading. A less-extreme example would be unequal access to high-yield investments, like those created by hedge funds that have high initial investment requirements. A benign but important example would be the extraordinary returns accruing to skilled entrepreneurs or investors. In each of these cases, the capitalization method would overestimate the level of wealth: instead of dividing the observed income by the actual realized rate of return, it would adjust it by a smaller, normal, rate of return.

Fourth, some types of income treated as return to capital on tax returns do not correspond to a person's underlying stock of wealth in a clear way. For example, the "carried interest" rule allows managers of certain investment funds to treat part of their compensation for managing assets as capital gains that are taxed at preferential rates. This is one of many examples of taxpayers acting on the strong incentive for those who face high marginal income tax rates to find ways to characterize their

labor income as capital income. Other examples include payment through qualified stock options and certain choices about form of compensation in closely held firms. Such situations in which compensation is disguised as capital income are another reason why observed capital income might be higher than the normal rate would indicate, resulting in an overestimate of the underlying stock.

Fifth, wealthy individuals may in fact be those who received what, in retrospect, appears to be a very high rate of return. Obvious examples include successful technology companies—say Microsoft, Apple, or Google—that made their owners into billionaires. The capitalization method can capture the underlying stock of wealth after the valuation has already increased if assets pay, on average, normal dividends—although rapidly growing companies often do not pay dividends (Google still does not; Apple has only started in 2012; Microsoft initiated its dividend payouts in response to a dividend tax cut in 2003). But the capitalization method does not capture gain in the stock of equity wealth until individuals realize capital gains. Even if they do, such capital gains realized during explosive growth would correspond to extraordinary rates of return, but the capitalization method would interpret them as the outcome of a normal rate of return and hence would overestimate the underlying stock of wealth. It seems plausible that the prevalence of these types of issues is larger at the top of the distribution and that it has increased in recent decades with a rise in initial public offerings, weakening the attractiveness of the claim that such issues may somehow average out. Indeed, capital gains are an issue in general for the capitalization method, because income tax returns do not contain information about the holding period, which is necessary to capitalize them properly.

Sixth, the capitalization method is subject to biases due to tax avoidance. In fact, most tax avoidance/planning approaches that would skew estate tax data are going to leave a footprint in income tax data as well. As a trivial example, transfers of any income-generating assets would do so.

Despite these issues, the capitalization method produces estimates of wealth concentration that are parallel to the one obtained using the estate multiplier method until about 1986, as shown earlier in Figure 1. The key question, tackled in the next section, is to understand the source of differences in trends since then.

Saez and Zucman (2014) present a variety of validation checks for the capitalization method. For example, if one looks at the income reporting by foundations and applies this method, it does a good job of estimating the underlying wealth of the foundation. Of course, foundations are likely to be a poor counterfactual for the very wealthy individuals because foundations tend to be more diversified in their investments (in particular, for regulatory reasons) and they are nontaxable. Using matched income and estate data from the 1970s, Saez and Zucman also show that there is correspondence between wealth and capital incomes, which supports assumptions of the capitalization method. As another validation check, the Survey of Consumer Finances includes both income and wealth data, and the authors again show that the capitalization method allows the inference of wealth from the income data. Thus, there are surely reasons to be open to the possibility that the capitalization method may perform well in estimating wealth distribution.

Lists of the Wealthiest

Lists of the wealthiest Americans have the disadvantage of being based on valuations reported by journalists, which for a variety of reasons may contain errors or biases. However, one great advantage of such lists is that a researcher can identify specific people on the list and thus can identify whether their wealth comes from wages, other labor income, capital income, or inheritance. They also allow for looking at the age of top wealth-holders, their industry, and other factors.

The best-known of the lists of wealthy Americans is the Forbes 400. Using wealth as reported by Forbes, this group accounts for about a 2 percentage point increase in the total share of wealth at the top 1 percent (or the top 0.1 percent) between 1983 and 2013 (Saez and Zucman 2014). However, there are reasons to be concerned about the quality of this data. For example, Piketty (2014, pp. 441–443) is skeptical because he thinks that inherited wealth may be underrepresented. A direct comparison of estate tax returns and Forbes data by researchers from the IRS Statistics of Income Division (Johnson, Raub, and Newcomb 2013) finds that actual estates correspond to only about 50 percent of reported Forbes values. Part of this discrepancy may be due to tax avoidance and to a different way of allocating wealth (estate tax is individual, while Forbes often reports wealth for a "family"), but the gap is still very large. Possible reasons for overestimates in Forbes reports include difficulty in observing debt and differences in valuation approaches.

There are other historical lists going further back than Forbes. An impressive list of the 4,000 wealthiest Americans was published in 1892 by the *New York Tribune* newspaper. The website Classification of American Wealth (http://www.raken.com /american_wealth/) compiles many sources of information on top wealth-holders. Unfortunately, such sources are not systematic enough to allow for studying trends over time.

Understanding Discrepancies between Data Series

From about 1916 up until the 1960s, there are only two available approaches to estimating the evolving distribution of US wealth: the estate multiplier approach and the capitalization method. They agree that inequality in the distribution of wealth peaked in the 1920s, fell during the 1930s and into the 1940s, and then was mostly unchanged from the late 1940s up through the 1960s. As illustrated earlier in Figure 1, these data disagree on the level of wealth inequality during this time when looking at the top 1 percent, with the capitalization method usually providing higher estimates than the estate tax method. They are much closer for the smaller top 0.1 percent group. Possible straightforward explanations of the systematic difference in levels for the top 1 percent are differences in the unit of observation (individual versus "tax unit") and difficulty in observing debt on income tax returns.

There is one discrepancy during this time frame that is worth noting: the differing behaviors of the estate tax and capitalization series (as shown in Figure 1) around the time of the Great Depression. The estate tax approach shows an

Figure 3
Composition of the Top 0.1% Wealth Share
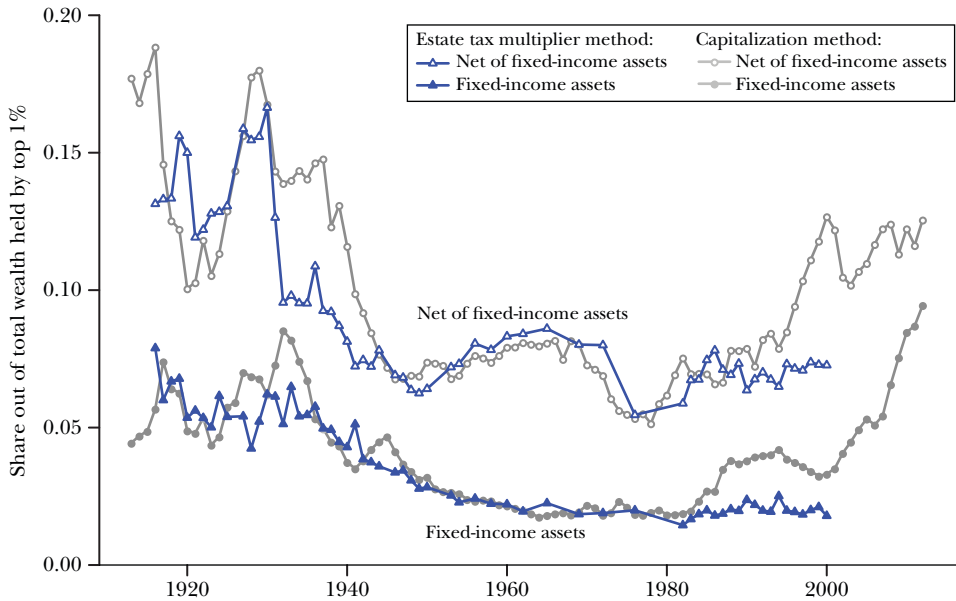
Source: Author using data described in the text.
Notes: The figure splits the estimated share of wealth accruing to the top 0.1 percent into two components: fixed income assets and everything else. The sum of the two components adds up to the share of the top 0.1 percent for the corresponding method. SCF is the Survey of Consumer Finances.

immediate decline in the share of wealth held by the top 1 percent during the Great Depression. Surprisingly, the capitalization method shows a smooth and fairly steady decline throughout the late 1920s through the 1940s, with the largest annual declines in the late 1930s and 1940s. This pattern resembles the Piketty and Saez (2003) finding that income inequality experienced the most rapid decline only in the 1940s.

Figure 3 shows what accounts for this difference. The figure splits the estimated share of wealth accruing to the top 0.1 percent into two components: fixed-income assets and everything else. Equities account for most of the latter category so that it primarily traces their dynamics; in particular, the share accounted for by real estate is fairly smooth and does not affect the qualitative pattern of the series. The sum of the two components adds up to the share of the top 0.1 percent for the corresponding method. Both methods show the decline in the non-fixed-income component (driven by equities) after 1929, although the decline in estate multiplier series is much steeper. Strikingly, the two series for the non-fixed-income component diverge throughout the 1930s. Furthermore, closer inspection of the underlying data available in online appendices to Saez and Zucman (2014) reveals that the capitalization factor for fixed income increases dramatically after 1929, reflecting lower yields, and

that this effect is behind the temporary increase in the fixed-income component visible on Figure 3 in the early 1930s. The overall result is a relatively gentle decline in the overall share of the top 0.1 percent visible on Figure 1. Still, the *increase* in the share accounted for by the value of fixed-income assets in the capitalization series on Figure 3 nevertheless corresponds to about a 10 percent *decline* in the real value of such assets between 1930 and 1932.

There is of course the question of which series does a better job in representing dynamics over this period. Given similar dynamics of the two series before and after this episode and given that the estate tax captures wealth directly while the capitalization series relies on hard-to-verify assumptions about the relationship between capital income and underlying stock, it seems reasonable to suspect that the latter approach has trouble picking up distributional dynamics in the aftermath of Great Depression. In particular, it is hard to see why the estate tax series would have exaggerated the extent of decline in non-fixed-income assets between 1930 and 1932.

From about 1960 up through the early 1980s, some survey-based evidence on the wealth distribution becomes available through predecessors of the modern Survey on Consumer Finances. Together with the estimates from the estate tax approach and the capitalization method, the general pattern is that the level of inequality of the wealth distribution remains relatively unchanged throughout this period—although there is again a difference in the levels produced by the alternative methods as far as the top 1 percent is concerned (though the top 0.1 percent coincides remarkably well for capitalization and estate multiplier approaches).

However, for the period since about 1986, the trend in the distribution of wealth differs across these approaches. Estimates of the distribution of wealth based on the Survey of Consumer Finances and the estate tax method show little or no rise in the share of total wealth held by the top 1 percent in the last 30 years, while the capitalization approach finds a substantial rise (as shown earlier in Figure 1). In addition, the Survey of Consumer Finances data shows that the share of wealth received by the 90th to 99th percentile is rising in recent years, while the capitalization method suggests that the share of wealth for this group is falling.

How can these differences be explained? Some of the possible explanations include lower mortality rates for the wealthy (which could lead to biases in the estate tax method), concerns over survey representativeness (which could lead to biases in the survey-based method), trends in the bias in the rate of return assumptions under the capitalization method, and changes in the relationship between wealth and individual capital income on tax forms driven, for example, by changes in tax law (which could lead to biases in the capitalization method) or tax avoidance (which would affect both capitalization and estate multiplier approaches).

Composition of Top Wealth and Tax Incentives

A potential problem with the two tax-based approaches arises due to changes in tax incentives over the years. First, both approaches may be skewed by tax avoidance and evasion. While this would lead to understating the level of concentration, it is less clear that this would make a big difference for the trends because tax avoidance

is hardly a new phenomenon and there is no clear presumption that it has secularly increased or declined over time. While international tax sheltering may be perhaps a bigger issue nowadays, corporate tax sheltering has likely been a much bigger issue in the past. The notion that tax avoidance has increased over time is also hard to reconcile with the evolution of tax rates. The top marginal income tax rate was above 60 percent from mid 1930s and 1981, and reached as high as 94 percent at its peak. It was then dramatically cut to 28 percent between 1981 and 1986 and remained below 40 percent ever since. Furthermore, tax avoidance is likely to affect both methods simultaneously. In particular, avoiding the estate tax usually entails transfer of assets and often income associated with them, so that it is likely to affect both estate multiplier and capitalization methods together.

Certain specific tax events appear important in understanding the discrepancy between the data series. The Tax Reform Act of 1986 in particular created an incentive to shift income from corporate to individual tax returns in a way that generated a massive behavioral response (Gordon and Slemrod 2000). The single largest short-term increase in top income shares according to Piketty and Saez (2003) takes place between 1986 and 1988 and reflects precisely this incentive. This is also the exact time when the capitalization measure of wealth begins to drift upward. There is no similar response at that point in time in estate multiplier estimates of wealth. This observation suggests the possibility that the capitalization method of estimating wealth, which is based on income-tax sources of information, may be responsive to tax-driven behavior in reporting or realization of capital income in ways that direct measures of wealth are not. More generally, changes in incentives and the repeal of the key provisions that had been behind some pre-1986s corporate tax shelters (such as the repeal of the "General Utilities doctrine") likely increased the extent to which wealth is revealed on individual-income (rather than corporate) tax data. These developments also potentially explain why the Survey of Consumer Finances—which, at least in principle, should not be biased by changes in tax treatment—yields larger wealth concentration in the top 1 percent in the 1960s and early 1980s than the capitalization method does, and why this difference disappears over time.

As in the aftermath of the Great Depression, the discrepancy between the two data series may also be traced to discrepancy in the composition of top wealth shares. As Figure 3 demonstrates, the sharp separation in the two series in 1986 is initially driven by the fixed-income component. Two incentives associated with the Tax Reform Act of 1986 may offer a potential explanation here. First, the reform significantly reduced deductibility of interest payments and may have increased net capital income reported on income tax returns, thereby driving up the estimate of its share under the capitalization method. Second, the shift from a corporate to an individual income tax base should have led to increases in all types of business-based income, including categories classified as fixed income.

Going forward, the estate tax series appears to completely miss the late 1990s stock market bubble and so does the Survey of Consumer Finances (although the infrequent timing of that survey may offer a partial explanation here), while

the bubble is clearly visible in the capitalization series. This is very puzzling. It is possible that the estate tax somehow misses owners of successful tech companies who are relatively young and not likely to die, although in principle it should not be an issue since the observations for the few young individuals who do die would just end up being heavily weighted. One would also think that portfolios of other individuals would be partially invested in tech stocks, so that the run-up should be visible. None of these appears to be the case. One potential explanation is that estates may elect so called "alternate valuation" under which assets are valued at a later date than death (though, generally within a year)—this could result in smoothing the peak of the bubble, but it would be unlikely to eliminate its presence altogether. Hence, this piece of evidence appears to support the capitalization method. However, it also simultaneously casts doubt on one of its assumptions: in order for the, clearly very rich, estate taxpayers to miss the run-up in stock prices due the tech bubble, their estates had to be insufficiently diversified relative to what the capitalization method assumes. Put differently, this piece of evidence supports the idea that very high capital incomes on individual tax returns reflect extraordinary rather than normal returns.

The most striking feature of the estimates for the 2000s is a huge run-up of fixed income-generating wealth in the capitalization series. In fact, this run-up accounts for virtually *all* of the increase in the share of the top 0.1 percent between 2000 and 2012 and most of the increase since 2003. The underlying change in taxable capital income (reported by Saez and Zucman 2014, in their figure 3) is nowhere as dramatic. The share of fixed-income in overall capital income actually falls, as would be expected when yields fall. Instead, the (almost) tripling of the fixed income component on Figure 3 (from 3.3 percent of total wealth in 2000 to 9.5 percent in 2012) is driven by an increase in the underlying capitalization factor from 24 to 96.6. This is precisely what the method is intended to do: as yields have declined, the capitalization method should weight the remaining income much more heavily. This increase—if real—would correspond to enormous rebalancing of the underlying portfolios of the wealthy throughout the 2000s. An alternative possibility is simply that the capitalization factors are difficult to estimate during periods of very low rates of return, resulting in a systematic bias.

Mortality Rates for the Wealthy

As noted earlier, projecting from estate taxes to the general population requires using a mortality rate: the approach treats those who have died as a representative sample from the population. However, the wealthy have a lower mortality risk than the general population. Indeed, Saez and Zucman (2014) cite evidence suggesting that socioeconomic mortality differentials for broad demographic groups may have increased in recent decades. Furthermore, to shed a light on mortality changes at the very top of the wealth distribution, they use confidential IRS data, and they report that the mortality of those who are college-educated is a good approximation of mortality for the top 10 percent of the wealth distribution but that this proxy overestimates mortality rates higher in the wealth distribution. For example, their

mortality rate evidence implies that mortality rates for 65 to 79 year-old males who are in the top 1 percent of the distribution are three quarters of the mortality rates of those in the top 10 percent. These are enormous differences in mortality rates: to put them in perspective, this estimated differential in mortality is bigger than that between the top 10 percent of the wealth distribution and the population average. Furthermore, they show that this discrepancy has increased since the 1970s and argue that the implied bias in estate multiplier might be able to explain the difference in trends between the estate tax method and the capitalization method.[4]

This explanation is conceptually plausible, but the estimated gap in mortality rates for the very wealthy is both very large and unexplored elsewhere in the literature, so the subject clearly requires further research. For example, an alternative possible explanation for their finding of such a large mortality advantage at the very top of the wealth distribution rests on the following observation: by construction, they report mortality rates for individuals with high capital income (which they interpret as high wealth); if high capital income represents active rather than passive returns (because it is a form of compensation for actively running or managing a business, for example), then individuals with high capital income are partially selected on health—it is being healthy that allows them to be active beyond retirement. On the flip side, individuals who are sickly may instead have an incentive to engage in tax planning and not realize capital income; in particular, there is a strong tax incentive not to realize capital gains until death in order to benefit from the step up of the basis of capital gains at death. As I will argue in what follows, it is likely that individuals at the top of the wealth distribution have become increasingly self-made, so that one might plausibly expect that this type of selection has become stronger over time. In addition, even such large increases in the mortality advantage of the very wealthy are still not large enough to explain the divergence between the capitalization and estate multiplier methods after the mid 1980s.[5]

Inclusion of Top Wealth-Holders?

As noted earlier, the Survey of Consumer Finances explicitly excludes those who appear on the Forbes 400. Saez and Zucman (2014) argue that one reason for the discrepancy between the SCF and the capitalization-based wealth estimates is that the SCF misses some of these top wealth-holders. However, remember that with more than 100 million households in the United States, the top 1 percent of the

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[4] Their evidence indicates that mortality assumptions in the Kopczuk and Saez (2004a) study of the estate-tax-based measures of the wealth distribution are not far off for the 1970s, which is also the time when the capitalization method using merged estate and income tax data produces consistent results.

[5] Assuming a Pareto distribution with parameter a, a proportional increase in mortality differentials by a factor of $1 + x$ everywhere would result in an increase in the top share implied by the estate multiplier method by a factor of $(1 + x)^{1/a}$. Taking the value of $x = 0.3$ (an extremely large value, about the maximum adjustment suggested by Saez and Zucman, 2014, for any age group) and $a = 1.5$ (from Kopczuk and Saez, 2004a), it would yield an approximately 20 percent proportional adjustment in shares—in 2000, it amounts to about 4 percentage points correction for the top 1 percent share and about 2 percentage points for the top 0.1 percent, way short of the discrepancy between capitalization and estate multiplier methods that transpired between the 1980s and 2000s.

wealth distribution involves more than 1 million households. Even if the Forbes 400 list is capturing the very tip-top accurately—and as noted earlier, that assumption is dubious—the change in the top 400 can only account for about 2 percentage points of the 15 percent increase in the wealth share of the top 1 percent from 1983–2012 that the capitalization approach yields.

Going further down the distribution beyond the top 400 and into the rest of the top 1 percent of households in the wealth distribution, it is certainly possible that the Survey of Consumer Finances does miss individuals beyond the top 400 and does not correct for it by adjusting its weighting scheme, although Kennickell (2009a) finds no evidence of that. The sampling scheme in the SCF is based on income tax information, and hence it effectively identifies the top wealth-holders in a similar way as the capitalization method does. In neither case is wealth observed a priori, but wealthy individuals are sampled based on prediction of wealth from income. If this sampling approach fails to represent the wealthy population adequately in the Survey of Consumer Finances, the capitalization method will face similar problems. Similarly, just as the SCF does not include wealth from annuities or return to human capital, the capitalization method of estimating wealth is also likely to exclude this wealth; to the extent that income from these forms of wealth is taxable on individual tax returns, it would usually be taxable as labor income.

Hence, it is unclear why this type of bias would generate growing discrepancy between wealth estimates based on the Survey of Consumer Finances and the capitalization method. Furthermore, if the capitalization method produces accurate results and the SCF somehow misses the trend, one still would need to explain why the SCF provides an estimate of the wealth held by the top 1 percent which exceed the estimates of the capitalization approach in the 1980s but falls below the estimates of the capitalization approach in the 2000s (as visible in Figure 1).

Another issue with the capitalization method lies in its estimates of the share of wealth for the 90th to 99th percentile, shown in Figure 2. While one cannot completely rule out heavy trends in nonresponse bias in the Survey of Consumer Finances lower down in the wealth distribution, my prior is that this is not a likely explanation. Assuming that the SCF is representative of wealth in the 90th to 99th percentile group—which is much easier to measure accurately than the top 1 percent—then the capitalization method is actually getting steadily worse in measuring wealth in that group. One potential explanation here may have to do with an increasing importance of wealth held in the form of defined contribution pension plans, which are not observed in the income tax data and instead are imputed by the capitalization method. But of course, if imputations matter so much for the group from the 90th to 99th percentile, they may also matter elsewhere in the wealth distribution. One should also note that estimates of wealth not at the top of the distribution (such as the share of the bottom 90 or 99 percent) should be treated with caution: because many forms of wealth held lower in the distribution (pensions, housing) do not generate taxable income and require imputations, such estimates are effectively residuals obtained by subtracting estimates of the wealth at the top of the distribution from the overall wealth and hence contain little independent information.

Overall, the existing evidence on what happened to the concentration of wealth in the last few decades is not conclusive. My preference is to rely on the survey-based approach using the Survey of Consumer Finances and the estate-tax approach, primarily because of the strong assumptions and imputations needed to apply the capitalization methods in a way that gives consistent results over time. But this is a lively area of research, and the interpretation and implementation of all three of these approaches to estimating the concentration of wealth continues to evolve.

The Interplay of Income and Wealth Inequality

If, as the Survey of Consumer Finances and estate tax multiplier approaches say, the wealth share of the top 1 percent has *not* been rapidly trending upward, how can we reconcile this with the clear-cut evidence of growing *income* inequality? If, on the other hand, the capitalization method gets things right, is there an economic explanation for why the other two approaches seem to miss the growth in wealth concentration? I suspect that the difficulty here lies in the nature of changing inequality. Certainly, if the top 1 percent of incomes and the top 1 percent of wealth were the same people, growth in income shares would be expected to correspond to growth in top wealth shares.

However, the US distribution of income has not been stable in recent decades. There has been an increasing concentration of earnings over time, especially at the very top of the income distribution, as observed by Piketty and Saez (2003) and reiterated by many other authors. In addition, the nature of top incomes has changed since the 1920s—the last time when the share of income going to the top 1 percent was this high. In recent years, income at the top levels has been dominated by labor income; back in the 1920s, it was dominated by capital income (Piketty and Saez 2003). This change in the sources of income at the top suggests that the relationship between income inequality and wealth inequality has likely changed too.

The importance of inheritances as the source of wealth at top of the wealth distribution peaked in the 1970s and has declined since then, according to our analysis in Edlund and Kopczuk (2009). Our primary evidence is based on the gender composition of estate taxpayers and the observation that inherited wealth is much more equally distributed between sons and daughters than self-made wealth is. At the extreme tail of the wealth distribution, the trend has been toward observing more men, hence revealing the increased importance of self-made wealth. We also provide supportive evidence from a number of other sources, including the Forbes 400 list, that shows that the importance of inheritance among the richest Americans has declined since 1982 when the list was first published. Kaplan and Rauh (2013) provide a more comprehensive analysis of the Forbes 400 list and reach a similar conclusion. These observations suggest that the top of the wealth distribution is in flux. Individuals who are wealthy nowadays are less likely to come from wealth than in the past and more likely to have reached the top through earnings or entrepreneurial success.

Because wealth is an accumulated stock, not an annual flow, its distribution is bound to move more slowly than earnings distribution. The last 30 years have likely seen a transition in the upper parts of the wealth distribution, and this transition may still be taking place. Such a transition is consistent with a number of potential explanations I have given for why estimates of the trend in wealth concentration have been inconsistent in recent decades. For example, the increased importance of self-made, busy, active individuals among top wealth-holders is a plausible conjecture for why there could be a trend toward nonresponse bias among the wealthiest in the Survey of Consumer Finances and difficulties in observing them on estate tax returns. It is also a plausible reason for why large capital incomes may be increasingly reflecting work rather than underlying assets—which would then explain why there might be an observed trend in the mortality differential between people with high capital incomes (who are selected on being active) and everybody else. Without taking a stand on which of the preceding stories is most empirically important, these changes can plausibly reconcile the differences in methods of estimating the concentration of wealth, regardless of which one turns out to be closest to being right.

The central challenge for future work is to go beyond measuring income and wealth separately to try to understand how the joint distributions of income and wealth have been evolving over the last few decades—a period that certainly does not represent a steady state. Recognizing that the sources of income and wealth have been evolving for top income- and wealth-holders is a first step to improving our understanding of the trends and economic forces behind those patterns.

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