MORE THAN THEY REALIZE: THE INCOME OF THE WEALTHY

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Income realized for tax or survey purposes usually understates economic income for the wealthy because capital income recognition is often voluntary. Using estate tax returns filed in 2007 linked with income tax returns from 2002 to 2006, we find realized returns to capital for most wealthy individuals are less than 2 percent, with the richest filers reporting the lowest returns. Because of tax preferences, taxable returns are even smaller than reported returns. Consequently, studies relying upon realized income tend to overstate tax progressivity, understate income inequality, and miscalculate the distribution of wealth when derived through income-capitalization techniques.

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I. INTRODUCTION

Income reported on tax returns and literally all survey measures of income underestimate true economic income for wealthy people because the bulk of their income comes from capital, much of which is accrued rather than realized. A substantial portion is excluded from recognition altogether, as in the case of accrued gains not realized by the time of death and returns to home ownership. Because studies of income and taxation often fail to account for this, they tend to underestimate income inequality and overestimate the progressivity of taxes.[1] Further, studies that engage in the difficult estimation of wealth inequality through income capitalization methods can be improved by accounting for different rates of realization by different classes of individual taxpayers or survey respondents.

We help close this information gap through use of a new data source — federal estate tax returns from 2007 linked to federal income tax returns from 2002 through 2006 — that captures wealth information for decedents with gross estate (assets) of at least $2 million and allows us to calculate realized returns to capital across wealth categories.[2] We find that the vast majority of wealthy decedents (whose holdings consist largely of stocks, real estate, bonds, and various business assets) realized nominal returns to capital of 5 percent or less and typically less than 2 percent. At the same time, the stock market enjoyed long-run real returns of 7 to 8 percent

[1] Some distributional tables produced by the Tax Policy Center and Treasury attempt to impute corporate gains as they accrue by grossing up reported dividends received by some ratio of aggregate corporate earnings to aggregate dividends. This partly gets around the problem of ignoring accrued gains in measuring income, but it cannot get at differences among individuals in their dividend or realization rates or account for accrued gains outside of corporate stock.

[2] Our study is well timed for several reasons: (1) it predates several jumps in the estate-tax filing threshold, eventually scheduled to reach $11 million in 2018, (2) in one year (2010) the estate tax was eliminated for those willing to forego a step up in basis of assets and pay tax on accrued gains as an alternative, and (3) the data pertain to people who died before the Great Recession began, which likely generated short-run behavioral effects that our dataset avoids. The National Bureau of Economic Research dates the beginning of the Great Recession as December 2007. http://www.nber.org/cycles/cyclesmain.html.

(Damodaran, 2015; Ibbotson et al., 2013; Smeeding and Thompson, 2011).[3] Taxable returns to capital in our sample were even lower; in the aggregate, taxable returns were less than 3 percent and the predominant rate was in the 1 to 2 percent range. These results are consistent with earlier work (Steuerle, 1985a) indicating that in aggregate most capital income is not reported on tax returns.

Strikingly, realized returns to capital — whether taxable or not — for the wealthiest of decedents were lower than those for their less-wealthy counterparts. We speculate that this indicates portfolio allocation toward assets with returns that are accrued but not realized, often for tax planning purposes, but not that the very rich earn lower true economic returns than the moderately rich.

The following sections offer theoretical background, describe the data more fully, present information on returns to capital across wealth categories, and report results from a regression analysis. We conclude with the implications of our work.

II. THEORETICAL BACKGROUND

A. Why Taxable Income Differs from Economic Income

The literature on the elasticity of taxable income with respect to marginal tax rates models utility as a positive function of disposable income and a negative function of reported income (Feldstein, 1999; Saez, Slemrod, and Giertz, 2012). Numerous empirical studies show that people — especially high-income people — change the timing of income or the form in which it is received in response to changes in the tax system (e.g., Auerbach and Slemrod, 1997; Auten and Carroll, 1999; Burman, Clausing, and O'Hare, 1994; Carroll and Joulfaian, 1997;

[3] Data provided by Robert Shiller yield a mean of the 10-year moving average of real returns to equities from 1987 to 2006 of just over 6.8 percent. http://www.econ.yale.edu/~shiller/data.htm. Peter Diamond cites unpublished work by Jeremy Siegel that reports average real returns to equity over the period 1946 to 1998 as 7.8 percent. https://economics.mit.edu/files/637.

Feenberg and Poterba, 1993; Feldstein, 1995; Goolsbee, 2000; Goolsbee, Hall, and Katz, 1999; Saez, 2004; Slemrod, 1996). This research suggests that persons facing higher statutory marginal tax rates have a greater incentive to seek tax-preferred income and to avoid realization if possible. One might expect these patterns would occur across wealth classes as well as income levels. Several studies (Johnson and Bourne Wahl, 2004; Johnson, Raub, and Newcomb, 2012; Steuerle, 1983, 1985b) find that wealthier people realize lower taxable returns to capital.

We expect that wealthier people also tend to achieve higher-than-average economic returns from their investments. As a simple empirical matter, higher returns accompany the types of assets — stocks and real estate — that are more prevalent in the portfolios of rich people (Steuerle, 1975).[4] Occasional individual examples also suggest high economic and low realized rates of return for the wealthy. Warren Buffett, for instance, released a tax return showing a realized rate of return of about 1/50th of 1 percent of his net worth on a portfolio comprised largely of a stock that had been producing 10 percent returns in recent years.[5]

Two types of selection bias further warrant the supposition of higher economic returns for those at the top: ex post measures of who is wealthy naturally include those more successful than peers making similar ex ante levels of investment, and the wealthy are more likely to include longer-term investors who achieve higher returns because they worry less about shorter-term risks. Thus, wealth and economic income from wealth are likely to be more concentrated at the top than taxable returns to capital alone would indicate.

[4] Data from Aswath Damodaron indicate an arithmetic average of nominal returns to the Standard & Poor's 500 Index (S&P 500) to be 13.41 percent over the period 1977–2006, as compared to 5.99 for 3-month Treasury bills and 8.41 for 10-year Treasury bonds. http://pages.stern.nyu.edu/~adamodar/. The average of nominal returns to real estate investment trusts over the period was 16.36. https://wilshire.com/indexcalculator/index.html# . Average nominal returns to AAA corporate bonds was 9.86. https://fred.stlouisfed.org/series/AAA .

[5] See http://www.taxpolicycenter.org/taxvox/what-trumps-and-buffetts-tax-returns-say-about-how-wealthy-are-taxed for further detail.

B. Demographic and Other Considerations

The tax system is not the only influence on the timing and type of income recognized. An individual's taxable income can also be thought of as the outcome of a complex optimization process in a world of uncertain lifetimes, unknown health status, and possible bequest motives. Yaari (1965) offers the seminal work on intertemporal choice in the face of uncertainty about the date of death; other scholars have expanded on Yaari's work, extending the theory and offering various types of empirical evidence (e.g., Dammon, Spatt, and Zhang, 2001; Hurd, 1987, 1989; Kopczuk and Lupton, 2007; Kotlikoff and Summers, 1981; Kuehlwein, 1993). These works suggest that updated information about the likelihood of death — for instance, age and extraordinary medical expenses — could affect the amount and type of income realized. Older people are also more likely to be retired and thus receiving no income from labor.[6] This could influence their decision to realize capital income.

Sex, marital status, dependency rates, and charitable desires may also affect realized returns. Men and women have different average lifespans and vary in their level of engagement in business and investment activity. Consumption needs are higher for married couples than for singles, and the marital deduction on the estate tax form permits bequests to spouses to escape estate tax, at least temporarily. More dependents mean more mouths to feed as well as the potential for greater number of heirs. A stronger desire to give during life — in conjunction with the extra benefit of tax deductibility for charitable contributions — could lead to greater realized capital income.

[6] In years 2002 through 2006, only 15 to 20 percent of decedents aged 70 and older received wage and salary income; the range for decedents younger than age 70 was 60 to 70 percent.

Finally, home ownership influences returns recognized for tax or survey purposes. Although homeowners enjoy implicit rents, these are not counted or even measured for most purposes. People for whom their residence is a major asset might therefore report lower realized capital income than similar individuals whose residence is a smaller share of their portfolio.

III. DATA DESCRIPTION

The Statistics of Income (SOI) Division of the Internal Revenue has created a dataset that links federal estate tax returns (Form 706) filed for persons who died in 2007 to their federal income tax records (Form 1040) for the years 2002–2006. A total of 36,889 Forms 706 were filed for individuals who died in 2007 and whose total gross estates were at least $2 million.[7] Our stratified sample of 12,296 observations uses sample weights to report results pertaining to the entire population of estate tax filers who died in 2007, with the wealthiest estates sampled at 100 percent.[8] Compared to standard survey data, SOI data provide much more information at the top of the wealth distribution, making these data especially useful for analyzing returns to capital for the very rich.[9]

A. Wealth

Form 706 reports the gross estate left by the decedent as well as substantial information about the types of assets held, including real estate, stocks, bonds, mortgages, notes, cash, family limited partnerships, and the like. All told, persons who died in 2007 and met the estate-tax filing

[7] All decedents with total gross estate at least equaling the filing threshold — $2 million in 2007 — are required to file a Form 706. These forms were filed in the years 2007–2009 for persons who died in 2007 with a total gross estate of at least $2 million. The relatively long data-collection period is because executors have up to 15 months after the decedent's death to file an estate tax return, with longer extensions sometimes permitted.
[8] The stratification variables are date of death, size of estate, and age.
[9] The Survey of Consumer Finances does oversample high-wealth individuals but by design omits the Forbes 400 (the top 400 wealth holders in the United States for the given year) (Bricker et al., 2015; Kennickell, 2011). Kopczuk (2015) evaluates different methods for estimating the wealth distribution, and Vermeulen (2017) proposes a way to improve estimates of wealth at the top by combining the Survey of Consumer Finances, the European Household Finance and Consumption Survey, and Forbes-400 information.

threshold left over $229 billion in total gross estate. Average gross estate was $6.21 million and median gross estate was $3.25 million.

A better measure than gross estate of the wealth available to individuals is *net estate*: gross estate plus the small amount of valuation discounts permitted by the IRS to reduce estate-tax burden minus debts and mortgages.[10] Average *net estate* was $6.22 million and median *net estate* was $3.21 million. Just over 70 percent of filing decedents had *net estate* of between $2 and $5 million; just under 1 percent had *net estate* over $50 million.

Among 2007 estate-tax filers, those with a *net estate* of $2 to $5 million held about a quarter of their assets in stock whereas those with a *net estate* of $50 million or more held nearly half. [11] Personal residence comprises an increasingly smaller portion of portfolios as wealth increases, falling to 1 percent for those with $100 million or more in wealth. Table 1 reports the distribution of assets and debts for decedents in different wealth categories.

(TABLE 1 ABOUT HERE)

B. Realized Capital Income

[10] Some assets, such as ownership shares of closely held businesses and limited partnerships, do not have a readily ascertainable market value. Valuation discounts allow some estates to report a value for estate tax purposes that is lower than the likely true market value of the asset at its highest and best use. For example, assets held as a part of limited partnership shares may have a lower value if they had to be sold immediately than if they were held free and clear, due to lack of marketability. Adding back the valuation discounts better reflects the wealth of the decedent.

Gross estate includes the net value of life insurance, but no distinction is made between policies such as whole or universal life and term life. While we think we should count cash value of life insurance as part of wealth available during life, one might not want to count all of the term value of insurance received at death in excess of the cash value as wealth available during life. Our data did not permit us to exclude this amount. Fortunately, life insurance made up less than 3 percent of the value of gross estate on average, with the proportion being smaller for larger estates.

[11] The IRS collects information on gross estate reported at the date of death ("tgedod") and gross estate calculated for tax purposes ("tgetax"). These values are highly correlated, with a Pearson correlation coefficient of 0.999. Throughout the paper, we use date-of-death valuations reported on Form 706. Both tgedod and tgetax include valuation discounts, although only the discounts for tax purposes are recorded in the data set. To back out the valuation discounts from tgedod, we therefore grossed up tgedod by the fraction that tax valuation discounts represented in grossed-up tgetax. Thanks to Aaron Barnes for this useful suggestion. We also net out debts and mortgages from gross estate to be consistent with our net income measures, which subtract interest deductions taken on Form 1040.

We calculate two measures of realized capital income from information reported on Form 1040: *net capital income* and *net taxable capital income*. All income figures are in constant 2007 dollars calculated using chained gross domestic product (GDP) deflators. The measures we report are five-year averages, obtained from information on income tax returns filed by the decedent in the years 2002 through 2006. Table 2 lists the components of these two measures. To be consistent with our measure of wealth, which nets out debts and mortgages, we subtract interest deductions that appear on Schedule A.

(TABLE 2 ABOUT HERE)

Net capital income does not consider the additional reported tax preferences that yield *net taxable capital income*. Schedule C income is income from a sole proprietorship, schedule F income is farm income, and schedule E income includes rents, royalties, and income from S corporations, partnerships, estates, and trusts. Each of these schedule C, F, and E income components arguably flows from both labor and capital, so we do not necessarily want to include their full amounts in a measure of *net capital income*. Schedule E income in particular is a hodge-podge — mostly labor income for lawyers and accountants who belong to partnerships, but mostly capital income for those with passive partnership income, rents, and estate and trust income. It is also worth noting that, for some types of partnerships and trusts reported on Schedule E, individuals retain a life interest that reflects wealth and income when alive but does not carry over to estate wealth.

Individual retirement account (IRA) distributions, pensions, and annuities include income from capital earned from current and past years and a return of previously untaxed labor income. For defined-benefit pension plans, moreover, the estate reports no asset value even though the annuity had value (equal to discounted expected lifetime income) when the filer was still alive.

But IRA distributions, pensions, and annuities arguably include some current capital income, so we include a portion of these items in *net capital income*.

The amounts reported as Schedule C and Schedule F income are moderate; we chose to include half of each in our measure of *net capital income*. We also include half of IRA distributions, pensions, and annuities. Given that the bulk of our data comprises older (retired) decedents, we chose to ascribe the preponderance (75 percent) of schedule E income to capital. We acknowledge that these proportions are arbitrary; we also recognize that people in different wealth categories might choose to characterize income differently, so using constant proportions across individuals is restrictive. Consequently, we also calculated all our results using the extreme assumption that everything other than wage income could be considered *net capital income*. This had very little effect on the patterns depicted in the figures or on regression results.

Net capital income includes both taxable and tax-preferred income. Yet, as noted earlier, income realization is partly tax-dependent, and the tax literature makes clear that higher tax rates tend to lower the recognition of income (e.g., Auten and Carroll, 1999; Feldstein, 1995; Feldstein and Feenburg, 1996; Kopczuk, 2005; Saez, Slemrod, and Giertz, 2012). We therefore calculate a second measure: capital income that is effectively subject to tax at the income tax rate, or *net taxable capital income*. The maximum capital gains rate was just over 21 percent in 2002 and 2003, just over 16 percent in 2004 and 2005, and 15.7 percent in 2006. The maximum statutory income tax rate was 38.6 in 2002 and 35 percent thereafter. The effective exclusion rate for capital gains income was therefore 45 percent ((38.6 – 21)/38.6) in 2002, 40 percent in 2003, 54 percent in 2004 and 2005, and 55 percent in 2006. Because we did not have individual tax models to calculate the exact tax rate or equivalent exclusion at each margin for each individual, we use these exclusion rates as approximations. In other words, we assume that all capital gains

were taxed at the capital gains tax rate, which in 2002 is equivalent to 55 percent of capital gains being taxed at the income tax rate.

One drawback of using tax returns to calculate the rate of return on wealth is that estate tax returns naturally pertain to individuals whereas income tax returns can be filed jointly by married couples. In determining how to attribute income to individuals, we focus on command of resources within a household rather than labor-market earning capacity. We think it reasonable to assume that, in many families, capital resources are equally available to each spouse. This is the presumption made in most states in divorce cases (http://family.findlaw.com/divorce/divorce-property-division-faq.html). In cases of joint income tax returns, we therefore attribute half of realized capital income to the decedent.[12]

C. Demographic and Other Information

As discussed in the theory section, demographic and other variables could influence the timing and form of income received. About four-fifths of decedents in our sample were age 70 or older.[13] About half were married at the time of death. Only 15 percent had a change in marital status in the five years before death. Just over half of the decedents were male. Over 85 percent of women died at age 70 or older compared to 76 percent of their male counterparts. About two-thirds of the sample either claimed dependents in 2006, reported the existence of a trust, or had

[12] No one way of allocating marital capital income is perfect. We report all our results using the assumption of equal command of resources within a household but investigated other assumptions, including allocating all capital income to the decedent and pro-rating by the fraction of wages earned by the decedent. Fortunately, using the extreme alternative assumption that all capital income accrued to the decedent has little effect on results reported in the paper. Given that women's wages on average ranged between 62 and 81 percent of men's wages in the period 1979 to 2012, one could argue that ascribing half of joint capital income is too large a fraction for married women and too small a fraction for married men. https://www.bls.gov/opub/ted/2013/ted_20131104.htm. Still, the overall message we convey seems to be robust to alternative assumptions about the allocation of capital income to joint filers.

[13] By comparison, the proportion of the overall population aged 70 or older was about 9 percent. In 2005, 12.4 percent of the population was aged 65 or older and 6.1 percent was aged 75 or older. https://www.census.gov/prod/2006pubs/07statab/pop.pdf.

gift taxes payable in 2007. Each of these three factors could indicate that the decedent had others to care for during life as well as potential heirs. Almost one-third of decedents reported a zero dollar value for personal residence at the time of death.

For the period in question, individuals could take tax deductions on Schedule A of Form 1040 for medical expenses exceeding 7.5 percent of adjusted gross income as well as for charitable contributions. Just over a third of decedents reported these extraordinary medical expenses in 2006, and slightly more than half reported these expenses in at least one year between 2002 and 2006. The average charitable contribution deduction was $17,361. Among all decedents, 87 percent took a charitable contribution deduction in at least one of the five years before death; 97 percent of decedents with *net estate* of $100 million or more took the deduction.

IV. RETURNS TO CAPITAL ACROSS WEALTH CATEGORIES

A. Total Income and *net capital income*

For estate tax filers, *net capital income* constituted a large proportion of total income in the five years before death.[14] It was increasingly important at higher levels of wealth. Figure 1 shows that, for decedents in the lowest major category of wealth (*net estate* between $2 and $5 million), *net capital income* represented 67 percent of total income.[15] For decedents with *net estate* greater than $100 million, however, *net capital income* comprised 93 percent of total income.

(FIGURE 1 ABOUT HERE)

[14] Total income equals total income reported on line 22 of Form 1040 plus tax-exempt income. The proportions reported pertain to the total received in the category for both numerator and denominator.

[15] A small proportion of estate-tax filers had net estate totaling $2 million or less. Because these decedents were much less likely to have anticipated that their estates would have exceeded the estate-tax filing threshold and thus less likely to have acted strategically with regard to estate-planning and income realization, we do not report results for them.

Figure 2 shows the proportion of realized capital gains in *net capital income* by wealth category. This proportion ranged from 33 percent for the least wealthy in our sample to 45 percent for the wealthiest. The tax-preferred nature of capital gains helps explain their prominence as an element of capital income, particularly for the very richest.

(FIGURE 2 ABOUT HERE)

Because a portion of capital gains is taxed at rates lower than income-tax rates, we can roughly translate that to a percentage excluded from taxation, as we described earlier. Figure 3 shows the proportion of net reported capital income that was subject to taxation after taking into account that effective exclusion. The range was 62 to 81 percent, with richer people enjoying smaller proportions. This implies that about one-fifth to one-third of capital income realized by the wealthy decedents who met the estate-tax filing threshold bore no federal income tax.

(FIGURE 3 ABOUT HERE)

B. Average Returns to Capital

Realized rates of return on capital were quite low across all wealth categories compared to the economic returns almost certainly earned by these individuals. For instance, the change in the S&P 500 Index ranged from 4.8 to 28.4 percent in the period 2003–2006,[16] and, as Figure 2 shows, capital gains dominate the ways that capital income is realized, while Figure 1 shows that stock is the primary asset among these top wealth holders. Of course, capital gains realized today reflect accruals from years past, so a better comparison for our realized returns is thus the 7 to 8 percent longer-term real return on stocks mentioned in the Introduction.[17]

[16] For S&P 500 figures, see http://people.stern.nyu.edu/adamodar/New_Home_Page/data.html. The S&P 500 Index lost 21.97 percent in 2002. Not surprisingly, wealthy people cushioned the impact because they could afford to take the long view on their investments.

[17] If the goal of an income tax is to tax all real income equally, then one should compare the nominal amounts included in returns with the real economic returns. The nominal amounts may overstate real returns in cases of interest receipts but understate them for other reasons.

Decedents at the very top of the wealth distribution realized a lower return to capital than did less-wealthy decedents who filed an estate tax return, particularly when it comes to taxable capital income.[18] As Figure 4 depicts, all decedents whose wealth exceeded the estate-tax filing threshold realized a return to capital of less than 4 percent. Net taxable capital income constituted less than 3 percent of wealth and, for the most wealthy, less than 2 percent.

(FIGURE 4 ABOUT HERE)

Because the value of homes constitutes a larger proportion of *net estate* at lower levels of wealth, realized returns to capital could potentially be low relative to economic income for lower wealth categories (but for different reasons than at the top). Unsurprisingly, then, Figure 4 shows that non-homeowners experienced an even steeper decline in net taxable returns to capital as wealth increased.

Our choice to average five years of income has the advantage of minimizing the effect of outliers as we calculate rates of return. Because we have only a single measure of wealth, however, returns could be biased downward for decedents whose wealth increased steadily from 2002 to 2007. By the same token, if wealth declined over this period to cover consumption needs, pay medical bills, or transfer money below the gift-tax threshold, returns could be biased upward. If the wealthiest fell into the former category and the least wealthy in the latter, that could potentially generate the observed pattern of returns. We therefore performed our analysis using only 2006 income and found similar negative patterns between wealth and realized returns.

C. Distribution of Returns to Capital

[18] Johnson, Raub, and Newcomb (2012, Fig. Q and R) find that rates of return on specific asset classes were typically lower for wealthier decedents. Single decedents with gross estate between $2 and $3.5 million realized returns of 2.51 percent on interest-bearing assets and 2.74 percent on dividend-bearing assets, whereas the figures were 2.35 percent and 2.41 percent for decedents with gross estate of $20 million or more.

Figure 5 offers additional evidence that wealthy people realize low taxable returns to capital. More than 90 percent report a taxable return to capital of 5 percent or less. Except for the lowest wealth category, the majority of income tax returns report a taxable return to capital of between 0 and 2 percent. The proportion reporting a taxable return of 2 percent or less increases as wealth increases. Notably, one-third of individuals at the highest levels of wealth reported realized taxable returns of less than 1 percent, a higher fraction than in any other wealth group. Again, keep in mind one means by which people select into the highest wealth groups: they accrue rather than spend down their wealth.

(FIGURE 5 ABOUT HERE)

D. Estimated Returns to the Living Population

Looking at rates of return only for decedents could be misleading for purposes of evaluating tax progressivity and wealth and income inequality. Those who die are older on average than those who live. Older people have different sorts of income than younger persons — for instance, older individuals are more likely to be retired and thus receiving no wage income.[19] Older people are more likely to have planned their portfolios to reflect anticipation of death. We therefore estimate returns to the living population that had at least as much wealth in 2007 as our decedents had.

One can estimate the wealth of the living population with $2 million of more of wealth by applying a multiplier to estate tax return data (Atkinson and Harrison 1978; Johnson 1998; Johnson and Moore 2009; Lampman 1962; Mallet 1908). The multiplier equals a sampling weight, which is derived from SOI sample weights and national mortality rates (by age and sex) calculated for holders of large-dollar-value annuity policies. Using these mortality rates rather

[19] In years 2002 through 2006, only 15 to 20 percent of decedents aged 70 and older received wage and salary income; the range for decedents younger than age 70 was 60 to 70 percent.

than rates for the overall population acknowledges the generally longer life expectancy associated with individuals holding higher levels of wealth.

We employ this technique to estimate rates of return to capital for the living population with assets equal to or above the estate-tax filing threshold. Figure 6 suggests that realized returns for the living population tended to be even lower than for decedents of the same wealth class. Except for those with wealth ranging from $50 to $100 million, about 40 percent realized taxable returns to capital of 1 percent or less. Over 60 percent in all wealth categories realized taxable returns of 2 percent or less, with the top wealth group receiving the highest percentage. This may reflect a greater ability to consume out of wages for the younger living population and a greater need to realize income to pay medical bills or engage in diversifying assets for the older population of those closer to death. Figure 7 shows that the net return to capital ranged from 2.1 to 3.8 percent, whereas the taxable net return to capital ranged from 1.5 to 2.6 percent. In both instances, persons aged 61 to 70 reported the highest estimated returns, perhaps reflecting pre-retirement diversification of assets such as sales of small business holdings. For all age groups, realized returns fell far short of the long-term economic returns on assets typically held by the wealthy.

(FIGURE 6 and 7 ABOUT HERE)

The implications for tax policy are obvious. The rates of realization are low enough throughout life that much income is not merely deferred from individual income taxation but excluded forever. With continually higher levels of individual exclusion from estate tax for decedents in years after this study was conducted ($11.2 million in 2018 after the passage of the Tax Cut and Jobs Act of 2017, as compared to the $2 million threshold examined here), an even

larger share of wealthy individuals will escape any individual or estate tax on much of their capital income.[20]

E. Regression Analysis

Another way to inspect the relationship between capital income and wealth is via regression analysis. As outlined in the theory section, we expect that wealthier people tend to achieve higher-than-average economic returns to capital. This would suggest that the elasticity of economic income with respect to wealth should be greater than one. If, however, wealthier people avoid realization and seek tax-preferred income, we could observe an elasticity of capital income with respect to wealth potentially less than one, and the elasticity of taxable capital income even lower.

Table 3 reports the results of regressions of the natural log of *net taxable capital income* and *net capital income* on the natural log of *net estate* and other variables, along with mean values for selected variables. We interpret our results as descriptive rather than causal, particularly because *net estate* is not exogenous.

(TABLE 3 ABOUT HERE)

Perhaps most interesting are the coefficients pertaining to *net estate*. The loglinear form of the regression permits us to interpret the coefficients as elasticities. *Net taxable capital income* was unambiguously inelastic with respect to wealth: a 1 percent increase in *net estate* corresponded to a 0.8 percent increase in *net taxable capital income*. *Net capital income,* not surprisingly, was more responsive to wealth but still inelastic. A 1 percent increase in *net estate* corresponded to a 0.92 increase in *net capital income*. Because wealthier people are likely to

[20] The Tax Policy Center estimates that only about 1,700 estates will owe any estate tax in 2018. http://www.taxpolicycenter.org/taxvox/only-1700-estates-would-owe-estate-tax-2018-under-tcja.

enjoy greater economic returns to capital, these results suggest that the rich exercise considerable control over the timing and form of income and that taxes play an important role for both.

The regressions revealed other interesting patterns as well. Our theory section suggested that age, sex, marital status, and medical needs could influence the decision to realize capital income. We find that older decedents realized more capital income, ceteris paribus. Always-single female decedents realized about 9 percent more capital income than similar female decedents whose marital status changed in the five years before death. Males realized less capital income than comparable females, particularly if they were married. And decedents who experienced extraordinary medical expenses shortly before death realized larger amounts of capital income, all else equal, but at a decreasing rate relative to wealth.

The theory section also pointed to charitable desires, home ownership, and dependency rates as factors that potentially affect realized returns. Not surprisingly, those who took larger deductions for charitable contributions also realized larger amounts of capital income, ceteris paribus. This cause-effect pattern may work in both directions: additional deductions could offset increased taxation due to any increased realization of income, and Steuerle (1987) has found that charitable giving tends to be related much more closely to realized income (cash on hand) than to available wealth and the likely economic income from that wealth. As expected, decedents who had a larger percentage of assets tied up in a primary residence realized smaller amounts of capital income, ceteris paribus. Decedents who had likely had others depending on them (as indicated by a trust, dependents in 2006, or the payment of gift taxes) and likely needed more cash to cover those additional costs realized larger amounts of capital income. Although this dummy variable could have acted as a proxy for a bequest motive, it instead appears to indicate how many people the decedent supported during life.

V. IMPLICATIONS

Warren Buffett's statement about paying tax at a lower statutory rate than his secretary was an understatement.[21] Buffett was contrasting the then-maximum capital gains tax rate of about 15 percent with the ordinary tax rate on labor income. Our research indicates that discretion in realization, particularly for the very rich, implies an even lower effective tax rate than one based only on recognized income.

Consider individuals who received a 7 percent real return (and even higher nominal return) on their capital in the long term. Assume that for tax purposes they are among the majority shown here who reported taxable income of only 2 percent or less. In the years 2003 to 2006, the top tax rate was 35 percent (and, in 2002, 38.6). Under those circumstances, the effective marginal federal individual tax rate on income from capital for top wealth holders comes to about 10 percent (2/7 x 35 percent). If 10 percent is an average figure, then many top wealth holders pay an even lower rate.

When considering taxation of capital income more broadly, these individuals certainly may also directly or indirectly pay corporate tax and property tax, and their estates may eventually be subject to the estate tax. Direct ownership of corporate shares equaled 35 percent of the cumulative value of all *net estates* examined here, for instance, and 43 percent of the value of *net estates* exceeding $10 million. We have not examined how other taxes add to overall tax burden, although recent tax law changes —including corporate tax rate reductions and a rise in the estate-tax filing threshold — mean that taxes other than the federal income tax are of reduced importance for the very wealthy.

[21] Buffett first raised the point at a fundraiser for Hillary Clinton in 2007. He later wrote an op-ed about the issue: "Stop Coddling the Super-Rich," *New York Times*, p. A21 (August 15, 2011).

Nevertheless, the nation continually changes the way it taxes capital income earned by individuals, not just because of evolving voter preferences but also due to forcing actions such as budget imbalances and the temporary nature of tax provisions like many enacted in 2017. Optimal tax policy requires a fuller analysis of overall tax burden, so that any attempt to redistribute corporate, individual income, and estate taxes should clearly consider the extent to which capital income is realized at the individual level – the issue on which we provide extensive evidence here.

The results presented here also have implications for estimation of wealth holding and its concentration. Recent work on wealth inequality in the United States suggests that wealth may be becoming increasingly concentrated in the hands of a few, although the evidence is decidedly mixed (Bricker et al., 2015; Kennickell, 2011; Kopczuk, 2015; Saez and Zucman, 2016; Wolff, 2012). Gauging wealth inequality via inequality in realized capital income (Piketty, 2013; Piketty and Zucman, 2014; Saez and Zucman, 2016) is problematic, however, because capital-income recognition is often a voluntary event, especially for the wealthy.

It is clear, moreover, that using capital income to estimate the distribution of wealth must consider factors related to differential rates of realization. Our findings indicate that wealthy decedents held substantial amounts of stock, which historically has generated a long-run real return of 7 to 8 percent, yet they typically realized returns percent of less than half that amount. As a simple example, if one grosses up wealth at 16 times capital income (a typical price-to-earnings ratio for stock and real-estate investments), then those returns with realized rates of one-half the normal economic rate should be grossed up at 32 times the realized income from that capital (capital gains and dividends). If one accounts for the higher economic returns to wealth enjoyed by the rich, then even the factor of 32 would be too small.

VI. CONCLUSION

When realized rates of return are compared to expected rates of return for long-term investments in the types of assets held by rich people, it seems clear that much capital income of top wealth holders either is not subject to federal income taxation or is effectively excluded from taxation by a preferential tax rate. Realized income from capital therefore significantly understates the true economic return to capital. For most wealthy individuals, capital income realization is a discretionary event due to the large percentage of capital held in the form of assets like corporate stock or real estate that need not be sold. Top wealth holders also tend to concentrate their wealth in assets that yield the highest average long-term returns, as well as seek opportunities to shelter assets via trusts, family limited partnerships, and other means. Hence, their lower realized rates of return do not reflect lower economic rates of return, as would be the case if they owned mainly tax-exempt securities.

These results should not be surprising. The rich disproportionately include those with above-average rates of savings and above-average success in investments. People who save more than most other individuals simply face fewer risks of a lower standard of living from short-term fluctuations in rates of return. They therefore more easily can make those longer-term investments that produce higher returns. Also, any ex post measurement of top wealth holders contains a selection bias toward those who were most successful in generating higher returns — the fruitful business venture or the right stock pick.

Policy makers interested in assessing tax burden, estimating wealth via income capitalization, and calculating measures of economic inequality must therefore take care when using realized income or taxable income. With our unique data set containing excellent measures of wealth and realized income, we have shown that the richest among us report lower returns to

capital — and even smaller taxable returns — than those less wealthy. For a variety of reasons ranging from the higher-than-average economic returns associated with the assets more likely to be held by the wealthy to the simple fact that the wealthy often got that way by saving more and getting above-average returns, low realization rates among the wealthy are associated with high, not low, economic returns.

Table 1

Asset Types and Debts as Percentages of *Net Estate*, by Wealth Category

	Size of *Net Estate* ($ Million)				
Asset Type	2–5	5–10	10–50	50–100	Over 100
Personal residence	12	8	6	3	1
Other real estate assets	15	15	13	9	10
Federal, state, and local bonds	10	12	13	15	13
Corporate bonds and bond funds	2	1	1	1	0
Stock	28	34	39	45	47
Limited partnerships	1	2	4	6	3
Cash	11	11	9	8	5
Non-corporate non-farm business assets	12	12	8	2	1
Other assets	10	5	7	11	19
Debts and mortgages owed	3	3	3	3	2
N (weighted)	25,903	6,531	2,975	198	116
N (unweighted)	5,715	2,878	2,898	198	116

Note: *Net estate* equals total gross estate at date of death plus valuation discounts less debts and mortgages reported on Schedule K of Form 706. Other assets include retirement assets, art, depletable and intangible assets, farm assets and land, and other non-classifiable assets. Reported percentages are for weighted data. Figures are not reported for the small number of decedents with *net estate* less than $2 million.

Source: Authors' calculations from SOI data.

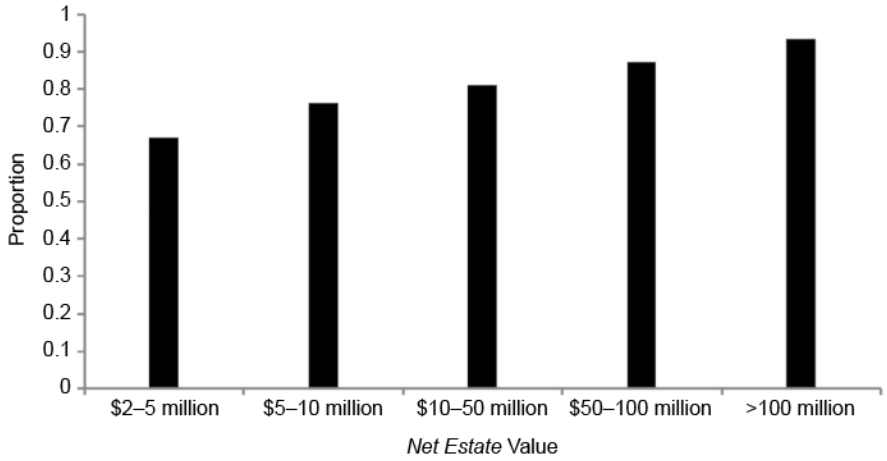
Table 2
Two Measures of Capital Income

Net Capital Income	*Net Taxable Capital Income*
Taxable interest	Taxable interest
+Tax-exempt interest	
+Capital gains	+Taxable capital gains[1]
+Dividends	+Dividends
+Gains from sale of business property	+Gains from sale of business property
+½ Schedule C	+½ Schedule C
+¾ Schedule E	+¾ Schedule E
+½ Schedule F	+½ Schedule F
+½ IRA distribution	+taxable portion of IRA distribution
+½ Pensions and annuities	+taxable portion of pensions and annuities
–Interest deduction	–Interest deduction

[1]The types of income reported on each Schedule of Form 1040 are described in the text. Capital gains are taxed at a rate lower than income. As discussed in the text, "taxable" capital income converts capital gains income to an amount equivalent to what it would have been had capital gains been taxed at the same rate as income. All income figures are in constant 2007 dollars; five-year averages are used for income measures.

Figure 1

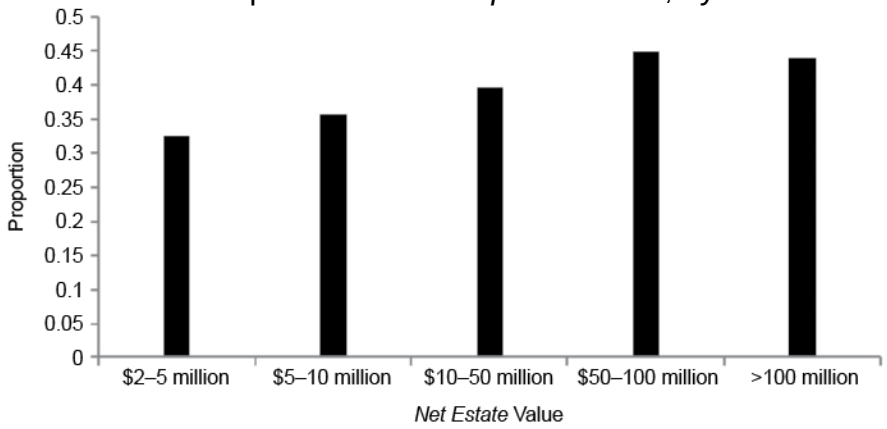
Net Capital Income as a Proportion of Total Income, by Wealth Category



Source: Authors' calculations from SOI data.

Figure 2

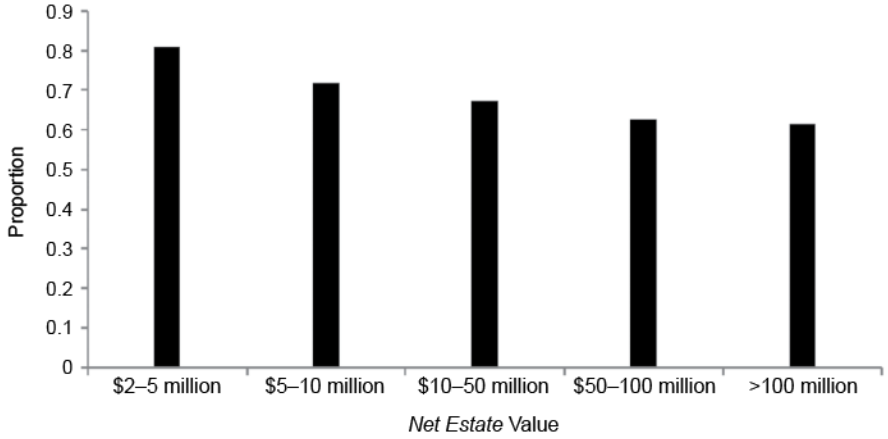
Capital Gains as a Proportion of *Net Capital Income*, by Wealth Category



Source: Authors' calculations from SOI data.

Figure 3

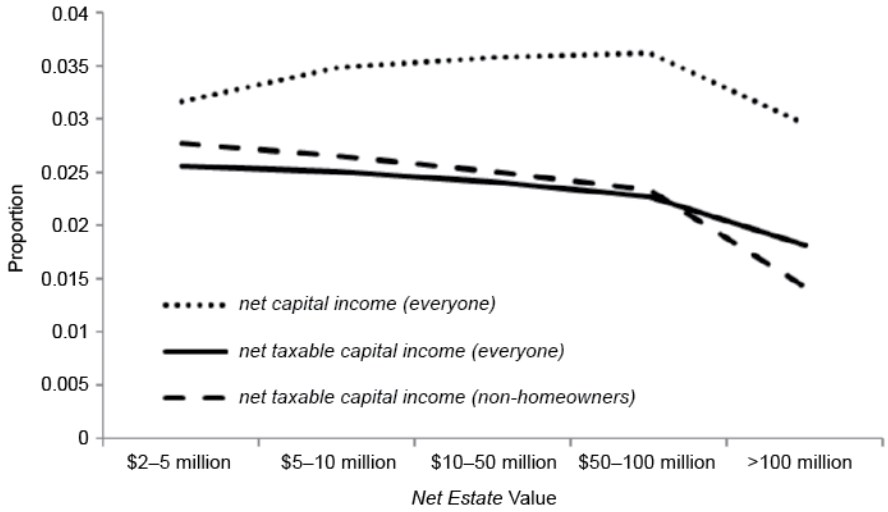
Net Taxable Capital Income as a Proportion of *Net Capital Income*, by Wealth Category



Source: Authors' calculations from SOI data.

Figure 4

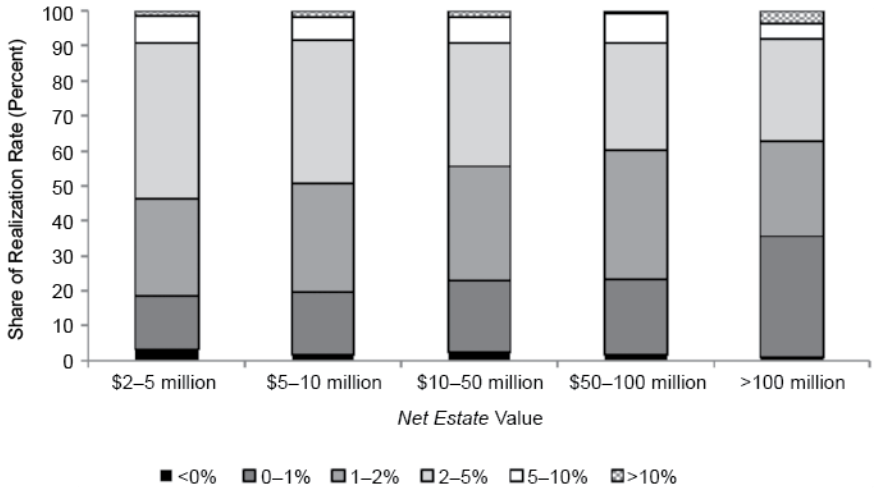
Net Capital Income and *Net Taxable Capital Income* as Proportions of *Net Estate*, by Wealth Category



Source: Authors' calculations from SOI data.

Figure 5

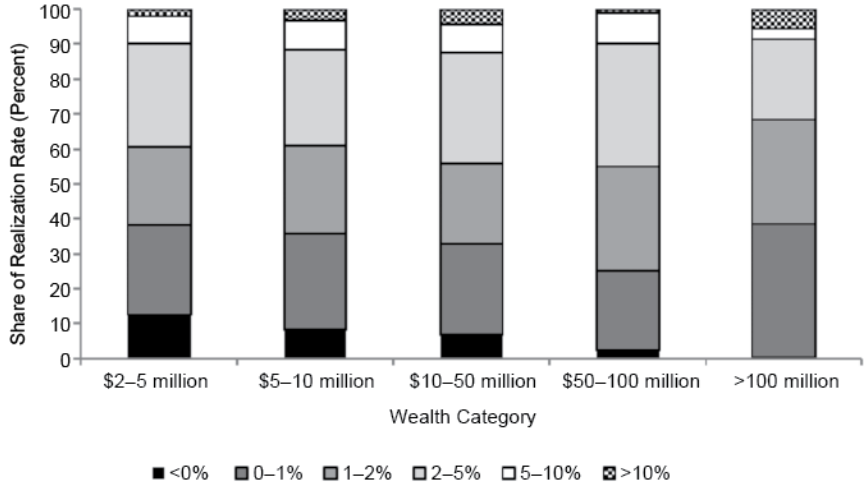
Shares of Estate Tax Filers at Different Rates of Realization of *Net Taxable Capital Income*,
by *Net Estate* Category



Source: Authors' calculations from SOI data.

Figure 6

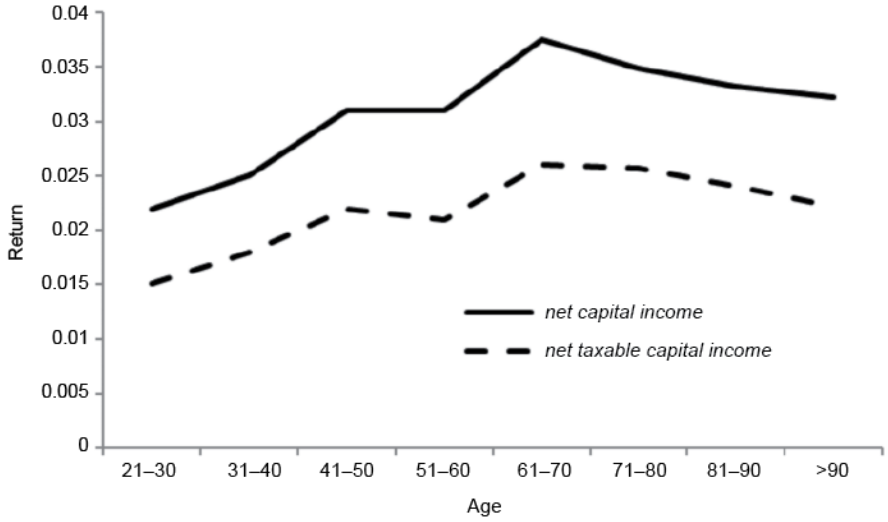
Shares of the Living Population with Wealth of at least $2 Million at Different Rates of Realization of *Net Taxable Capital Income*
by Wealth Category



Source: Authors' calculations from SOI data.

Figure 7

Estimated Realized Return on Capital for the Living Population, by Age Group



Source: Authors' calculations from SOI data.

Table 3
Regression Results

	Dependent Variable					
	ln(net taxable capital income)			*ln(net capital income)*		
	β	Robust S.E.	Mean	β	Robust S.E.	Mean
Independent Variable						
Intercept	–4.000	0.363		–4.290	0.368	
Ln(net estate)	0.799	0.016	15.19	0.929	0.018	15.19
Age	0.055	0.007	80.21	0.018	0.007	80.11
Age squared	–0.0003	0.00005		–0.00003	0.00005	
D(always married)[1]	0.063	0.050	0.45	0.094	0.051	0.45
D(always single)[2]	0.090	0.043	0.39	0.089	0.042	0.39
D(male)	–0.202	0.052	0.56	–0.138	0.052	0.57
*D(male*always married)*	–0.122	0.063	0.34	–0.163	0.066	0.34
*D(male*always single)*	0.110	0.062	0.15	0.085	0.063	0.14
Ln(charitable contribution)[3]	0.079	0.004	6.96	0.081	0.004	6.96
Home value as % of net estate	–0.335	0.091	0.11	–0.537	0.112	0.11
D(medical)[4]	1.442	0.378	0.52	0.879	0.418	0.51
*Ln(net estate)*D(medical)*	–0.113	0.024	7.78	–0.067	0.027	7.76
D(dependents)[5]	0.096	0.022	0.66	0.118	0.024	0.66
Adjusted R-squared		0.42			0.44	
No. Obs. (unweighted)		11,425			11,551	

Note: The small number of returns with negative capital income are not included due to the log form of the regression.

[1]This dummy variable equals one if the decedent was married at the time of death and all five years preceding death.

[2]This dummy variable equals one if the decedent was single at the time of death and all five years preceding death.

[3]This variable is the natural log of annual charitable contributions averaged over the five years before death. Returns reporting no charitable contribution in any year were assigned a contribution of one.

[4]This dummy variable equals one if the decedent had medical expenses exceeding 7.5 percent of AGI in any of the five years before death.

[5]This dummy variable equals one if the decedent claimed any dependents in 2006, left a trust, or had gift tax payable.

Source: Authors' calculations from SOI data

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DISCLOSURES

Author please provide disclosures here.

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