

Top Income Concentration and Volatility

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Top Income Concentration and Volatility

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Abstract:

Measures of income concentration—such as the share of income received by the highest income families—may be biased by pro-cyclical volatility in annual income. Permanent income, though, can smooth away such volatility and sort families by their usual economic resources. Here, we demonstrate this bias using rolling 3-year panels of IRS tax records from 1997 to 2013 as a proxy for permanent income. For example, one measure of 2012 income concentration—the share of income received by the top 0.1 percent—falls from 11.3 percent to 8.9 percent when families are organized by permanent income instead of annual income. However, the growth in income concentration cannot be explained by this volatility, as growth rates are comparable in the permanent income and annual income groupings during our sample period. Further, the probability of remaining in the highest income groups, while relatively low at the very top of the distribution, increased slightly during our sample period, suggesting that top incomes have become *less* volatile in this dimension. These results are confirmed using household income data measured in the Survey of Consumer Finances (SCF)—a household survey with a large oversample of high-income households and a unique measure of permanent income.

JEL: D31 – Personal Income, Wealth, and Their Distributions
D61 – Equity, Justice, Inequality, and Other Normative Criteria and Measurement

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I. Introduction

Income is increasingly concentrated when measured with income tax data (Piketty and Saez, 2003 and updates) or with survey data (Bricker, Henriques, Krimmel, and Sabelhaus, 2016; Fisher, Johnson, Smeeding, and Thompson, 2018). But while the trend is toward rising concentration, the recent time series has notable variation, rising in expansionary periods and falling in contractionary periods in a pro-cyclical pattern. The factors explaining the rise and fall in income concentration are not fully understood, but some of the most prominent explanations for rising top incomes highlight the role played by individuals—who may be “superstars” (Rosen, 1981) or “rent seekers” (Bivens and Mishel, 2013)—whose compensation is relatively volatile from one year to the next (Bebchuk and Fried, 2003, Kaplan and Rauh, 2013, among others).

Income tax returns have emerged as a key resource for studying levels and trends in U.S. income inequality (Piketty Saez, 2003 and updates; DeBacker, Heim, Panousi, Ramnath, and Vidangos, 2012; Auten, Gee, and Turner, 2013; CBO, 2014). Tax returns offer many advantages for studying inequality: the data sets are large, timely, span many years, and include high-income households. But up to this point the inequality estimates from these data are primarily based on annual cross-sections, leaving the role of income volatility at the top unresolved.¹

This paper evaluates the contribution of income volatility at the very top of the distribution by measuring U.S. income concentration in annual cross-sections and in rolling three-year panels of IRS tax records from 1997 to 2013. Using these data, we demonstrate that annual measures of income concentration are typically biased upward relative to measures of concentration based on permanent income (**Figure 1**). For example, one measure of income concentration in 2012—the share of income received by the top 0.1 percent—falls from 11.3 percent to 8.9 percent when families are organized by permanent income instead of annual income. The three-year panels of income data can proxy for permanent income and smooth away transitory shocks to income that may bias concentration estimates.

¹ Two papers do use panels of income tax data and will be discussed in more detail later; DeBacker et al (2013) does not focus on income concentration at the top, and Auten, Gee, and Turner (2013) focus on top-group persistence measures but not top shares.

In past research, lengthening the period over which income is measured produces lower measures of concentration at a point in time. Inequality statistics using lifetime income—measured over 40 years using Swedish administrative data—were 35 to 40 percent smaller than those based on annual data (Bjorklund, 1993). In non-recessionary periods of our sample of U.S. families, the average difference between annual and permanent income concentration estimates is between 7 and 29 percent depending on the top-income group, suggesting that using three-year income panels can go a long way toward proxying for permanent income.

We know much less about whether using permanent income affects inequality *trends*, particularly of top share measures over the last two decades. Cross-section income measures have both permanent and transitory components, and any cyclical or trend variability in the transitory component implies that inequality measures may not be comparable over time. Using tax data can further compound this effect, as cyclical or trend movements in income realization—whether by type of income realized, timing of realizations, or pairing of gains and losses—further distorts underlying transitory income volatility.

However, the three-year income panels used here can help disentangle these factors. We demonstrate that income concentration growth rates are comparable in the permanent income and annual income groupings during our sample period, implying that the growth in income concentration cannot be explained by this volatility (**Figure 2**).

Further, we also evaluate the contribution of income volatility to rising top-income shares by estimating the probability of remaining at very high-levels of the income distribution—including the top 10, 5, 1, 0.1, .01 and top .001 percent—over consecutive years. If rising volatility is important for rising top shares in the cross-section, we would expect to see the likelihood of remaining at top across multiple consecutive years decline over time. However, we demonstrate that the probability of remaining in the highest income groups increased during our sample period, suggesting that top incomes have become *less* volatile in this dimension (**Figure 8**).

We repeat the above exercises using income measured in the Survey of Consumer Finances (Board of Governors of the Federal Reserve System, various years). As in the income tax data, permanent income concentration in the SCF is lower than annual income concentration, but the trend in income concentration is rising similarly in both measures.

The SCF shares some of the features of the income tax data, as the SCF relies on a heavy oversample of high income and wealth families—sampled from the same data as above—to credibly estimate the top of the distribution. But there are also key measurement differences that make the similar findings more remarkable. The SCF is a cross section, but measures permanent income through a survey question, rather than through a panel. When annual income is reported to be higher (or lower) than normal, the questionnaire collects an assessment of the family’s *usual* income, which serves as a proxy for permanent income (Ackerman and Sabelhaus, 2012). Further, the SCF data are at the family level, while the income tax data are analyzed at the tax-unit level.

In the next section we briefly review relevant recent literature on both top-income shares and the role of volatility in longer-terms inequality trends more generally. In section three, we discuss the tax data and describe how we construct the three-year panels. In the fourth section we review trends in the probability of staying in top-income groups across multiple years, as well as levels and trends in top-share inequality using 3-year income rankings.

II. Previous Literature Explaining Trends in Top Income Shares

In general, rising tax-unit or household-level income volatility could lead to rising top shares in the cross-section if high-income units increasingly receive income that is concentrated into single years instead of being smoothed over several years. Changing compensation practices, including a shift toward bonuses, stock options, and other forms of irregular pay and away from regular salaries, are one possible mechanism. Shifts in industrial or occupational composition – toward those with more highly variable pay and away from those with more stable pay – would achieve the same effect. Business owners and other asset holders altering their behavior, such that they become more likely to concentrate realization of gains and less likely to smooth them over time, could also produce the same outcome.

Some of the earlier papers discussing rising top-income shares focused on the out-sized role of CEO pay. In a series of papers, Bebchuk and co-authors (2003 and 2005) documented a steady rise in CEO pay as a share of firm total earnings and an accompanying shift in the composition of CEO pay toward equity-based compensation. While Bebchuck evaluated rising managerial power and failures in corporate governance, other researchers trying to understand the role of

CEO compensation in driving top income shares looked instead to the erosion of social norms and tax policies that previously constrained managerial pay (Levy and Temin, 2007; Piketty and Saez, 2003).

Kaplan and Rauh (2013) argue that the driving force behind rising top-shares is not isolated to CEOs, pointing to large increases in fee income for hedge funds and private equity investors, as well rising self-employment, partnership, and S-corp income by owners of closely-held businesses, along with that of corporate attorney and top athletes. Since rising top-incomes are not isolated to environments that are subject to greater managerial power or changing social norms on what managers should earn, Kaplan and Rauh argue in favor of Harvey Rosen's (1981) more market-oriented "superstar" theory. According to the "superstar" theory, modern advances in technology and communications have allowed high-performing individuals in various fields to reach mass audiences and capture outsize share of the income in the fields where they operate.

Bakija, Cole, and Heim (2012) use tax data to examine the occupations and incomes of top income individuals, and find a group that doesn't so much resemble "superstars" using technology and modern communications to reach mass audiences, as much as managers from nearly every industry type and a large portion of the finance industry. They report "executives, managers, supervisors, and financial professionals can account for... 70 percent of the share of national income going to the top 0.1 percent of the distribution of income between 1979 and 2005." The prominent role of managers and the finance industry is more consistent, Bivens and Mishel (2013) argue, with a story of rent-seeking. More recently, Jones and Kim (2017) develop a "Schumpeterian" model which points to efforts by entrepreneurs to exponentially expand their income, which is restrained by the creative destruction efforts of outside innovators to generate the pattern of top-income inequality that we observe in the US.

This brief summary certainly does not exhaust all of the explanations put forth to explain the long-term rise in top income shares. Suffice to say that the high-income individuals and sectors highlighted in these accounts also have relatively volatile incomes. As such, they are potentially consistent with the idea that rising volatility could be responsible for some of the rise in top shares that we observe in the cross-section.

Largely distinct from the literature exploring the evolution of top-income shares is a body of research evaluating volatility – decomposing the transitory and the persistent components of the

variance – in income and income inequality trends.² Gottschalk and Moffitt (2009) use PSID data and present some evidence that the transitory variance of income has increased since the 1980s. More recently, Debacker et al (2016) use a panel of US tax returns to explore several alternative approaches to decomposing the transitory and persistent components of the variance in taxable income. They conclude that rising income dispersion in recent decades is almost entirely attributable to persistent changes in income.

Most of this research has focused on income across the entire distribution, and is not explicitly focused on top-incomes or any specific sub-groups. One exception is Jensen and Shore (2015) who use the PSID and find that all of the increase in average income volatility is attributable to households who are either self-employed or who self-identify as risk-tolerant. Guvenen, Kaplan, and Song (2014) use panel of SSA earnings history data and focus on “persistent top earners” – those who are in the top one percent of a moving 5-year average measure of earnings. They then compare the cyclical growth of earnings for top earners and all others across sectors. In most sectors, earnings growth is similar at the top and across the rest of the distribution. Overall cyclical growth of top earnings is driven primarily by earners in the FIRE sector.

Our paper combines these two strands of the literature, exploring changes in top-income shares, specifically evaluating the role of income volatility in influencing longer term trends. In doing so, this paper is most similar to Kopczuk, Saez, and Song (2010) and Auten, Gee, and Turner (2013).

Kopczuk, Saez, and Song (2010) use individual earnings panel data from SSA covering the period from 1978 until 2001, and calculate distributional measures (Gini coefficient and top 1 percent share) comparing estimates using a single year and five years of data. They show that top shares measured using five years of data rise less at business cycle peaks than when measured with a single year of data, but both measures follow the identical long-term trend. They also calculate probabilities of remaining in top one percent for three and five consecutive years, respectively. They find that the probability of remaining at the top of the earnings distribution for

² An even greater number of papers explicitly volatility in labor earnings and the distribution of earnings. See, for example, Moffitt and Gottschalk (1995) and Sabelhaus and Song (2010).

consecutive years was steady or slightly rising between the late 1970s and the early 1990s, at which point the probability of remaining at the top started to decline.

Auten, Gee, and Turner (2013) use a panel of income tax filers from the IRS between 1987 and 2010, and calculate the persistence of remaining in the top 1 percent of the income distribution for anywhere between two and six years. They find that the probability of remaining in the top one percent falls off sharply as the number of years increase; 65 percent of top one-percent filers from 2005 were still in the top one percent one year later, and only 27 percent were still at the top in 2010.

In this paper, we extend both of these earlier papers in different ways. Kopczuk, Saez, and Song (2010) are evaluating top-earning workers, whereas we are looking to high-income households. While Auten, Gee, and Turner (2013) evaluate persistence of filing unit incomes over consecutive years, we are also comparing top-shares in single years versus multiple combined years. And, relative to both of these earlier papers, we are using more updated data, covering up through 2013, and we are also exploring top shares and persistence measures much higher up the distribution – successively smaller groups up through the top .001 percent of the income distribution.

III. IRS and SCF Data

The Statistics of Income Insole File

This analysis draws on two different data sets. The primary dataset is the Statistics of Income (SOI) Divisions annual Insole file which is a sample of individual income tax returns. The second dataset, used to create the 3-year centered panels and described in more detail below, is a population file of all individual income tax returns maintained by the IRS.

The single-year cross section for each year of the analysis is based on the SOI Insole file, which contains data that are estimates from a probability sample of unaudited Individual Income Tax Returns, Forms 1040, 1040A, and 1040EZ (including electronic returns) filed by U.S.

citizens and residents during a Calendar Year. All returns processed during were subjected to sampling except tentative and amended returns.³

The sample design is a stratified probability sample, in which the population of tax returns is classified into subpopulations, called strata, and a sample is randomly selected independently from each stratum. Strata are defined by the following characteristics: nontaxable (including no alternative minimum tax) with adjusted gross income or expanded income of \$200,000 or more; high business receipts of \$50,000,000 or more; presence or absence of special forms or schedules (Form 2555, Form 1116, Form 1040 Schedule C, and Form 1040 Schedule F), and; indexed positive or negative income.⁴ The sampling rates range from 0.10 percent to 100 percent.⁵ Weights were obtained by dividing the population count of returns in a stratum by the number of sample returns for that stratum. The weights were adjusted to correct for misclassified returns.

The SOI data are attractive for measuring the distribution of income for a host of reasons. The data have been gathered in a consistent fashion for a very long period of time and provide nearly universal coverage of the population, particularly at the top of the income distribution. The data sets are also very large, with the administrative records for individual income tax filings including 164 million returns (in 2013), and the samples used for analysis containing nearly 340,000 returns (in 2013) (**Appendix Table 1**).

There are also several important limitations to using the SOI data as well. Since they are based on tax records, SOI income data are subject to changes in the definition of taxable income.

³ Tentative returns were not subjected to sampling because the revised returns may have been sampled later, while amended returns were excluded because the original returns had already been subjected to sampling. A small percentage of returns were not identified as tentative or amended until after sampling. These returns, along with those that contained no income information or frivolous or fraudulent income information when recognized, were excluded in calculating estimates.

⁴ Sixty variables are used to derive positive and negative incomes. These positive and negative income classes are deflated using the Chain-Type Price Index for the Gross Domestic Product to represent a base year of 1991.

⁵ Tax data processed to the IRS Individual Master File at the Enterprise Computing Center at Martinsburg during a Calendar Year were used to assign each taxpayer's record to the appropriate stratum and to determine whether or not the record should be included in the sample. Records are selected for the sample either if they possess certain combinations of the four ending digits of the social security number, or if their five ending digits of an eleven-digit number generated by a mathematical transformation of the SSN is less than or equal to the stratum sampling rate times 100,000.

In addition, the data are also influenced by non-filing and underreporting of income – due to either evasion or avoidance – and changes in income realization behavior due to changes in tax policy. To help strengthen the analysis using the SOI data, a “dummy” record was added to each SOI tax year to help represent non-filers. The dummy record was given a weight to represent the number of non-filers for each tax year. Income for non-filers is calculated using a similar approach as Piketty and Saez (2003), assuming non-filers have incomes that are 20 percent of the mean for filers. In the analysis, tables, and figures presented below, total income and total number of returns are the sum of the income and returns actually reported on tax returns as well as this correction for non-filers. Since non-filers fall at the bottom of the income distribution, this correction lowers the income thresholds for entry into the top-income groups.

The very large data sets and near-universal coverage allow us to calculate income statistics for income groups at the very top of the income distribution, as high as the top .001 percent. In this paper we study trends for that group as well as for other top-income groups, including the top .01, 0.1, 1, 5, and 10 percents. Since the data also include the full range of income components reported on the Form 1040, we can also estimate the distribution of different income concepts. Here we explore the distribution of total income as well as total income minus capital gains.

The unique coverage of the entire distribution of income is conveyed in Tables 1 and 2, which show mean income and shares of income held by small groups at the very top of the distribution. Mean income for tax units in the top .001 percent of the distribution, for example, was \$111 million in 2013, and they received 1.9 percent of all income (**Table 1**). Excluding capital gains, mean income and share of income for the top .001 percent were \$68 million and 1.2 percent, respectively (**Table 2**).

These top-income shares track very closely with the well-known Piketty and Saez (2003) series based on the same underlying data (**Appendix Figure 1**). The Piketty and Saez series cover a much longer time-span and follow the identical trend, only differing by a few tenths of a percent in any given year. The top 1 percent share of total income in the SOI series, for example, rose from 17.7 percent in 1997 to 19.7 percent in 2013; in the Piketty and Saez series, the top 1 percent share rose from 18.0 to 20.1 percent over the same period.

The tax data also contain some information on household composition, including whether a return is filed by someone who is a dependent of another tax filing unit. Dependent filers do not represent distinct economic units or even, commonly, households. Since dependent filers overwhelmingly report very low incomes, their inclusion mechanically increases top-income share estimates. The top 1 percent share of total income estimated on the sample excluding dependent filers (**Table 3**) is just 19.4 percent in 2013, compared to 19.7 percent when dependent filers are included (**Table 1**). The influence of dependent filers has also changed over time, with the dependent filer share of total returns and share of income both falling steadily over time. The dependent filer share of returns fell from 8.7 percent in 1997 to 5.5 percent in 2013, and the share of total income falling from 1.1 percent to 0.6 percent over the same period (**Appendix Figure 2**). The net effect of excluding dependent filers is to slightly lower top-share estimates at a given point in time, but to just-as-slightly increase the rate of growth in top shares over time. Between 1997 and 2013 the top 1 percent share of total income rose 1.97 percentage points for all returns and 2.1 percentage points when dependent filers are excluded (**Appendix Figure 3**). For the remainder of the paper we continue to exclude dependent filers.⁶

Constructing the 3-year “centered” panels

In order to explore the impact of tax-unit-level income volatility on top-share estimates, we construct a series of short “centered” panels. The process starts with the base year (“t”) where all records are selected from the SOI Insole File. The records from the base year were then matched to the pre (“t-1”) and post (“t+1”) years SOI Insole Files. The base record was first attempted to be matched where the SSN was the primary, and if no match existed it was attempted to be matched where the SSN was the secondary. Wherever a match existed tax data was collected from the SOI Insole Files.

When a match did not exist to a pre- or post- year SOI file, the base year record was matched to the pre and post years population file. The base year record was first attempted to match the population file where the SSN was the primary SSN. If there was not a match on the primary SSN for pre and post years with the base record SSN then it was matched where the SSN was a secondary SSN.

⁶ We also include reported negative incomes in the data as well.

The base year records were all then combined to create the 3 year panel. The weights from the SOI sample were then applied to the sample records to create the estimates used throughout the paper.

In some cases, matching tax units across years is not possible. This can occur when returns are not filed in some years, due possibly to death of the tax filer, immigration or emigration, income falling beneath filing requirement levels, or “maturation” when individuals transition from dependents to independent filers. Linking tax units across years also is complicated when filing units dissolve or form through divorce and marriage, and also when couples change status from filing jointly to separately.

Despite the various obstacles, we are able to successfully match the vast majority of returns across tax years. In 2012, for example, we matched 90 percent of all non-dependent tax units with the return they filed in the previous tax year (2011) and the same percentage with the return they filed in the following (2013) year (**Table 4**). The match rate is even higher for top-income households. For tax units in the top 1 percent of the income distribution, the 2012 match rates were 97 percent for both the previous and the following tax years. Match rates in the top 1 percent fluctuated between 95 and 98 percent over the entire period, exhibiting no noticeable trend (**Appendix Figure 4**). Overall match rates for all returns dipped slightly following the financial crisis, but remained at 90 percent.

The Survey of Consumer Finances Data

The Survey of Consumer Finances (SCF) is a cross-section survey, conducted every three years by NORC on behalf of the Federal Reserve Board (FRB) and with the cooperation of the Department of Treasury (Statistics of Income (SOI) Division).⁷ The SCF provides the most comprehensive and highest quality survey microdata available on U.S. household wealth. SCF families respond to questions about financial and nonfinancial assets, debts, employment, income, and household demographics.

⁷ See Bricker, et al (2017) for results from the most recent triennial SCF. A great degree of security is involved with this sampling procedure and formal contract govern the agreement between the FRB, NORC and SOI. The FRB selects the sample from an anonymized data file. The FRB sends the sampled list to SOI, who remove the famous families and passes along the list to NORC for contacting. NORC collects the survey information and sends to FRB. Thus, the FRB never knows any contacting information, SOI never knows any survey responses, and NORC never knows anything more than survey responses and location information.

Measuring income and wealth at the top using simple random sampling is not viable due to the concentrated nature of economic resources. Thin tails at the top lead to large sampling variability, and disproportional non-participation at the top biases down top-share estimates. Both make measuring wealth concentration extremely difficult. The Survey of Consumer Finances (SCF) overcomes both problems by oversampling at the top using administrative data derived from income tax records (the INSOLE file, described earlier), and by verifying that the top is represented using targeted response rates in several high-end strata (Bricker, Henriques, and Moore, 2017). The list sample ensures that the SCF has adequate representation of the upper tail of the wealth distribution and ensures adequate representation of sparsely held assets.

IV. Alternative Top-Share Estimates and Persistence Measures

IV.A. Alternative Top Shares

Within top income groups, the mean of three years of income is typically considerably smaller than the mean of annual income. For tax units in the top .01 percent of the distribution of 2012 income (excluding dependent filers), the single year average income was \$34 million (Table 3), and the 3-year average was \$23 million (**Table 5A**).⁸ As expected, combining three years of tax-unit-level data result in estimates of mean income and top-income shares that are lower than those estimated using a single year. When families are ranked by annual income, the equivalent top .01 percent income shares were 5.6 percent for annual income data but only 4.0 percent using an average of three contiguous years of income.

It is clear from figure 1 that top income shares calculated from permanent income are also influenced less by the troughs and peaks of the business cycle. The alternative estimates of the top 1 percent share of income are nearly indistinguishable at business-cycle troughs in 2002 and 2009, but are distinctly different at the peaks in 2000 and 2007 (**Figure 1A**). The top 1 percent share climbed to 20.7 percent in 2000 using one year of data, but averaged over three years the top share was only 17.9 percent. The differences in the two measures are even more pronounced for groups higher up the income distribution. The top .001 percent share of income in 2007 was

⁸ The estimates in Table 5A use a single year of income to determine the ranking, but three years of income to calculate average incomes and shares of total income. Table 5B uses three years of income for *both* the ranking *and* calculation of average incomes and income shares.

nearly 50 percent larger when calculated using a single year of income (2.5 percent) than when it is based on the average of three years of income (1.7 percent) (**Figure 1C**).

The moderating influence of using multiple years of income, however, is somewhat offset when all years of income are used to rank tax units as well as calculate average income and top shares. The top .001 percent share of total income for the 3-year period centered on 2007, when ranked by the 3-year average, is 2.0 percent (**Table 5B**). Comparing trends in the top .01 percent income share, we see that both of the 3-year estimates, whether ranked by the 1-year or 3-year averages, are less cyclical than the single-year estimates, not exhibiting the same spike at the business cycle peak (**Figure 2A**). The peak-to-trough changes in the 3-year top share estimates are from one-third to two-thirds as large as the increase that we see over the business cycle for the single-year measure. Despite differences in levels and cyclicity, however, all three different alternatives for estimating top-income shares (1-year ranking & income; 1-year ranking & 3-year income; and 3-year ranking and income) follow the same longer-term trend.

The impacts of moving to the three-year measures are much less evident when using income minus capital gains. This is unsurprising, as capital gains are probably the most volatile income component. Even still, the single-year top .01 percent share, for example, is considerably more cyclical than either of the 3-year measures (**Figure 2B**). As with total income, all three top .01 percent share estimates estimated using income minus capital gains follow the same trend.

The final set of top-income shares we explore is for a series of non-overlapping sub-groups, first within the top one percent and then within the top 10 percent of the distribution. We already know that the impact on income shares from shifting to multiple years of income is greater for higher-income groups, but this will let us see how far down the distribution we see meaningful differences between the single and 3-year estimates.

Figure 3 shows trends in the top total income shares for four different non-overlapping groups within the top 1 percent of the distribution – the top .001 percent; the next .009 (from .001 to .01); the next .09 (from .01 to .1); and the next .9 percent (from .1 to 1). Each of the four sub-figures shows top share estimates using the same three alternative approaches shown in Figure 2 (1-year ranking and income; 1-year ranking and 3-year income; and 3-year ranking and income). In the first three sub-figures (**3A, 3B, 3C**), representing groups down to the 99.9th percentile of the distribution, we see that the 3-year estimates do not have the same pronounced

spike in top-shares at in the business cycle peak that we see in the single-year estimates.⁹ For the fourth group (representing the 99.9th percentile down to the 99th), however, there is no longer any noticeable difference at business cycle peaks, instead suggesting a slight buffering at the trough, not falling as low as the single year measure. In each of the four subgroups within the top one percent the income shares follow the same longer term trend regardless of the number of years of data used for ranking or calculating shares.

For the three subgroups within the top 10 percent of the total income distribution, we can only observe any impact of shifting to three years of income for the top one percent (**Figure 4A**). For the “next four” percent (99th to 95th percentiles) and the “next 5” percent (95th to 90th percentiles) the three alternative top-share estimates are indistinguishable (**Figures 4B, 4C**).

Comparable top share statistics can be calculated using data from the Survey of Consumer Finances. The SCF is only a cross-sectional survey, but asks households for the “usual” income they receive in a “normal” year, which proxies for permanent income. Similar to the tax data, the top 1 percent income share is lower for “usual” income than it is for current income. In 2012, for example, the top one-percent income share was 20.2 percent using current income and 17.1 percent using permanent income to rank and measure income (**Figure 5**). In addition, the trends are the same over time for both top-share series. Since the SCF is a triennial survey the cyclical differences in the two approaches to measuring top shares is not as pronounced as it is in the tax data.

IV.B. Persistence – the Probability of Remaining at the Top over Consecutive years

Another way to use the short-panels to explore the relationship of tax-unit-level income volatility on trends in cross-sectional income shares is to calculate the share of tax units identified in a top-income group in one-year (year “t”) who were also in that same top-income group in the prior year (“t-1”) or in the following year (“t+1”). A decline in these persistence measures would mean that it is becoming more common for tax units to rise into and fall out of top-income groups as incomes of high-income families are increasingly volatile from one year to

⁹ The scaling in Figure 7 is designed to include the same vertical distance in percentage point terms around each of the series. In all four subgroups the difference between the bottom and top of the y-axis scale is 2.5 percent. The scaling in Figure 8 is designed similarly, with the y-axes spanning 8 percent in each of the three subgroups within the top 10 percent.

the next. Declining persistence over the 1998-2012 period would be suggestive of a relationship between rising volatility and top-income shares.

Of the 1,518 returns in the top .001 percent of the 2012 distribution of total income, 635 were also in the top .001 of the 2011 distribution, and 694 were in the top .001 of the 2013 distribution (**Table 6**). When viewed in terms of rates of persistence, in recent years between 40 and 45 percent of the tax units in the top .001 of total income were also in the top .001 in the prior year, and a similar share was in the top .001 in the following year (**Figure 6**). One-third of all tax units in the top .001 percent one year were in the top .001 percent in *both* the prior and the following years.

Instead of declining, however, the persistence measures are rising. The likelihood of a tax unit in the top .001 percent in one year remaining at that high level over three consecutive years doubled between 1999 and 2012, rising from 17 percent to 33 percent. Rising persistence of top-income group membership is also evident for income minus capital gains. The share of tax units remaining in the top .001 of income minus capital gains rose from 27 percent to 41 percent (**Figure 7**).

The probability of remaining in a top-income groups over consecutive years increases as we turn from the very richest groups to the somewhat less affluent. The probability of remaining in a top income group over the entire 3-year period centered on 2012 was 37 percent for the top .01 and 73 percent for the top 10 (**Figure 8**). The increase in persistence between 1998 and 2013 was greatest among the very highest income groups, but all of the subgroups in the top exhibited some increase over the period.

V. Conclusion

Using a series of 3-year panels of IRS income tax data this paper shows that measures of concentration calculated using permanent income are lower than and less cyclically volatile than those using current income. As a result, current income results in upwardly biased measures of permanent income concentration, and this bias is particularly severe at business cycle peaks in recent decades. The growth in income concentration, however, cannot be explained by this volatility, as growth rates are comparable in the permanent income and annual income groupings during our sample period. Further, the probability of remaining in the highest income groups

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increased during our sample period, suggesting that top incomes have become *less* volatile in this dimension. These results are confirmed using household income data measured in the Survey of Consumer Finances.

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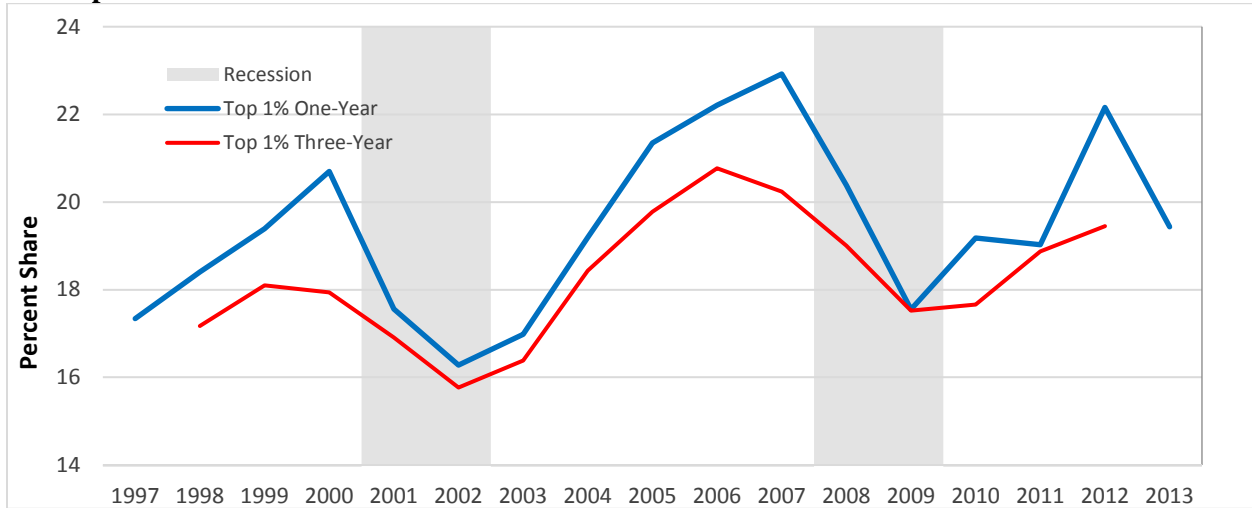
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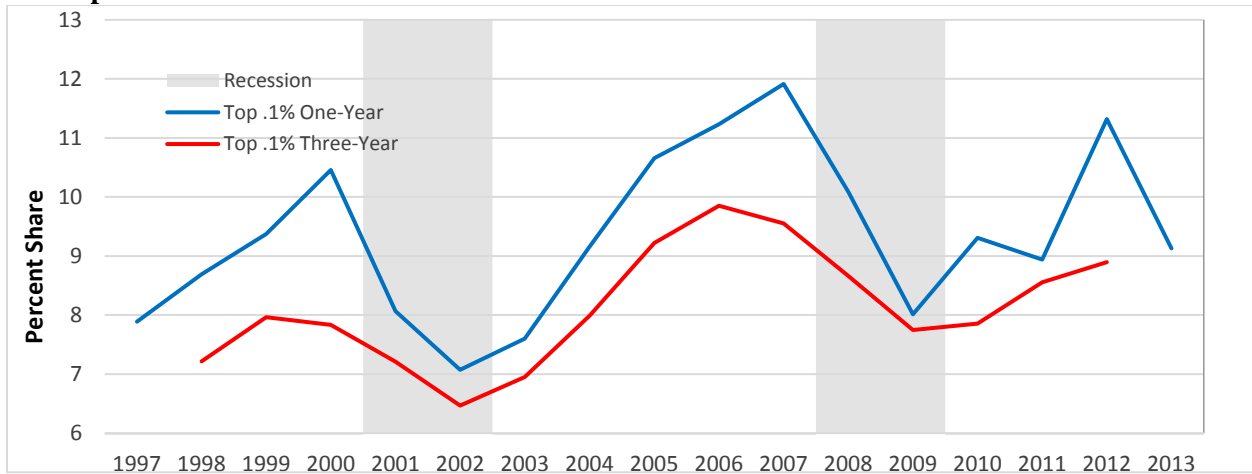
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Figure 1. Comparing Top-Income Shares Using single and 3-year Incomes, 1997-2013

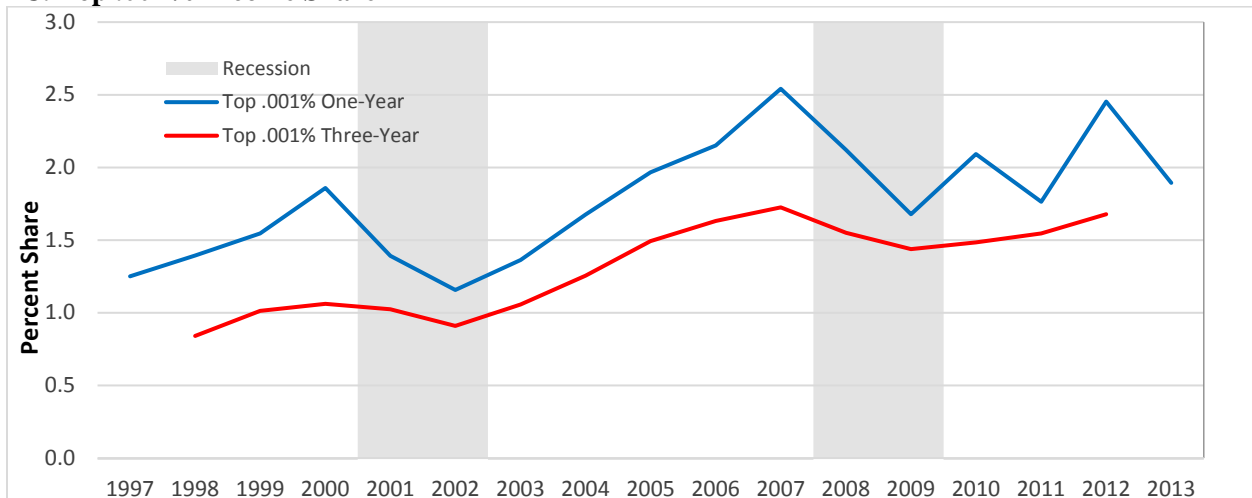
1A. Top 1% Income Share



1B. Top .1% Income Share

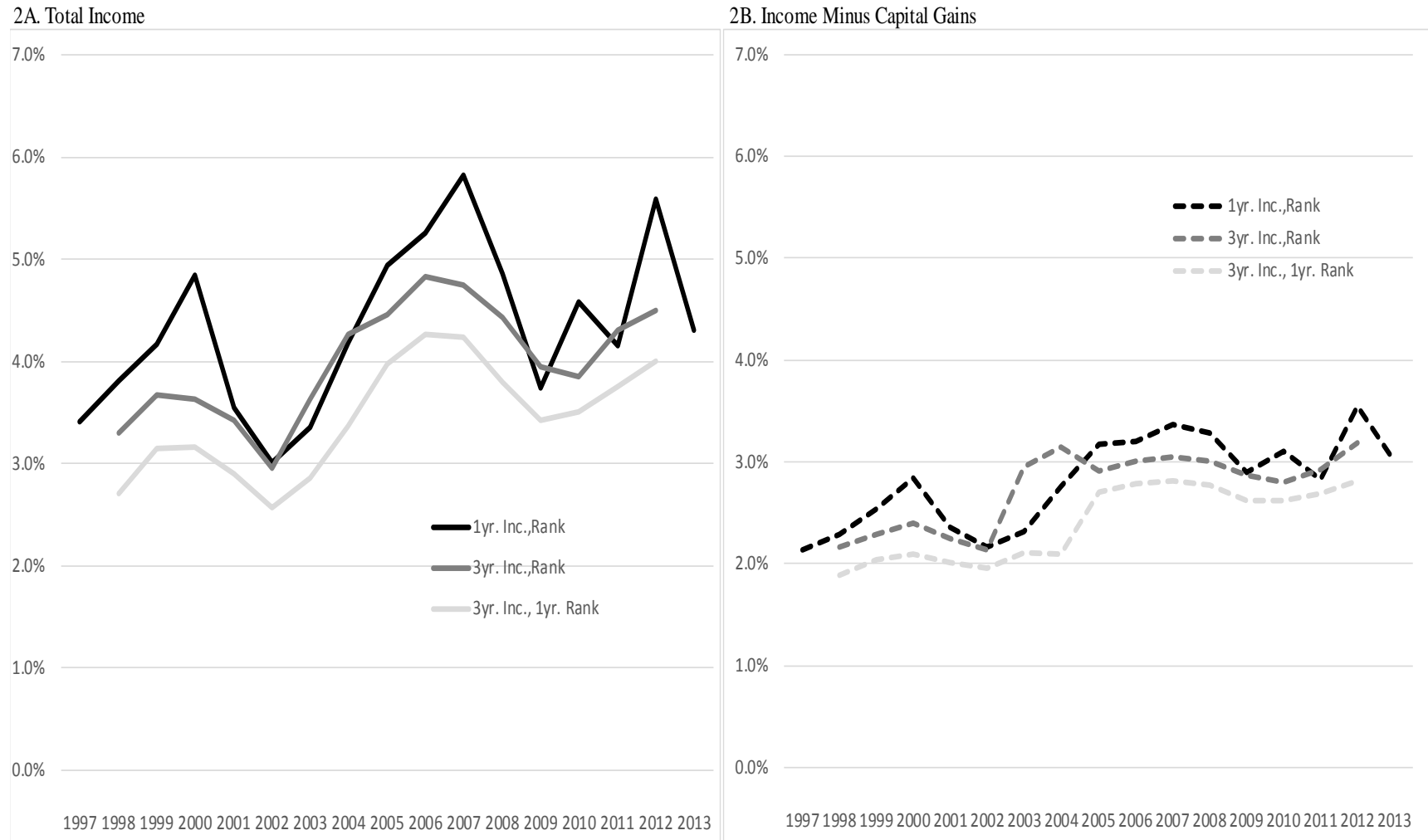


1C. Top .001% Income Share



Volatility and Top Shares

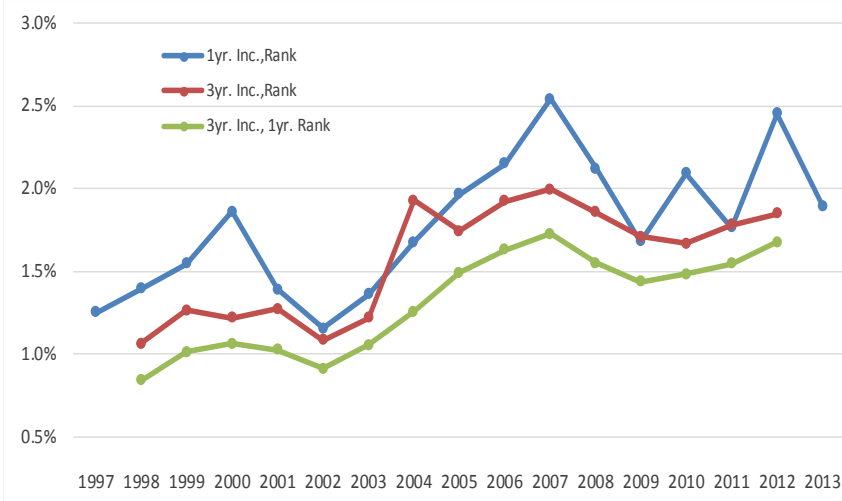
Figure 2. Comparing Trends in Top .01 Percent Income Shares for All Returns (Excluding Dependent Filers) Using Alternative Estimates, 1997-2013



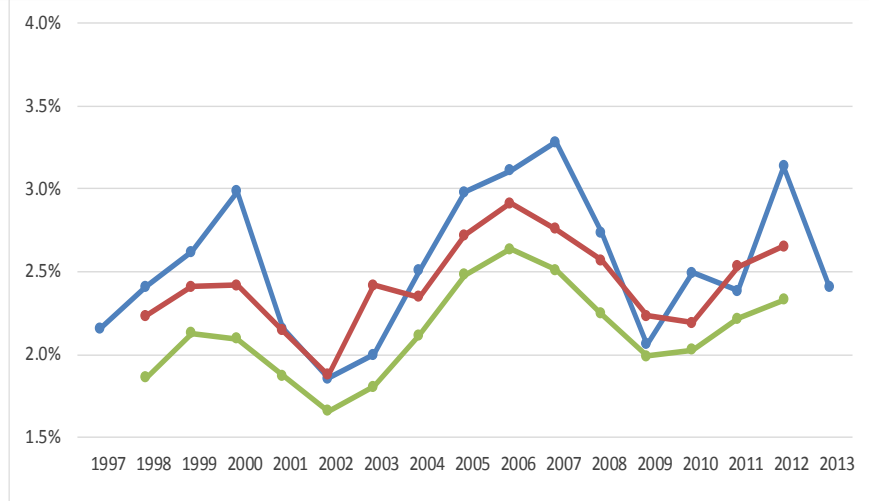
Volatility and Top Shares

Figure 3. Total Income Shares of Non-overlapping Top Income Groups within Top 1 Percent, by Year and Ranking/Definition Alternatives

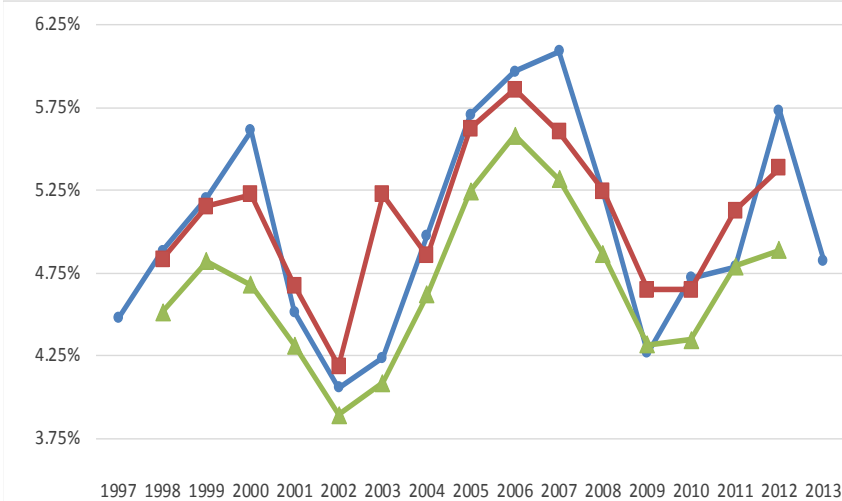
A. Top .001%



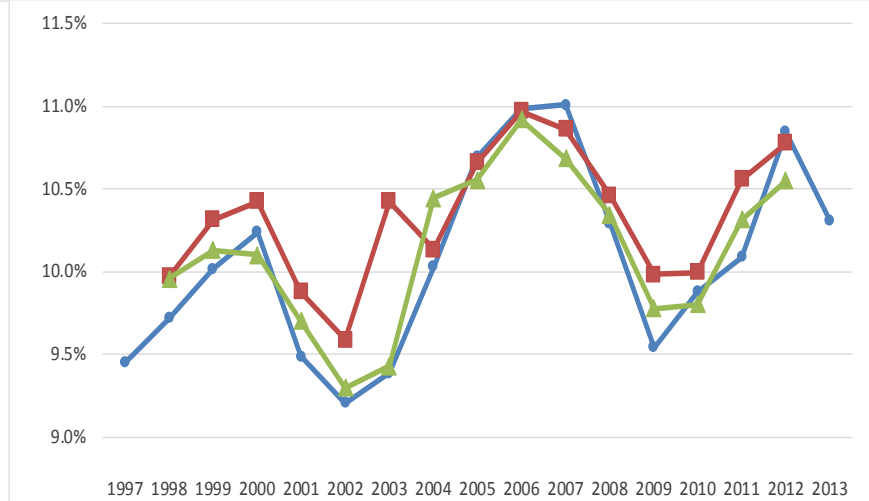
B. Next .009% (.001% to .01%)



C. Next .09% (.01% to .1%)



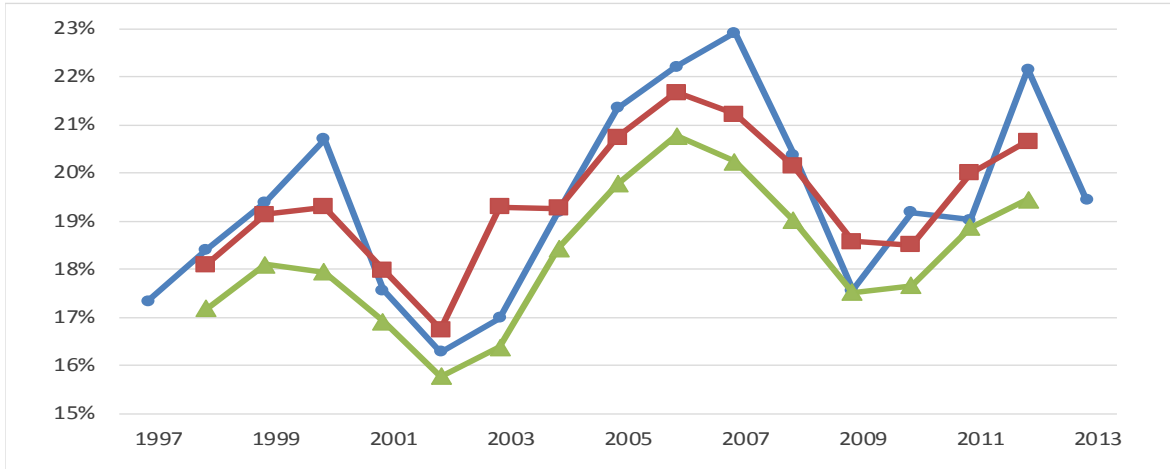
D. Next .9% (.1% to 1%)



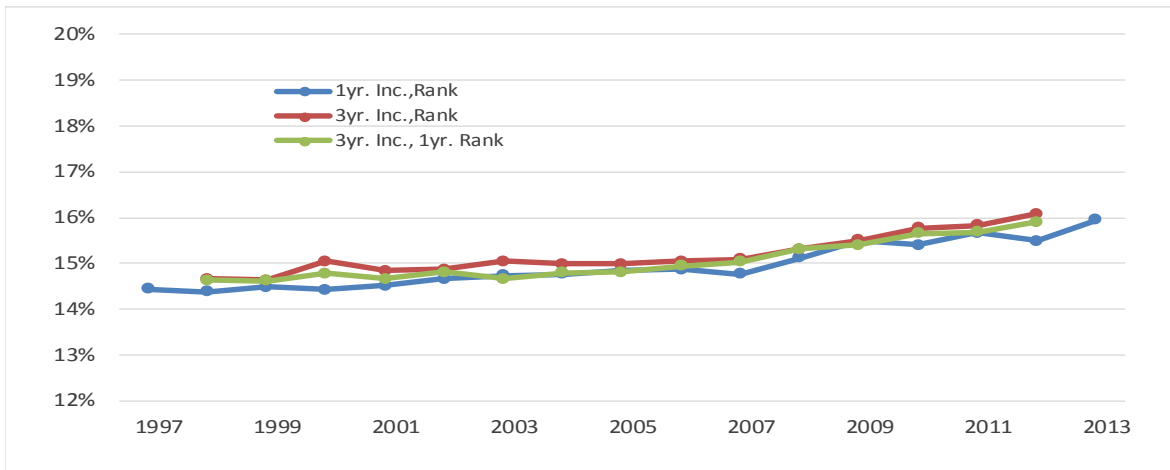
Volatility and Top Shares

Figure 4. Total Income Shares of Non-overlapping Top-income Groups within Top 10 Percent, by Year and Ranking/Definition Alternatives

A. Top 1



B. Next 4 (1 to 5)



C. Next 5 (5 to 10)

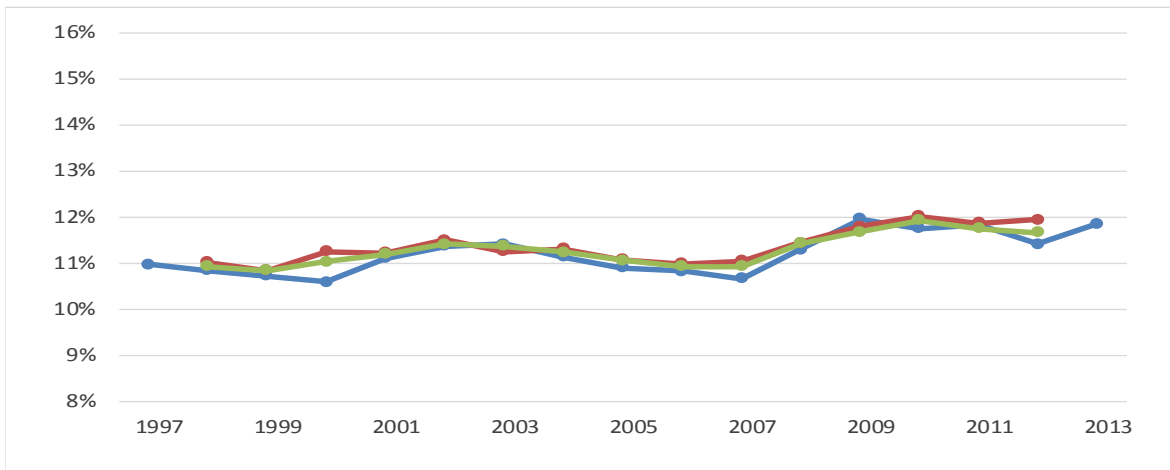


Figure 5. SCF income concentration: Top 1% Income Shares by Year and Ranking/Income Definition (permanent and annual)

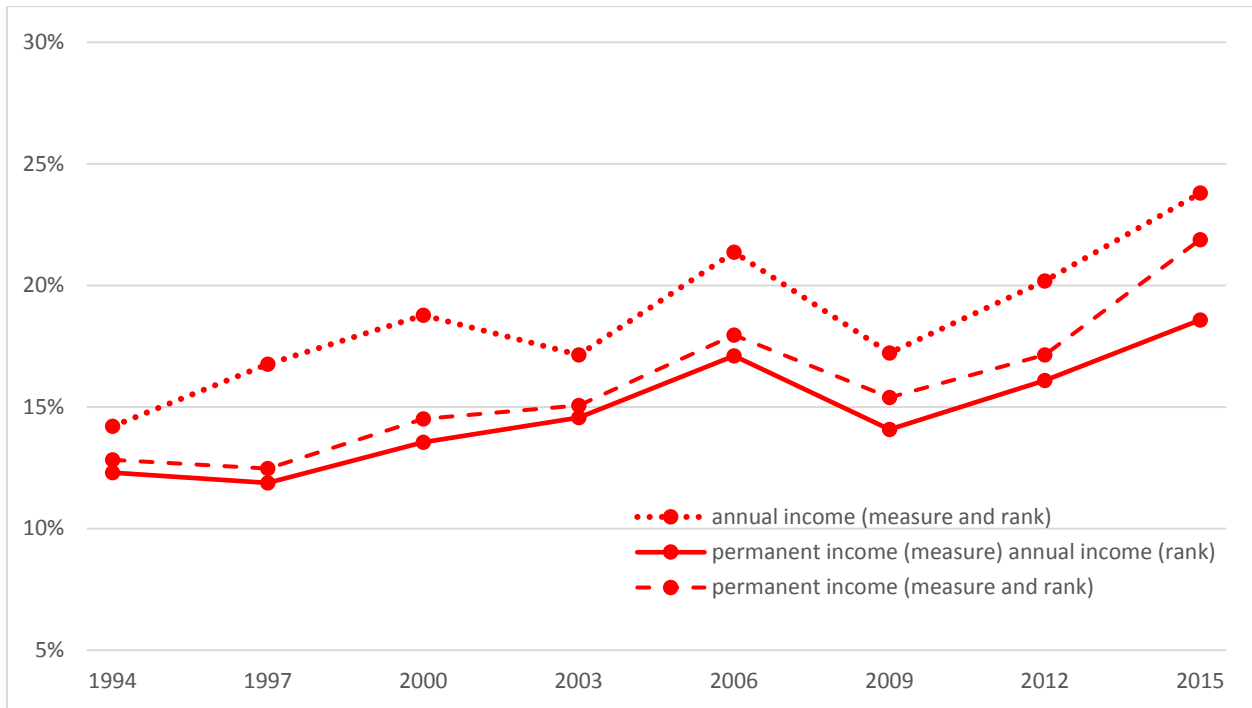


Figure 6. Total Income Top .001% Share Persistence: Pre, Post, and Both Adjacent Years, 1999-2012

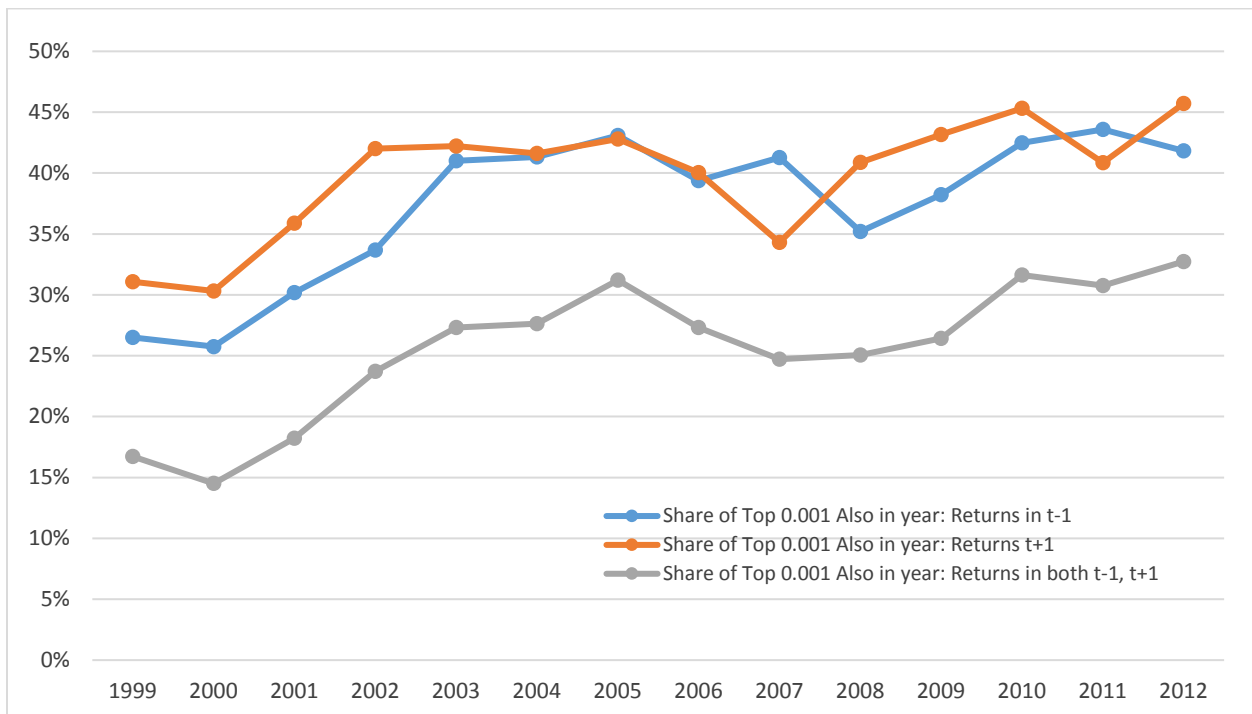


Figure 7. Top .001% Share Persistence in Both Adjacent Years, by Income Concept, 1999-2012

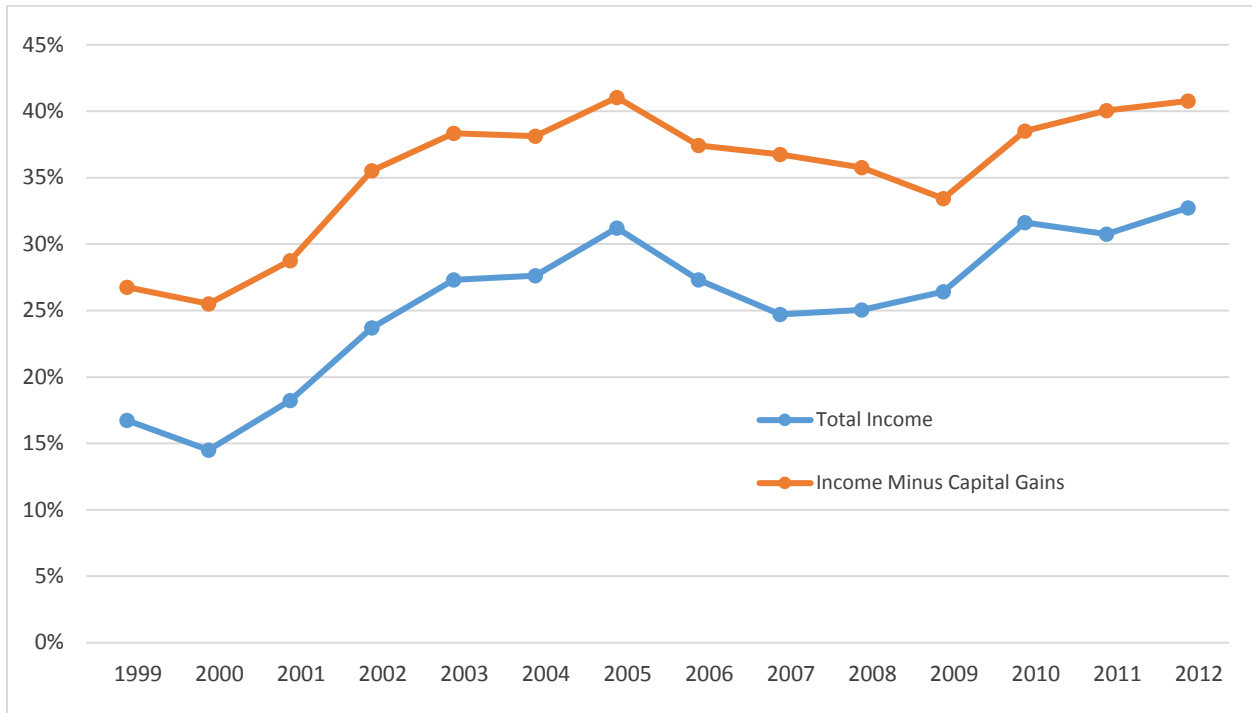
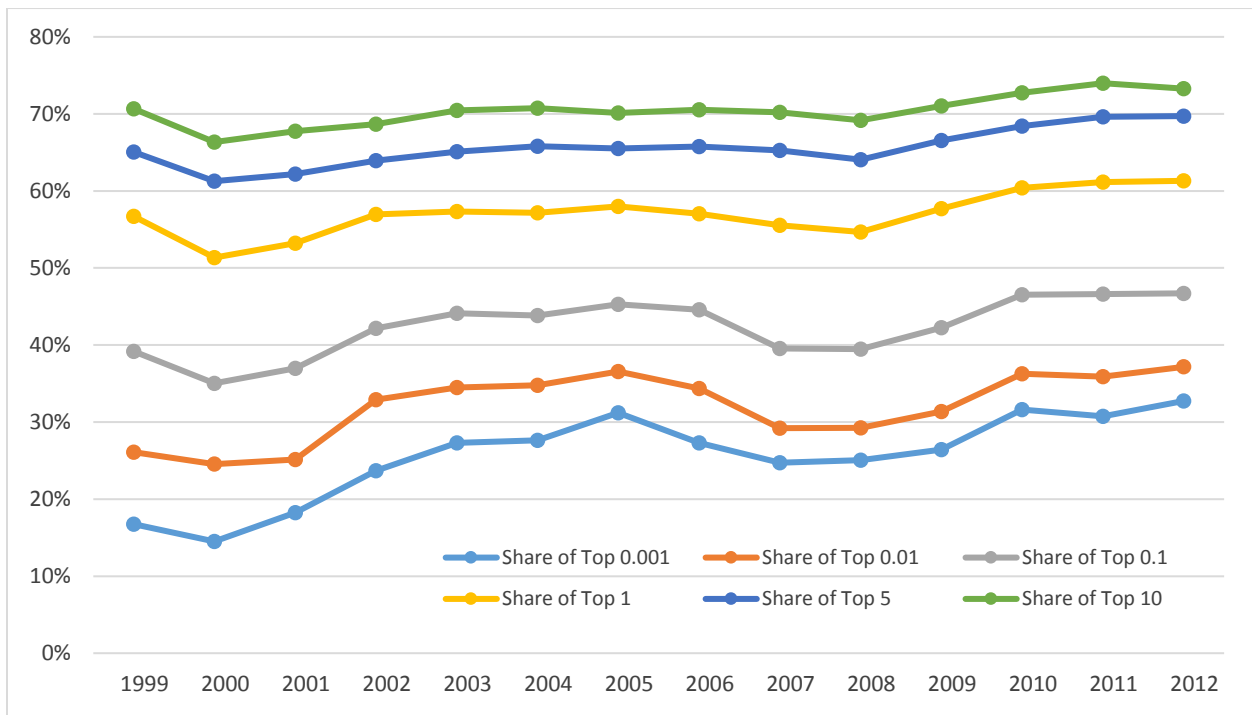


Figure 8. Total Income Top Share Persistence in Both Adjacent Years, by Top-Income Level, 1999-2012



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Table 1. All Individual Returns: Average Income and Shares of Total Income, by Selected Expanded Descending Cumulative Percentiles of Returns Based on Income Size Using the Definition of Income for Each Year, Tax Years 1997-2013

[All figures are estimates based on samples]

Item and year	Total Income						
	Total	Percentiles					
		Top .001 percent	Top .01 percent	Top .1 percent	Top 1 percent	Top 5 percent	Top 10 percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Average income:							
1997	39,211	50,603,073	13,731,060	3,161,983	695,746	256,337	172,911
1998	42,146	60,595,423	16,441,107	3,737,111	792,122	283,693	189,264
1999	45,047	71,932,140	19,256,656	4,307,628	891,782	313,117	206,789
2000	48,128	92,370,827	23,888,994	5,127,281	1,015,129	346,410	226,119
2001	45,903	65,701,287	16,682,278	3,779,165	823,115	302,287	203,960
2002	44,339	52,621,735	13,665,524	3,197,898	737,132	281,534	192,890
2003	45,088	62,741,755	15,448,232	3,485,108	780,204	292,765	199,441
2004	48,609	83,287,499	20,701,310	4,522,750	948,263	337,045	224,282
2005	52,441	105,487,022	26,410,631	5,668,889	1,136,066	386,553	252,090
2006	55,629	122,348,180	29,806,814	6,339,604	1,253,580	420,146	272,034
2007	59,322	153,723,470	35,140,444	7,167,122	1,379,369	455,298	292,800
2008	55,707	120,221,080	27,489,360	5,695,366	1,152,371	403,044	266,175
2009	51,248	87,285,847	19,445,492	4,157,591	912,223	344,564	234,953
2010	53,437	113,193,390	24,780,127	5,023,222	1,037,375	375,416	251,815
2011	54,528	97,753,482	22,950,899	4,934,423	1,051,959	385,018	258,493
2012	58,582	146,053,894	33,177,636	6,706,335	1,314,042	447,958	292,339
2013	57,491	110,546,924	25,092,510	5,315,556	1,133,417	414,004	276,686
Income share (percentage):							
1997	100.00	1.29	3.50	8.06	17.74	32.69	44.10
1998	100.00	1.44	3.90	8.87	18.79	33.66	44.91
1999	100.00	1.60	4.27	9.56	19.80	34.75	45.91
2000	100.00	1.92	4.96	10.65	21.09	35.99	46.98
2001	100.00	1.43	3.63	8.23	17.93	32.93	44.43
2002	100.00	1.19	3.08	7.21	16.62	31.75	43.50
2003	100.00	1.39	3.43	7.73	17.30	32.47	44.23
2004	100.00	1.71	4.26	9.30	19.51	34.67	46.14
2005	100.00	2.01	5.04	10.81	21.66	36.86	48.07
2006	100.00	2.20	5.36	11.40	22.53	37.76	48.90
2007	100.00	2.59	5.92	12.08	23.25	38.38	49.36
2008	100.00	2.16	4.93	10.22	20.69	36.18	47.78
2009	100.00	1.70	3.79	8.11	17.80	33.62	45.85
2010	100.00	2.12	4.64	9.40	19.41	35.13	47.12
2011	100.00	1.79	4.21	9.05	19.29	35.30	47.41
2012	100.00	2.49	5.66	11.45	22.43	38.23	49.90
2013	100.00	1.92	4.36	9.25	19.71	36.01	48.13

Source: IRS, Statistics of Income Division, November 2015. Includes estimated non-filer "returns" and income as well.

Table 2. All Individual Returns: Average Total Income minus Capital Gains and Shares of Income minus Capital Gains, by Selected Expanded Descending Cumulative Percentiles of Returns Based on Income Size Using the Definition of Income for Each Year, Tax Years 1997-2013

[All figures are estimates based on samples]

Item and year	Total Income minus capital gains						
	Total	Percentiles					
		Top .001 percent	Top .01 percent	Top .1 percent	Top 1 percent	Top 5 percent	Top 10 percent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Average income:							
1997	36,457	26,756,796	8,042,806	2,101,965	533,633	215,860	151,081
1998	38,739	30,381,433	9,121,097	2,355,276	583,736	232,664	161,905
1999	40,944	36,067,778	10,725,034	2,688,757	643,994	251,557	173,601
2000	43,439	44,997,492	12,735,865	3,106,503	716,607	274,169	187,561
2001	43,521	36,248,854	10,576,585	2,716,016	668,328	265,171	184,261
2002	42,630	32,211,945	9,466,305	2,465,755	627,726	255,012	178,789
2003	43,013	36,578,217	10,189,520	2,573,472	643,997	259,879	181,988
2004	45,319	48,329,374	12,768,949	3,080,630	731,389	284,819	196,598
2005	47,862	58,895,720	15,489,931	3,658,837	834,843	313,657	213,385
2006	50,375	62,413,943	16,454,699	3,944,865	899,635	335,851	227,396
2007	53,265	72,858,458	18,340,115	4,277,871	964,727	357,583	241,188
2008	52,629	71,332,967	17,606,488	4,066,709	929,854	352,528	239,937
2009	49,740	60,212,466	14,623,153	3,397,134	808,046	320,697	222,502
2010	51,103	65,996,762	16,075,983	3,703,435	865,748	336,855	231,817
2011	52,147	57,790,874	14,999,768	3,656,971	882,232	346,579	238,462
2012	54,705	81,478,591	19,693,751	4,506,203	1,019,680	381,916	258,135
2013	54,502	67,622,778	16,632,450	3,939,151	941,273	368,064	252,208
Income share (percentage):							
1997	100.00	0.73	2.21	5.77	14.64	29.60	41.44
1998	100.00	0.78	2.35	6.08	15.07	30.03	41.79
1999	100.00	0.88	2.62	6.57	15.73	30.72	42.40
2000	100.00	1.04	2.93	7.15	16.50	31.56	43.18
2001	100.00	0.83	2.43	6.24	15.36	30.46	42.34
2002	100.00	0.76	2.22	5.78	14.73	29.91	41.94
2003	100.00	0.85	2.37	5.98	14.97	30.21	42.31
2004	100.00	1.07	2.82	6.80	16.14	31.42	43.38
2005	100.00	1.23	3.24	7.64	17.44	32.77	44.58
2006	100.00	1.24	3.27	7.83	17.86	33.33	45.14
2007	100.00	1.37	3.44	8.03	18.11	33.57	45.28
2008	100.00	1.36	3.35	7.73	17.67	33.49	45.59
2009	100.00	1.21	2.94	6.83	16.25	32.24	44.73
2010	100.00	1.29	3.15	7.25	16.94	32.96	45.36
2011	100.00	1.11	2.88	7.01	16.92	33.23	45.73
2012	100.00	1.49	3.60	8.24	18.64	34.91	47.19
2013	100.00	1.24	3.05	7.23	17.27	33.77	46.27

Source: IRS, Statistics of Income Division, November 2015. Includes estimated non-filer "returns" and income as well.

Volatility and Top Shares

Table 3. All Individual Returns Excluding Dependents: Average Income and Shares of Income, by Selected Expanded Descending Cumulative Percentiles of Returns Based on Income Size Using the Definition of Income for Each Year, Tax Years 1997-2013

[All figures are estimates based on samples]

Item and year	Total Income						
	Total	Percentiles					
		Top .001 percent	Top .01 percent	Top .1 percent	Top 1 percent	Top 5 percent	Top 10 percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Average income:							
1997	42,510	53,158,043	14,497,109	3,352,421	736,981	270,175	181,719
1998	45,580	63,527,357	17,342,806	3,960,856	839,064	298,957	198,865
1999	48,851	75,578,030	20,362,560	4,578,617	947,222	331,022	217,894
2000	52,196	97,070,972	25,287,476	5,457,684	1,080,247	366,732	238,629
2001	49,430	68,828,614	17,554,684	3,987,956	867,805	317,075	213,423
2002	47,443	54,865,761	14,304,735	3,355,617	772,337	293,661	200,768
2003	48,005	65,383,673	16,144,161	3,647,921	815,360	304,649	207,113
2004	51,721	86,699,042	21,627,985	4,737,562	992,575	351,359	233,280
2005	55,758	109,649,056	27,579,157	5,941,150	1,190,286	403,523	262,534
2006	59,188	127,361,169	31,144,120	6,646,912	1,314,731	439,034	283,635
2007	63,238	160,644,329	36,835,750	7,534,023	1,449,473	476,731	305,851
2008	59,036	125,161,420	28,689,541	5,954,844	1,203,303	419,199	276,303
2009	53,690	90,112,030	20,097,839	4,301,065	942,457	354,802	241,633
2010	55,934	117,000,445	25,655,501	5,205,324	1,072,962	386,931	259,164
2011	57,348	101,197,851	23,812,138	5,126,966	1,091,245	398,018	266,842
2012	61,610	151,176,330	34,430,876	6,973,836	1,365,363	463,966	302,295
2013	60,461	114,518,456	26,034,067	5,520,724	1,175,161	427,997	285,663
Income share (percentage):							
1997	100.00	1.25	3.41	7.89	17.34	31.78	42.75
1998	100.00	1.39	3.81	8.69	18.41	32.80	43.63
1999	100.00	1.55	4.17	9.37	19.39	33.88	44.60
2000	100.00	1.86	4.84	10.46	20.70	35.13	45.72
2001	100.00	1.39	3.55	8.07	17.56	32.07	43.18
2002	100.00	1.16	3.02	7.07	16.28	30.95	42.32
2003	100.00	1.36	3.36	7.60	16.99	31.73	43.14
2004	100.00	1.68	4.18	9.16	19.19	33.97	45.10
2005	100.00	1.97	4.95	10.66	21.35	36.19	47.08
2006	100.00	2.15	5.26	11.23	22.21	37.09	47.92
2007	100.00	2.54	5.82	11.91	22.92	37.69	48.37
2008	100.00	2.12	4.86	10.09	20.38	35.50	46.80
2009	100.00	1.68	3.74	8.01	17.55	33.04	45.01
2010	100.00	2.09	4.59	9.31	19.18	34.59	46.33
2011	100.00	1.76	4.15	8.94	19.03	34.70	46.53
2012	100.00	2.45	5.59	11.32	22.16	37.65	49.07
2013	100.00	1.89	4.31	9.13	19.44	35.39	47.25

Source: IRS, Statistics of Income Division, November 2015. Includes estimated non-filer "returns" and income as well.

Volatility and Top Shares

Table 4. Returns with Matched Income In Prior and Post Years, by Year for All Returns and Top 1 Percent, 1998-2012

[All figures are estimates based on samples]

All returns					
Item and year	Number of returns in current year	Returns matched to prior year		Returns matched to post year	
		Number of returns	Percentage	Number of returns	Percentage
	(1)	(2)	(3)	(4)	(5)
Number of returns:					
1998	164,194	151,504	92.27	151,633	92.35
1999	176,839	164,039	92.76	164,455	93.00
2000	196,002	175,956	89.77	179,927	91.80
2001	191,810	177,466	92.52	173,130	90.26
2002	175,330	160,746	91.68	158,117	90.18
2003	182,366	166,082	91.07	165,357	90.67
2004	200,297	182,790	91.26	183,559	91.64
2005	292,839	268,703	91.76	271,721	92.79
2006	320,898	294,878	91.89	298,371	92.98
2007	325,058	299,109	92.02	294,920	90.73
2008	328,470	303,174	92.30	292,550	89.06
2009	294,953	268,019	90.87	264,543	89.69
2010	308,585	274,917	89.09	276,609	89.64
2011	332,824	297,281	89.32	298,687	89.74
2012	338,352	304,797	90.08	304,448	89.98

Returns in top 1%					
Item and year	Number of returns in current year	Returns matched to prior year		Returns matched to post year	
		Number of returns	Percentage	Number of returns	Percentage
	(1)	(2)	(3)	(4)	(5)
Number of returns:					
1998	63,223	62,188	98.36	61,144	96.71
1999	71,963	70,736	98.29	70,226	97.59
2000	84,797	80,697	95.16	82,215	96.96
2001	71,524	70,370	98.39	69,096	96.61
2002	59,331	58,155	98.02	57,706	97.26
2003	62,945	61,431	97.59	61,519	97.73
2004	78,036	76,088	97.50	76,579	98.13
2005	95,764	93,283	97.41	93,554	97.69
2006	107,788	105,615	97.98	104,887	97.31
2007	110,416	108,443	98.21	104,833	94.94
2008	97,635	95,875	98.20	92,465	94.70
2009	75,683	73,743	97.44	73,230	96.76
2010	85,974	83,215	96.79	83,038	96.59
2011	93,405	91,112	97.55	91,105	97.54
2012	107,715	104,537	97.05	104,131	96.67

Source: IRS, Statistics of Income Division, November 2015

Table 5A. All Individual Returns Excluding Dependents: Average Total 3-Year Incomes and Shares of Income, by Selected Expanded Descending Cumulative Percentiles of Returns Based on 1 Year Income Size, Tax Years 1998-2012

[All figures are estimates based on samples]

Item and year	Total Average 3 Year Income						
	Total	Percentiles					
		Top .001 percent	Top .01 percent	Top .1 percent	Top 1 percent	Top 5 percent	Top 10 percent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Average income:							
1998	44,517	37,432,058	12,035,764	3,213,044	764,537	283,184	190,276
1999	48,107	48,712,521	15,122,576	3,831,765	870,596	314,815	209,549
2000	46,867	49,796,165	14,793,953	3,672,483	840,546	306,673	205,031
2001	48,401	49,561,909	14,022,122	3,490,620	818,562	305,745	207,026
2002	46,837	42,634,137	12,043,574	3,028,957	738,497	286,475	196,682
2003	47,870	50,575,812	13,714,503	3,328,234	784,116	297,246	203,075
2004	50,692	63,594,418	17,083,839	4,049,875	934,518	336,923	225,401
2005	54,573	81,465,847	21,687,790	5,032,354	1,079,231	377,571	249,161
2006	57,945	94,584,519	24,748,135	5,708,261	1,203,490	413,937	270,294
2007	59,497	102,610,891	25,194,323	5,683,014	1,203,922	419,633	274,866
2008	57,348	88,966,928	21,790,167	4,967,847	1,089,918	393,714	262,357
2009	54,922	78,916,445	18,825,679	4,254,902	962,387	361,773	245,063
2010	54,135	80,368,829	19,010,411	4,253,366	956,043	360,776	244,931
2011	56,843	87,919,058	21,392,658	4,863,057	1,072,732	392,872	263,279
2012	58,020	97,325,981	23,265,875	5,162,637	1,128,405	410,275	272,809
Income share (percentage):							
1998	100.00	0.84	2.70	7.22	17.17	31.81	42.74
1999	100.00	1.01	3.14	7.97	18.10	32.72	43.56
2000	100.00	1.06	3.16	7.84	17.93	32.72	43.75
2001	100.00	1.02	2.90	7.21	16.91	31.58	42.77
2002	100.00	0.91	2.57	6.47	15.77	30.58	41.99
2003	100.00	1.06	2.87	6.95	16.38	31.05	42.42
2004	100.00	1.25	3.37	7.99	18.44	33.23	44.46
2005	100.00	1.49	3.97	9.22	19.78	34.59	45.66
2006	100.00	1.63	4.27	9.85	20.77	35.72	46.65
2007	100.00	1.73	4.23	9.55	20.24	35.27	46.20
2008	100.00	1.55	3.80	8.66	19.01	34.33	45.75
2009	100.00	1.44	3.43	7.75	17.52	32.93	44.62
2010	100.00	1.48	3.51	7.86	17.66	33.32	45.24
2011	100.00	1.55	3.76	8.56	18.87	34.56	46.32
2012	100.00	1.68	4.01	8.90	19.45	35.36	47.02

Source: IRS, Statistics of Income Division, November 2015. Includes estimated non-filer "returns" and income as well.

Volatility and Top Shares

Table 5B. All Individual Returns Excluding Dependents: Average Total 3-Year Incomes and Shares of Income, by Selected Expanded Descending Cumulative Percentiles of Returns Based on Income Size Using 3 Years Average Income, Tax Years 1998-2012

[All figures are estimates based on samples]

Item and year	Total Average 3 Year Income						
	Total	Percentiles					
		Top .001 percent	Top .01 percent	Top .1 percent	Top 1 percent	Top 5 percent	Top 10 percent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Average income:							
1998	44,517	47,312,305	14,673,458	3,618,527	805,734	291,711	194,900
1999	48,107	60,809,034	17,676,960	4,245,936	920,894	324,992	214,636
2000	46,867	57,135,299	17,055,758	4,154,526	904,048	321,872	213,679
2001	48,401	61,668,897	16,566,716	3,918,887	870,065	317,657	213,166
2002	46,837	50,842,510	13,878,049	3,349,613	784,062	296,196	201,949
2003	46,867	57,135,299	17,055,758	4,154,526	904,048	321,872	213,679
2004	50,692	97,623,396	21,663,494	4,626,798	976,346	347,333	231,023
2005	54,573	95,101,745	24,358,722	5,504,164	1,132,211	390,112	255,491
2006	57,945	111,467,263	28,037,957	6,198,969	1,255,626	425,606	276,456
2007	59,497	118,684,561	28,287,693	6,162,184	1,262,465	432,090	281,737
2008	57,348	106,432,224	25,387,517	5,547,720	1,154,669	406,670	268,977
2009	54,922	93,859,265	21,661,458	4,718,896	1,020,214	374,361	251,939
2010	54,135	90,231,903	20,884,635	4,605,897	1,001,788	371,195	250,653
2011	56,843	101,210,169	24,504,704	5,364,052	1,136,578	407,251	271,108
2012	58,020	107,371,024	26,121,015	5,736,593	1,199,043	426,538	282,561
Income share (percentage):							
1998	100.00	1.06	3.30	8.13	18.10	32.76	43.78
1999	100.00	1.26	3.67	8.83	19.14	33.78	44.62
2000	100.00	1.22	3.64	8.86	19.29	34.34	45.59
2001	100.00	1.27	3.42	8.10	17.98	32.82	44.04
2002	100.00	1.09	2.96	7.15	16.74	31.62	43.12
2003	100.00	1.22	3.64	8.86	19.29	34.34	45.59
2004	100.00	1.93	4.27	9.13	19.26	34.26	45.57
2005	100.00	1.74	4.46	10.09	20.75	35.74	46.82
2006	100.00	1.92	4.84	10.70	21.67	36.73	47.71
2007	100.00	2.00	4.75	10.36	21.22	36.31	47.35
2008	100.00	1.86	4.43	9.67	20.13	35.46	46.90
2009	100.00	1.71	3.94	8.59	18.58	34.08	45.87
2010	100.00	1.67	3.86	8.51	18.51	34.28	46.30
2011	100.00	1.78	4.31	9.44	20.00	35.82	47.69
2012	100.00	1.85	4.50	9.89	20.67	36.76	48.70

Source: IRS, Statistics of Income Division, November 2015. Includes estimated non-filer "returns" and income as well.

Volatility and Top Shares

Table 6. Number of Returns in Percentage classes and also present in prior and post years

[All figures are estimates based on samples]

Year	Total income											
	Top .001 percent				Top .01 percent				Top .1 percent			
	Returns also in prior year	Returns in current year	Returns also in post year	Returns in pre, current, and post	Returns also in prior year	Returns in current year	Returns also in post year	Returns in pre, current, and post	Returns also in prior year	Returns in current year	Returns also in post year	Returns in pre, current, and post
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Number of returns:												
1999	320	1,207	375	202	4,763	12,073	5,021	3,152	65,254	120,732	65,135	47,292
2000	316	1,227	372	178	4,780	12,274	4,675	3,012	61,532	122,737	61,628	43,000
2001	381	1,262	453	230	4,808	12,620	5,786	3,174	64,069	126,204	72,479	46,657
2002	436	1,295	544	307	5,716	12,948	6,622	4,260	70,757	129,477	78,313	54,596
2003	542	1,322	558	361	6,515	13,218	6,528	4,557	78,056	132,178	77,329	58,337
2004	555	1,343	559	371	6,563	13,427	6,424	4,670	77,929	134,266	77,587	58,868
2005	587	1,362	583	425	6,691	13,618	6,725	4,977	79,190	136,181	80,359	61,663
2006	545	1,384	554	378	6,492	13,841	6,679	4,754	79,345	138,407	82,217	61,690
2007 [1]	576	1,396	479	345	6,612	13,955	5,588	4,076	80,505	139,551	73,169	55,220
2008	503	1,429	584	358	5,948	14,290	6,452	4,178	76,653	142,903	80,635	56,381
2009	557	1,457	629	385	6,172	14,567	7,348	4,571	78,077	145,669	89,176	61,527
2010	630	1,483	672	469	7,344	14,831	7,610	5,381	88,562	148,308	92,922	69,026
2011	652	1,496	611	460	7,488	14,958	7,265	5,367	92,221	149,583	88,846	69,704
2012	635	1,518	694	497	7,419	15,183	7,452	5,643	89,925	151,833	89,957	70,923

Year	Total income minus capital gains											
	Top .001 percent				Top .01 percent				Top .1 percent			
	Returns also in prior year	Returns in current year	Returns also in post year	Returns in pre, current, and post	Returns also in prior year	Returns in current year	Returns also in post year	Returns in pre, current, and post	Returns also in prior year	Returns in current year	Returns also in post year	Returns in pre, current, and post
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Number of returns:												
1999	519	1,207	496	323	6,303	12,073	6,041	4,279	75,794	120,732	73,930	56,394
2000	443	1,227	544	313	5,734	12,274	6,038	4,047	69,873	122,737	73,094	52,686
2001	541	1,262	615	363	6,110	12,620	7,176	4,434	75,623	126,204	81,826	57,744
2002	611	1,295	710	460	7,190	12,948	7,821	5,374	80,866	129,477	86,567	63,562
2003	701	1,322	722	507	7,725	13,218	7,925	5,743	86,389	132,178	87,538	67,395
2004	714	1,343	716	512	7,878	13,427	7,722	5,767	87,874	134,266	88,456	68,546
2005	748	1,362	762	559	7,986	13,618	8,291	6,047	89,538	136,181	91,842	70,591
2006	722	1,384	753	518	8,056	13,841	8,209	5,907	90,930	138,407	93,517	71,634
2007 [1]	767	1,396	722	513	8,147	13,955	7,745	5,652	91,660	139,551	89,159	68,981
2008	755	1,429	720	511	8,171	14,290	7,951	5,775	92,646	142,903	91,341	69,702
2009	689	1,457	760	487	7,662	14,567	8,636	5,777	89,281	145,669	97,011	70,775
2010	758	1,483	845	571	8,676	14,831	9,125	6,504	96,648	148,308	100,659	76,434
2011	830	1,496	800	599	9,005	14,958	8,846	6,718	100,043	149,583	99,077	78,162
2012	819	1,518	818	619	9,074	15,183	9,083	6,910	100,102	151,833	99,853	79,340

[1] The total number of returns does not include the returns filed by individuals to only receive the economic stimulus payment and who had no other reason to file.

Source: IRS, Statistics of Income Division, September 2016

Table A1. Numbers of Returns by Year and Top-Income Group, Total Returns and Returns Excluding Dependents, Tax Years 1997-2013

Item and year	Total	Total Income Percentiles					
		Top .001 percent	Top .01 percent	Top .1 percent	Top 1 percent	Top 5 percent	Top 10 percent
		(1)	(2)	(3)	(4)	(5)	(6)
Number of total returns:							
1997	129,301,257	1,293	12,930	129,301	1,293,013	6,465,063	12,930,126
1998	130,944,662	1,309	13,094	130,945	1,309,447	6,547,233	13,094,466
1999	132,267,205	1,323	13,227	132,267	1,322,672	6,613,360	13,226,721
2000	134,472,997	1,345	13,447	134,473	1,344,730	6,723,650	13,447,300
2001	137,088,000	1,371	13,709	137,088	1,370,880	6,854,400	13,708,800
2002	139,703,000	1,397	13,970	139,703	1,397,030	6,985,150	13,970,300
2003	141,843,002	1,418	14,184	141,843	1,418,430	7,092,150	14,184,300
2004	143,982,000	1,440	14,398	143,982	1,439,820	7,199,100	14,398,200
2005	145,880,678	1,459	14,588	145,881	1,458,807	7,294,034	14,588,068
2006	148,360,754	1,484	14,836	148,361	1,483,608	7,418,038	14,836,075
2007	[1] 149,874,806	1,499	14,987	149,875	1,498,748	7,493,740	14,987,481
2008	152,461,569	1,525	15,246	152,462	1,524,616	7,623,078	15,246,157
2009	153,543,127	1,535	15,354	153,543	1,535,431	7,677,156	15,354,313
2010	156,167,051	1,562	15,617	156,167	1,561,671	7,808,353	15,616,705
2011	158,367,240	1,584	15,837	158,367	1,583,672	7,918,362	15,836,724
2012	160,681,002	1,607	16,068	160,681	1,606,810	8,034,050	16,068,100
2013	163,795,535	1,638	16,380	163,796	1,637,955	8,189,777	16,379,554
Number of returns not including dependent filers:							
1997	118,009,306	1,180	11,801	118,009	1,180,093	5,900,465	11,800,931
1998	119,848,596	1,198	11,985	119,849	1,198,486	5,992,430	11,984,860
1999	120,732,450	1,207	12,073	120,732	1,207,325	6,036,623	12,073,245
2000	122,737,310	1,227	12,274	122,737	1,227,373	6,136,866	12,273,731
2001	126,203,649	1,262	12,620	126,204	1,262,036	6,310,182	12,620,365
2002	129,477,118	1,295	12,948	129,477	1,294,771	6,473,856	12,947,712
2003	132,178,323	1,322	13,218	132,178	1,321,783	6,608,916	13,217,832
2004	134,265,932	1,343	13,427	134,266	1,342,659	6,713,297	13,426,593
2005	136,181,055	1,362	13,618	136,181	1,361,811	6,809,053	13,618,106
2006	138,407,165	1,384	13,841	138,407	1,384,072	6,920,358	13,840,717
2007	[1] 139,550,911	1,396	13,955	139,551	1,395,509	6,977,546	13,955,091
2008	142,902,770	1,429	14,290	142,903	1,429,028	7,145,139	14,290,277
2009	145,668,936	1,457	14,567	145,669	1,456,689	7,283,447	14,566,894
2010	148,308,492	1,483	14,831	148,308	1,483,085	7,415,425	14,830,849
2011	149,582,712	1,496	14,958	149,583	1,495,827	7,479,136	14,958,271
2012	151,832,883	1,518	15,183	151,833	1,518,329	7,591,644	15,183,288
2013	154,757,391	1,548	15,476	154,757	1,547,574	7,737,870	15,475,739

[1] The total number of returns does not include the returns filed by individuals to only receive the economic stimulus payment and who had no other reason to file.

Source: IRS, Statistics of Income Division, November 2015. Includes estimated non-filer "returns" and income as well.

Table A2. Income Threshold by Percentile Group, Inclusion of Dependent Filers, Definition of Income, and Number of Years Used for Ranking, by Year for Selected Years

[All figures are estimates based on samples]

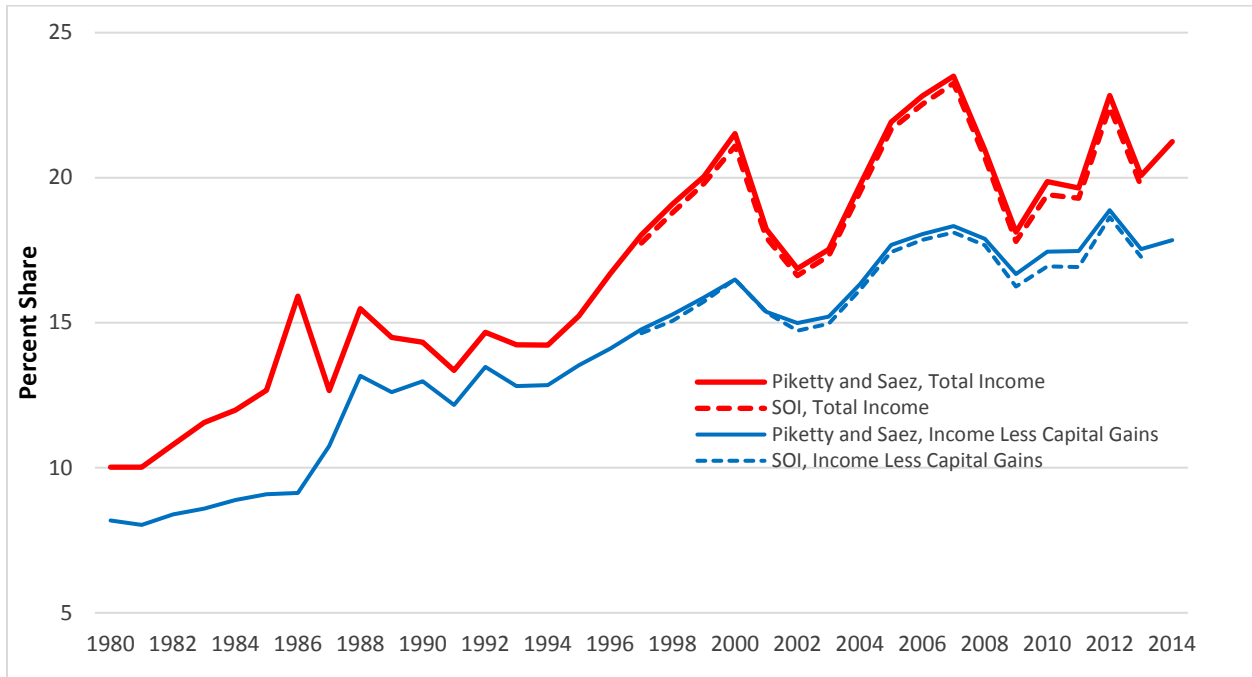
Item and year	Percentiles					
	Top .001 percent (2)	Top .01 percent (3)	Top .1 percent (4)	Top 1 percent (5)	Top 5 percent (6)	Top 10 percent (7)
All Returns, Total Income, 1-year						
1998	28,227,276	6,462,549	1,226,317	265,038	112,814	81,722
1999	32,935,259	7,385,472	1,382,871	290,215	119,450	86,495
2000	41,953,667	8,776,658	1,552,736	309,175	126,627	90,890
2001	28,665,097	6,282,050	1,276,942	288,051	125,395	90,980
2002	23,566,739	5,358,558	1,140,156	277,497	123,366	90,329
2003	25,796,895	5,738,713	1,192,938	284,739	125,955	91,742
2004	35,220,711	7,553,172	1,456,479	315,089	133,222	96,048
2005	45,853,581	9,620,960	1,738,395	350,946	140,949	100,895
2006	50,132,140	10,568,962	1,928,224	374,374	149,460	105,851
2007	58,503,604	11,714,173	2,079,655	401,663	157,540	111,383
2008	45,607,340	9,247,163	1,722,337	368,881	155,159	110,860
2009	31,394,390	6,566,286	1,356,952	331,172	149,260	107,841
2010	40,910,013	7,967,932	1,507,726	349,176	153,207	109,756
2011	38,386,737	8,050,795	1,574,739	365,602	158,343	112,775
2012	56,263,614	10,831,020	1,945,367	402,560	164,590	116,412
Excluding Dependents, Total Income, 1-Year						
1998	29,850,950	6,851,452	1,305,065	279,521	117,321	85,091
1999	35,213,274	7,875,272	1,473,227	306,638	124,632	90,397
2000	44,092,316	9,360,490	1,661,469	328,165	132,475	94,982
2001	30,197,021	6,627,424	1,350,936	302,300	130,384	94,399
2002	24,745,555	5,632,536	1,194,739	289,872	128,082	93,443
2003	26,922,447	6,031,468	1,251,469	297,284	130,193	94,937
2004	36,786,972	7,930,731	1,528,022	329,332	137,258	99,255
2005	48,066,770	10,106,548	1,827,231	366,084	145,611	104,247
2006	52,346,342	11,088,779	2,030,157	391,771	154,494	109,500
2007	60,905,865	12,348,042	2,194,728	422,108	163,108	115,318
2008	47,709,882	9,671,221	1,801,302	383,808	159,990	114,264
2009	32,360,496	6,821,741	1,405,070	341,209	153,117	110,557
2010	42,557,559	8,272,164	1,558,362	359,579	156,949	112,822
2011	39,979,190	8,370,526	1,634,744	377,632	162,713	116,194
2012	58,265,642	11,268,623	2,026,698	415,600	169,181	119,855
Excluding Dependents, Total Income, 3-Year						
1998	25,604,392	6,466,017	1,292,796	281,028	115,973	84,668
1999	30,504,416	7,338,448	1,478,569	308,474	124,321	89,927
2000	29,539,880	7,319,307	1,447,468	306,028	125,675	90,953
2001	28,137,302	6,637,755	1,382,878	306,110	129,446	93,585
2002	23,667,410	5,649,165	1,226,726	293,609	127,341	93,507
2003	29,539,880	7,319,307	1,447,468	306,028	125,675	90,953
2004	33,424,481	7,395,005	1,492,259	326,809	136,659	98,800
2005	41,373,116	9,430,690	1,767,505	360,534	144,487	103,942
2006	46,910,066	10,484,291	1,972,075	387,550	153,226	109,164
2007	46,416,100	10,096,245	1,964,874	398,980	157,634	112,982
2008	42,407,283	9,076,692	1,768,686	379,348	156,950	112,525
2009	35,674,828	7,432,362	1,541,744	357,691	154,348	111,353
2010	34,137,552	7,329,923	1,512,921	357,344	155,391	111,812
2011	40,883,792	9,024,892	1,735,843	385,930	161,218	115,504
2012	42,438,119	9,838,392	1,834,042	402,196	166,634	118,191
Excluding Dependents, Income Minus Capital Gains, 1-year						
1998	16,676,343	4,250,797	974,299	247,852	111,096	82,352
1999	19,925,296	4,887,206	1,078,196	265,505	117,135	86,495
2000	23,050,519	5,677,516	1,196,917	283,739	123,966	91,105
2001	19,108,412	4,833,161	1,118,016	281,527	126,655	92,727
2002	16,694,665	4,362,841	1,035,058	272,443	125,104	92,256
2003	17,859,350	4,485,798	1,048,307	275,554	126,554	93,187
2004	22,120,523	5,332,221	1,196,539	294,786	132,047	96,931
2005	27,162,095	6,430,494	1,367,518	318,164	138,355	100,982
2006	28,727,145	6,877,914	1,488,237	341,008	146,551	105,925
2007	32,066,273	7,333,658	1,584,055	364,120	154,302	111,231
2008	30,833,332	6,903,086	1,500,155	359,310	156,630	112,841
2009	24,430,886	5,656,158	1,267,299	329,356	151,226	109,768
2010	27,089,302	6,184,857	1,364,431	342,450	154,533	111,690
2011	25,412,013	6,203,801	1,424,163	360,201	160,299	115,072
2012	33,260,350	7,564,724	1,636,075	386,437	165,618	118,084
Excluding Dependents, Income Minus Capital Gains, 3-year						
1998	15,597,080	4,026,759	962,385	245,243	110,072	81,252
1999	17,173,648	4,566,037	1,076,579	264,848	116,621	86,276
2000	17,885,765	4,728,852	1,081,343	269,655	119,467	87,437
2001	17,151,809	4,617,345	1,099,483	277,446	124,159	91,251
2002	16,228,237	4,206,204	1,022,775	272,711	124,230	91,944
2003	35,167,500	4,656,255	1,073,385	275,166	126,033	93,216
2004	20,788,412	5,064,412	1,174,078	293,115	131,340	96,242
2005	24,510,829	6,072,727	1,332,300	314,121	137,239	100,413
2006	26,699,526	6,433,707	1,447,128	336,281	144,537	105,119
2007	27,669,221	6,479,504	1,484,395	351,152	150,468	109,157
2008	26,929,455	6,400,568	1,429,782	347,031	152,134	110,355
2009	25,243,471	6,097,786	1,338,646	341,233	151,841	110,066
2010	23,637,804	5,721,824	1,328,165	340,998	152,713	110,579
2011	25,762,132	6,203,826	1,450,771	362,253	158,271	113,969
2012	26,446,668	7,033,637	1,514,128	374,531	162,516	116,394

[Source: IRS, Statistics of Income Division, November 2015. Includes estimated non-filer "returns" and income as well.]

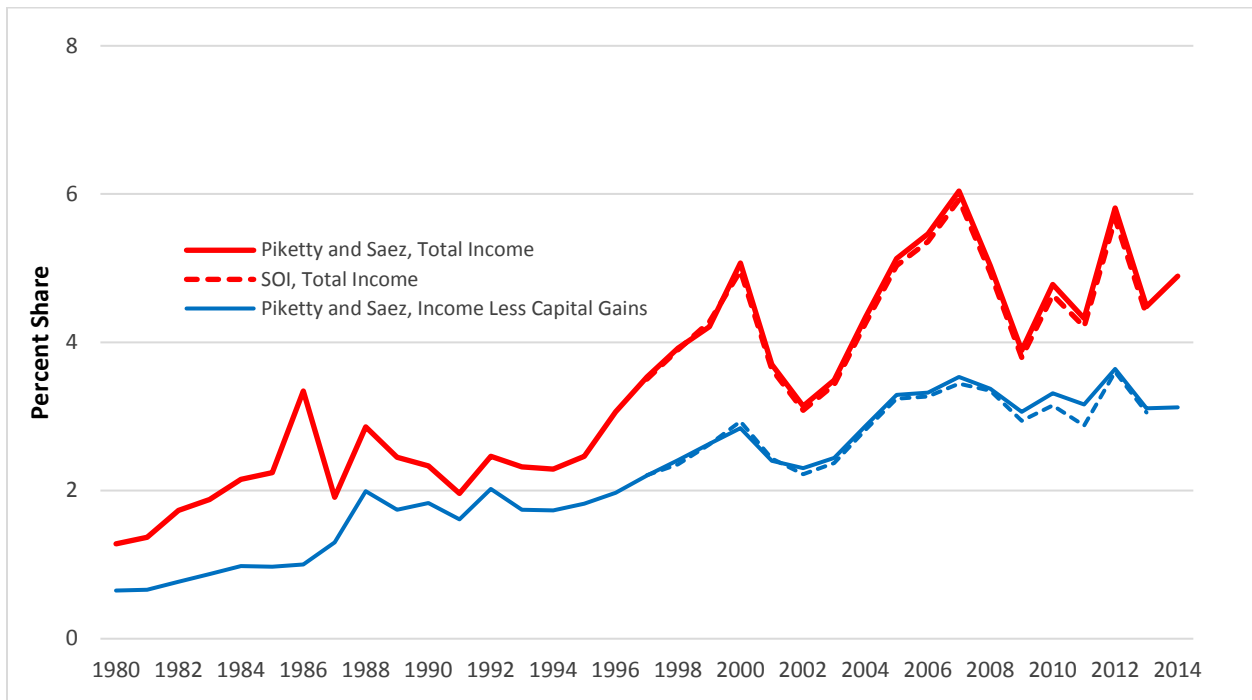
Appendix Figures

Appendix Figure 1. Comparing Trends Top-Income Shares from SOI and Piketty/Saez, by Income Concept

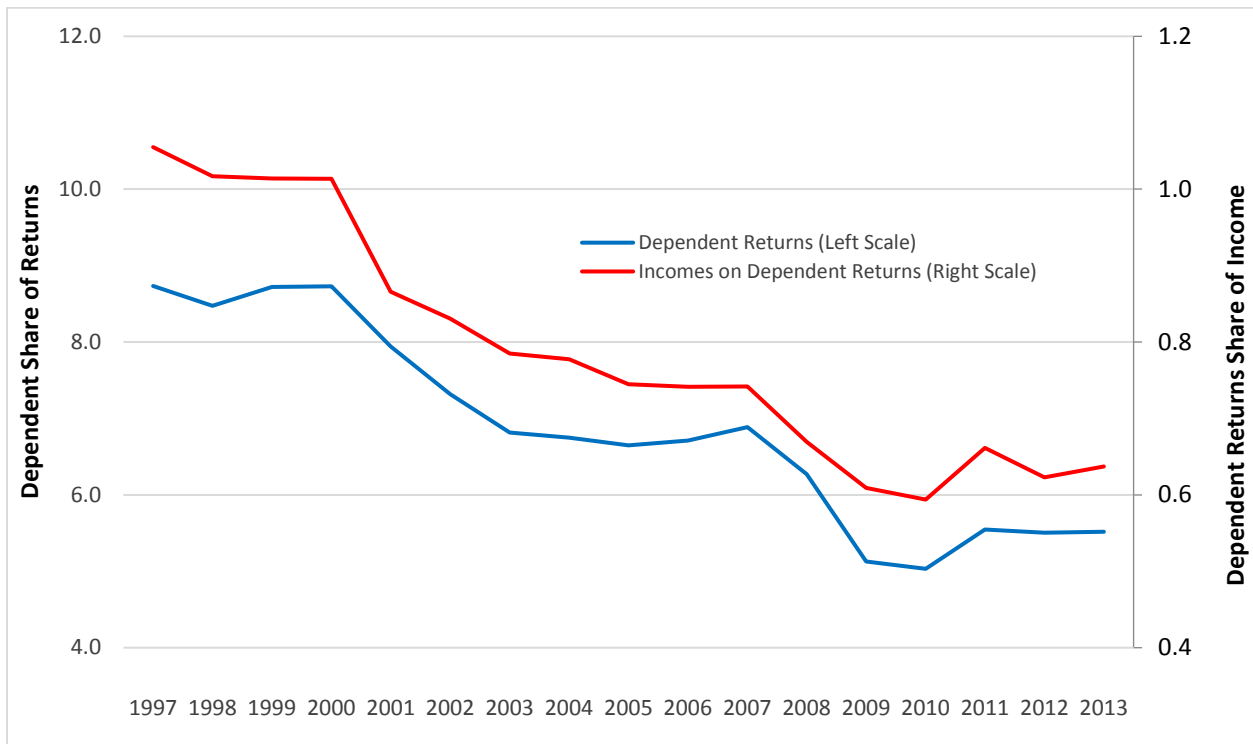
1A. Top 1% Income Share



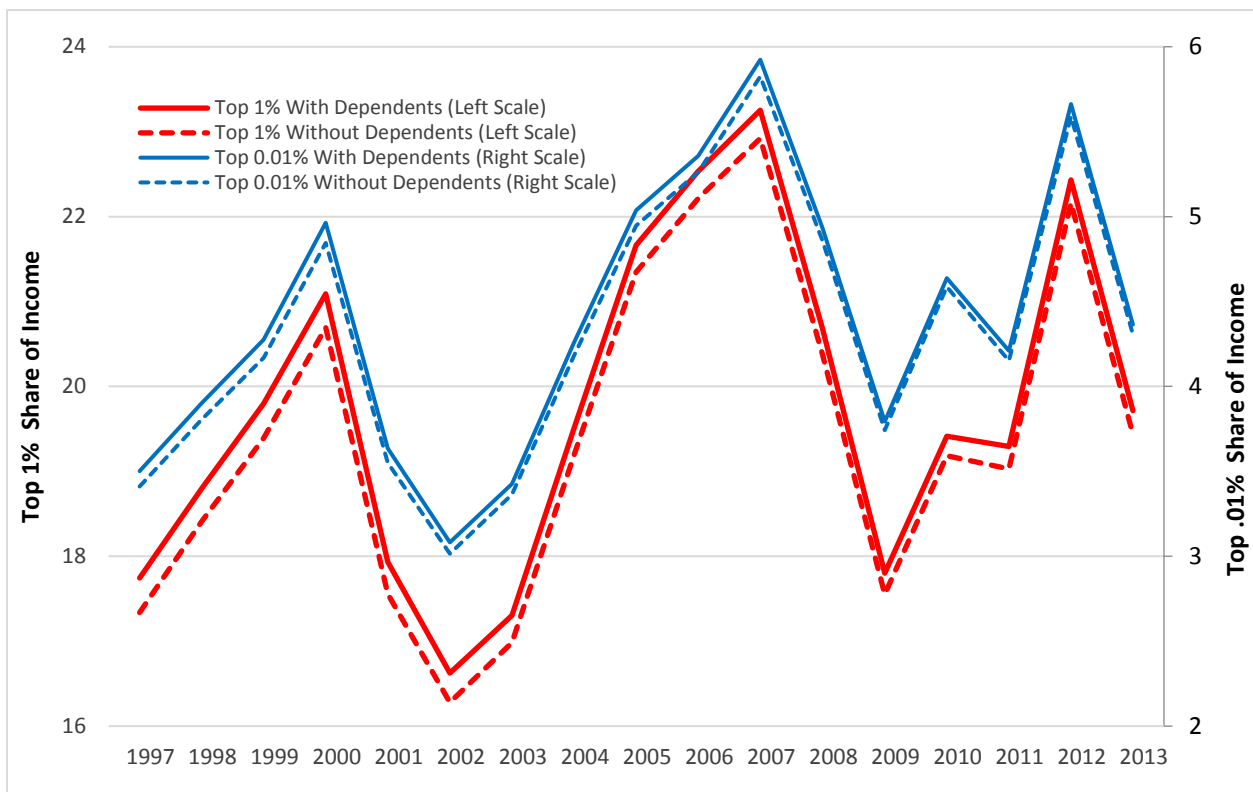
1B. Top .01% Income Share



Appendix Figure 2. Dependents: Share of Return Counts and Total Income, 1997-2013



Appendix Figure 3. Comparing Top-Income Shares (Top1% and Top .01%) by Inclusion of Dependents, 1997-2013



Appendix Figure 4. Three Year Rolling-Panel Match Rates, 1998-2012

