The Responsiveness of Reported Self-Employment Income to Tax Rate Changes

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April 2008

Abstract. This paper estimates the extent to which reported self-employment income responds to changes in the net-of-tax share using a new panel of tax returns. This panel consists of a stratified random sample of taxpayers in 1987 that were followed until 1996, spanning the OBRA90 and OBRA93 tax changes. The results suggest that the elasticity of self-employment income to the net-of-tax share is approximately .5, and that the response tends to be larger for joint filers, higher income filers, filers with at least some income from a sole proprietorship, and filers for whom the majority of income comes from self-employment. These results are generally robust to several specification changes, including changing the way income trends are accounted for, changing the income cutoff to be included in the sample, controlling for tax rates in the corporate sector, and controlling for shifting across years.

* Phone: (202) 622-1316. Email: Bradley.Heim@do.treas.gov. I wish to thank Bill Gentry, Jim Nunns, Deena Ackerman, James Pearce, David Joulfaian, and participants at the 2008 Annual Meetings of the American Economics Association for helpful advice and comments. Thanks also go to Jon Bakija for providing his comprehensive federal and state tax calculators. All remaining errors are mine. The views expressed are those of the author and do not necessarily reflect those of the Department of the Treasury.

1 Introduction

Self-employment is a common phenomenon in the United States. As an illustration, the IRS reported that 12.7 million tax returns in 1994 paid some amount of self-employment tax, which amounted to 11 percent of all returns filed that year.[1] Several recent papers have examined the whether marginal tax rates affect the decision whether or not to be self-employed. However, little is known about the extent to which the reported incomes of self-employed individuals respond to changes in tax rates. This study, then, uses a panel of tax returns to estimate the elasticity of self-employment income to changes in tax rates.

The responsiveness of self-employment income to marginal tax rates could take several forms. First, there could be a real effect, in that higher tax rates might induce the self-employed to devote more time to leisure and less time and effort to earning income, given that the return to earning the marginal income has gone down. Second, there could be a reporting effect, in that the gap between the income the self-employed individual received net of expenses incurred and what they report to the Internal Revenue Service may increase when tax rates are higher, when the payoff from such evasion is greater. Third, there could be a tax base effect, in which self-employment income could be recharacterized as corporate income, or wage and salary income, if there is an increased incentive to do so.[2] Finally, there may be a timing effect, in which the self-employed

[1] See IRS Statistics of Income (1994), Table A.

[2] This is related to a point made in Slemrod and Kopczuk (2002), that the elasticity of taxable income is a function of institutional features of the tax code. Because different tax rates are levied on different bases of

individual changes the timing of income or expenses to take advantage of tax rate differences between years. For example, they could change the timing of their billing in order to have the realization of income shift across years, or they could pay early for supplies to increase their expenses in the current period.

Using the Treasury Department's 1987-96 Family Panel of tax returns, this paper estimates the response of self-employment income to tax rates using data that begins at during the phase-in of the Tax Reform Act of 1986 (TRA86), and spans two major tax changes, the Omnibus Budget Reconciliation Act of 1990 (OBRA90) and the Omnibus Budget Reconciliation Act of 1993 (OBRA93). Numerous specifications are used to examine how the estimated elasticities depend on the sample, specification, and lag structure used.

The results suggest that the elasticity of self-employment income to the net-of-tax share is approximately .5, and that the response tends to be larger for joint filers, higher income filers, filers with at least some income from a sole proprietorship, and filers for whom the majority of income comes from self-employment. These results are generally robust to several specification changes, including changing the way income trends are accounted for, changing the income cutoff to be included in the sample, controlling for tax rates in the corporate sector, and controlling for shifting across years.

The paper proceeds as follow. Section 2 reviews the relevant literature, and Section 3 outlines the theoretical model underlying the estimation equations utilized in this study. Section 4 describes the dataset used. Section 5 summarizes the estimation strategy, and section 6 presents the estimation results. Section 7 concludes.

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income, the elasticity of self-employment income may be higher because of the ability to shift income to (or from) bases with lower (or higher) tax rates.

2 Related Literature

Several studies have demonstrated that self-employment income is frequently misreported or not reported to the IRS, particularly when compared to wage and salary income that is subject to withholding. For example, Kahn (1964) estimated that during the period 1939-60, approximately 70% of estimated self-employment income was reported to the IRS, while 96% of wage and salary income was reported. In IRS (1979) it was estimated that in 1976, 60-64% of self-employment income was reported on federal tax returns, while the comparable figure for wage and salary income was 97-98%. Since these studies, several others have been published that find compliance for self-employment income is lower than that for wage income, including Clotfelter (1983), Klepper and Nagin (1989), Feinstein (1991), Erard (1992), and Feldman and Slemrod (2007). Further, the IRS recently reported that in 2001, self-employment taxes were underreported by $39 billion, and taxes on business income (of which self-employment income is a part) were underreported by $109 billion.[3]

Since evasion of taxation on self-employment income may be easier than evasion on wages and salaries, it is possible that more individuals become self employed when tax rates (and the payoff from tax evasion) are higher. This observation has led to a large literature in which researchers have examined whether changes in tax rates lead

[3] See Internal Revenue Service: Tax Year 2001 Federal Tax Gap http://www.irs.gov/pub/irs-news/tax_gap_figures.pdf

individuals to become self-employed.[4] Several papers, including Long (1982), Moore (1983), Blau (1987), Parker (1996), and Schuetze (1998) find that higher marginal tax rates lead to self-employment. However, Fairlie and Meyer (1999) find that levels of self-employment are unrelated to marginal tax rates over the period 1910-90, and Moore (2003) finds that "neither TRA86 nor OBRA93 had a consistently significant effect on the self-employment decision." Gentry and Hubbard (2000) find that the level of marginal tax rates does not have a consistent effect on entry into self-employment, but that more progressive taxation tends to decrease entry into self-employment. In two papers, Bruce (2000, 2001) examines the response of entering into and exiting out of self-employment to differences in the tax rates that would be faced in wage work and self-employment, and finds that workers who switched into self-employment tended to be those who faced higher tax rates in self-employment than they would at a wage earning job.

Other papers have examine the response of the self-employed to particular business decisions of the self-employed. Carroll, Holtz-Eakin, Rider and Rosen (2000a, 2000b), find that a higher net-of-tax share (one minus the marginal tax rate) increases the probability that an entrepreneur invests, the probability of hiring of outside help, and the total wage payments to workers. Carroll, Holtz-Eakin, Rider and Rosen (2001) examined the effect of tax rates on the growth in gross receipts of the self-employed, and find that a 10 percent increase in the net-of-tax share (one minus the marginal tax rate) increases receipts by about 8.4 percent. Joulfaian and Rider (1998) examine the extent to which higher marginal tax rates increase the underreporting of self-employment income. While

[4] For a survey of studies that have examined other determinants of self-employment in several countries, see Le (1999).

these topics are certainly important on their own, this study abstracts away from these decisions to examine the extent to which the response along these and other margins aggregate up to an overall effect on reported self-employment income.

Most closely related to this study is that of Wu (2005). In that paper, data from the 1983 and 1989 Survey of Consumer Finances were used to estimate the responsiveness of rates of returns among privately held businesses to changes in tax rates, and estimated an elasticity in excess of 5. Compared to that study, this paper uses data that spans different tax changes (the Omnibus Budget Reconciliation Acts of 1990 and 1993) and comes from a different source (a panel of individual tax returns).

In addition to the studies on self-employment cited above, this study is related to two other sizable literatures. First, numerous studies have examined the extent to which men's and women's labor supply respond to changes in wage and tax rates. However, these studies typically omit the self-employed from their samples, because the neo-classical labor supply model is more likely to be applicable to wage and salary earners.[5] Second, several studies have attempted to examine the overall elasticity of taxable income to the net-of-tax share.[6] This literature has found a wide range of estimates, from close to 0 to well over 1, depending on the time period and specification used, leading Giertz (2006) to remark that "a narrower focus, for example on particular sources of taxable income, may prove more fruitful to understanding what drives the overall [elasticity of taxable income] estimates." This study follows in that vein.

3 Theoretical Model

[5] For good surveys of this literature, see Hausman (1985), Killingsworth and Heckman (1986), Pencavel (1986), and Blundell and MaCurdy (1999).
[6] This literature has been surveyed recently in Giertz (2004).

To derive the estimation equation used in this paper, start with a standard model of consumer choice, where the taxpayer receives income from self-employment (possibly among other sources). Let C_j denote ordinary consumption of type *j*, D_k denote deductible consumption of type *k*, E_l denote excludable consumption of type *l*, I_m denote income of type *m,* for example, labor, interest income, or net self-employment income (which will be denoted as I_{SE}), and M denote the exemption to which the taxpayer is entitled.

Since taxes are not withheld from self-employment income at the source, individuals can evade some taxes on self-employment income by reporting less than they actually earned or by overstating deductions or expenses. Doing this, however, may lead to a penalty if such an evasion is discovered by the IRS. So, let I_{SE}^{NR} denote the amount of self-employment income not reported to the IRS, and let $f\left(I_{SE}^{NR},\theta\right)$ denote the expected penalty from this evasion, where θ denotes the parameters of the detection and penalty systems of the IRS.[7]

Suppose that an individual is maximizing utility over these three types of consumption, subject to the constraint that the total spent on consumption is equal to their after tax income. Similar to Gruber and Saez (2002), for simplicity assume that income generating activities exhibit disutilites because they require effort, so that in the reduced form utility is a function of income earned. Assuming a one-period static choice model, letting τ denote the individual's marginal tax rate, and ignoring progressive taxation and

[7] This function reflects both the probability of getting caught mis-reporting income and the penalty if caught.

the choice of itemization status, the consumer's problem is

$$\begin{aligned} &\max U\left(\left\{C_j\right\}_{j=1}^{J},\left\{D_k\right\}_{k=1}^{K},\left\{E_l\right\}_{l=1}^{L},\left\{I_m\right\}_{m=1}^{M},Z\right) \\ &s.t.\sum_{j=1}^{J}p_jC_j+\sum_{k=1}^{K}p_kD_k+\sum_{l=1}^{L}p_lE_l=(1-\tau)\left\{\sum_{m=1}^{M}I_m-M\right\}+(1-\tau)I_{SE}^{NR}-f\left(I_{SE}^{NR},\theta\right) \end{aligned} \tag{1}$$

where the p_j's, p_k's, and p_l's denote the net-of-tax prices of regular, deductible, and excludable consumption, respectively, and Z denotes demographic characteristics of the individual.

Solving for the first order conditions yields the system of demand and supply equations

$$\begin{aligned} \left\{C_j\right. &= C_j\left(\left\{p_j\right\}_{j=1}^{J},\left\{p_k\right\}_{k=1}^{K},\left\{p_l\right\}_{l=1}^{L},(1-\tau),Z\right)\Big\}_{j=1}^{J} \\ \left\{D_k\right. &= D_k\left(\left\{p_j\right\}_{j=1}^{J},\left\{p_k\right\}_{k=1}^{K},\left\{p_l\right\}_{l=1}^{L},(1-\tau),Z\right)\Big\}_{k=1}^{K} \\ \left\{E_l\right. &= E_l\left(\left\{p_j\right\}_{j=1}^{J},\left\{p_k\right\}_{k=1}^{K},\left\{p_l\right\}_{l=1}^{L},(1-\tau),Z\right)\Big\}_{l=1}^{L} \\ \left\{I_m\right. &= I_m\left(\left\{p_j\right\}_{j=1}^{J},\left\{p_k\right\}_{k=1}^{K},\left\{p_l\right\}_{l=1}^{L},(1-\tau),Z\right)\Big\}_{m=1}^{M} \end{aligned} \tag{2}$$

Since the amount of nonreported income does not enter the individual's utility function directly, the amount of nonreported self-employment income is given by

$$I_{SE}^{NR}=I_{SE}^{NR}\left((1-\tau),\theta\right) \tag{3}$$

The amount of self-employment income reported to the Internal Revenue Service, then, is given by

$$\begin{aligned} I_{SE}^{R} &= I_{SE}\left(\left\{p_j\right\}_{j=1}^{J},\left\{p_k\right\}_{k=1}^{K},\left\{p_l\right\}_{l=1}^{L},(1-\tau),Z\right)-I_{SE}^{NR}\left((1-\tau),\theta\right) \\ &= I_{SE}^{R}\left(\left\{p_j\right\}_{j=1}^{J},\left\{p_k\right\}_{k=1}^{K},\left\{p_l\right\}_{l=1}^{L},(1-\tau),Z,\theta\right) \end{aligned} \tag{4}$$

If one normalizes the tax exclusive price of all consumption goods to 1, then the price of all deductible and excludable consumption goods becomes the net-of-tax rate, $(1-\tau)$. Taking this into account yields the reported self-employment income equation

$$I_{SE}^{R} = I_{SE}^{R}\left((1-\tau), Z, \theta\right) \tag{5}$$

which forms the basis for the estimation specification used initially.

However, suppose that instead of a static model, an individual is making a choice of consumption bundles in each of *T* periods. For ease of exposition, assume that the choice is made under perfect certainty, that the individual can lend or borrow at an interest rate of zero, and the individual's discount factor is zero. This consumer's problem is

$$\max \left\{ U_t \left(\left\{ C_j \right\}_{j=1}^{J}, \left\{ D_k \right\}_{k=1}^{K}, \left\{ E_l \right\}_{l=1}^{L}, \left\{ I_m \right\}_{m=1}^{M}, Z \right) \right\}_{t=1}^{T}$$
$$s.t. \sum_{t=1}^{T} \left(\sum_{j=1}^{J} p_j C_j + \sum_{k=1}^{K} p_k D_k + \sum_{l=1}^{L} p_l E_l \right) = \sum_{t=1}^{T} \left[\left(1-\tau_t\right) \left\{ \sum_{m=1}^{M} I_m - M \right\} + \left(1-\tau_t\right) I_{SE}^{NR} - f\left(I_{SE}^{NR}, \theta\right) \right] \tag{6}$$

Again normalizing the tax exclusive prices of all consumption goods to 1, the reported self-employment income function becomes

$$I_{SE}^{R} = I_{SE}^{R}\left(\left\{ \left(1-\tau_t\right) \right\}_{t=1}^{T}, Z, \theta \right) \tag{7}$$

If all cross-time price elasticities are zero, then all of the non-contemporaneous tax rates fall out of this equation, and the self-employment income supply equation becomes solely a function of the contemporaneous net-of-tax rate. However, self-employment income can often be substituted across periods. For example, a self-employed individual can arrange with a customer to shift the payment of some bills into the next year without a large change to their overall financial well-being. In this case, taxable income will be a function of the net-of-tax rate in the current period, as well as adjacent periods.

In addition, given sufficient planning, it may be possible for self-employed

individuals to shift some of their income either to or from the corporate sector, to take advantage of differences in the marginal tax rates between these two sectors. In this case, the self-employment income supply equation becomes

$$I^{SE} = I^{SE}\left(\left\{\left(1-\tau_t\right),\left(1-\tau_t^C\right)\right\}_{t=1}^{T}, Z, \theta\right) \tag{8}$$

where τ_t^C denotes the marginal corporate income tax rate in year *t*.

The specification in which the current year income depends only on the current year tax rate tends to be the dominant one in the taxable income elasticities literature, and so the analysis begins with that specification. The paper then examines the robustness of these elasticities to several specification changes, to netting out the effects of changes in the corporate tax rate, and to accounting for shifting of income across years.

4 The Family Panel, 1987-96

The data used in this study come from a ten-year panel of tax returns known as the "Family Panel."[8] This panel consists of two segments – a "cohort" segment and a "refreshment segment."

The cohort segment started with a cross section of tax returns for 1987 that were filed with the IRS in 1988 and sampled by the IRS's Statistics of Income (SOI) Division in that year. This sample consisted of approximately 85,000 tax returns. All taxpayers represented on the return of a member of this cross section, including secondary taxpayers on joint returns and dependents, were pulled into the sample. Then, over the

[8] For more information on Treasury's Family Panel, see Cilke et al. (1999, 2000). This section borrows heavily from those papers' description of the data.

following nine years, through returns filed in 1997 for tax year 1996, the SOI division included in the panel any return filed that reported any panel member as a primary or secondary taxpayer, including tax returns filed by panel members who were dependents of another taxpayer. Because of this sampling methodology, using this dataset it is possible to form "tax families," consisting of a primary and possibly secondary filer, and all dependents.

Because some members of the cohort panel dropped out of the tax-filing U.S. population due to death, emigration, or falling below the tax filing thresholds, while others entered because of immigration or becoming filers, over time this cohort panel represents a declining portion of the population. To keep the panel representative required an additional "refreshment" segment that represented individuals who became non-dependent tax return filers after 1987, and their dependents. This segment was created from the returns in the SOI cross sections for 1988 through 1996 filed by a random sample of primary filers who were not filers in 1987. The dataset also includes a number of imputed tax returns that represent permanent non-filers and non-filers who filed in at least one year between 1987 and 1996, and a few returns of panel member filers that were not included in the SOI sample. These imputed returns are not used in the analysis in this paper, however.

Overall, the Family Panel consists of 1.4 million actual or imputed tax returns. Numerous sample cuts were made, however, before the estimation is performed. Most of these cuts follow what has been done previously in the literature.

All observations for which data have been imputed are eliminated from the sample. The sample is then cut to include only those observations in which the primary filer was

not a dependent at any point during the panel. In addition, observations in which there is a change in filing status at some point in the panel are dropped. These cuts are done to eliminate changes in income that are due to changes in filing status. Also cut were all returns in which the primary filer is under the age of 25, to eliminate changes in income due to the completion of schooling. Finally, because log differences in self-employment income are used as the dependent variable, taxpayers who reported no self-employment income in either year of the difference were excluded from the sample. After these cuts, 77,389 observations remained.

The dependent variable in this study is total self-employment income, which. comes from the sum of line 1 (farm income) and line 2 (non-farm income) of the primary filer's form 1040 schedule SE, which in turn reflect the sum of the taxayer's Schedule C, Schedule F, and partnership income.[9]

To control for demographic characteristics of the filers in the panel, information is used on the primary filer's age,[10] gender, marital status, itemizer status, number of children, whether one or more children lived outside of the filer's house, and region of the country.

Marginal tax rates in this study include federal income tax, FICA, self employment, and state income tax rates. These rates were calculated using tax calculators provided by Jon Bakija.[11] Tax rates were calculated by incrementing self-employment income by $100 and calculating the marginal increase in taxes owed, taking into account self-

[9] Due to the small number of observations in the dataset that reported farm self-employment income, it was not possible to reliably estimate the effect of changes in the net of tax share on farm and non-farm income separately.
[10] Information on taxpayers' ages come from elements of social security that were merged into the Family Panel.
[11] Documentation for these tax calculators is detailed in Bakija (2008).

employment (SECA) taxes and the interaction between federal and state income taxes for those who itemize.[12]

To examine the extent of self-employment in all of the years under analysis in this study, Figure 1 presents the percent of filers reporting self-employment income and the amount of self-employment income reported for each year.[13] As can be seen from Panel (a), slightly over 10% of all filers reported some amount of self-employment income in 1987. Among joint filers, over 17% reported some amount of self-employment income, whereas 5% of single filers reported self-employment income. All of these figures tended to increase during the sample, so that in 1996 slightly less than 11% of all filers, including almost 18% of joint filers and almost 6% of single filers, reported some amount of self-employment income.

The total amount of reported self-employment income also increased substantially during this period, from $255 billion in 1987 to almost $300 billion, as can be seen in Panel (b). Most of this increase was due to joint filers, whose reported self-employment income increased from $205 billion to almost $240 billion, while single filers' reported income increased from just about $50 billion to about $60 billion.

Figure 2 presents the distribution of returns that reported self-employment income by the amount of self-employment income reported. From this figure, it is apparent that the distribution of returns by income is highly skewed, with over 50% of returns with self-employment income reporting less than $10,000 in all years in the sample. Further, over 30 percent of returns with self-employment income report between $10,000 and $50,000 of self-employment income.

[12] The federal tax rates from this calculator were benchmarked against the rates calculated by the Treasury Department's internal tax calculator for the Family Panel.
[13] The data used to create these figures are described in more detail in Section 3.

Figure 1: Fraction and Amount of Self-Employment Income

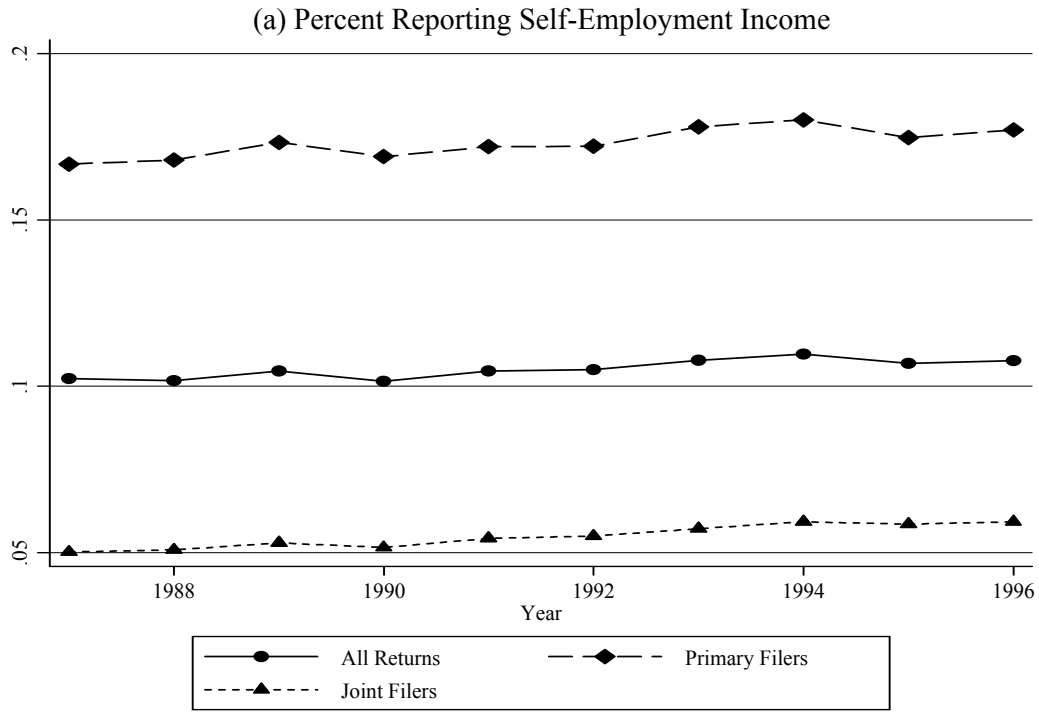
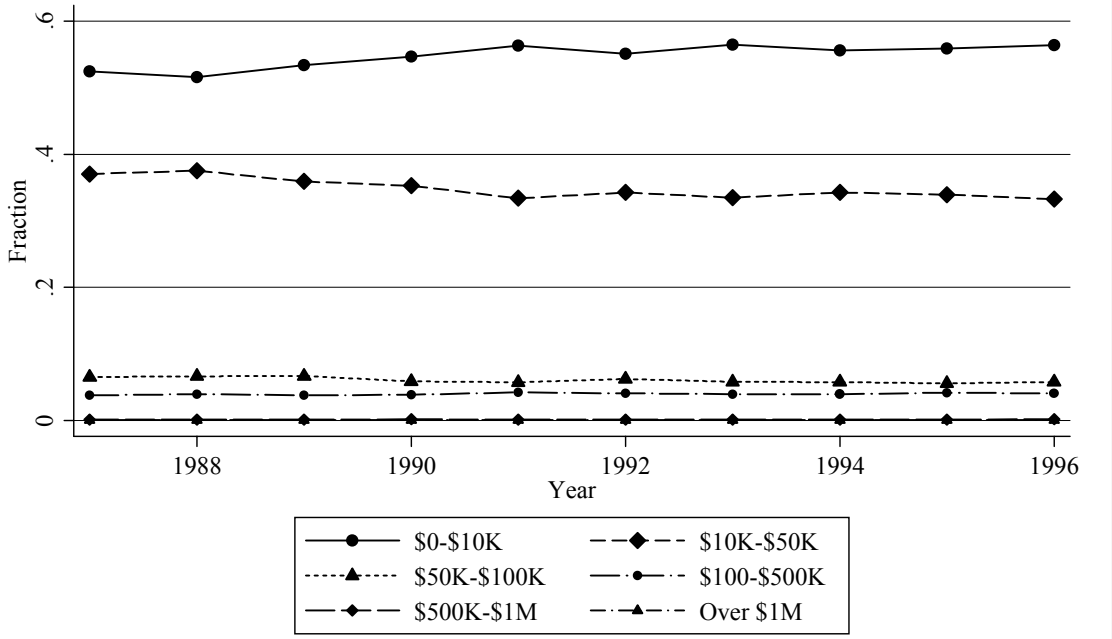


Figure 2: Distribution of Returns by Size



Sample statistics for the relevant variables in the resulting sample are presented in Table 1, both for the unweighted sample, and for the sample when population weights are applied. In the unweighted sample, the average amount of self-employment income is $322,615. Among married taxpayers filing jointly, the mean of self-employment income of the primary filer is $323,418, while mean of self-employment income for single filers is $ 313,481.

The majority of self-employment income comes from non-farm related activities, as the mean amount of non-farm self-employment income is $319,473, while the mean of farm self-employment income is $3,130. However, the lower mean for farm self-employment income is largely due to the small number of observations that report farm

income.

Examining the columns with population weighted means demonstrates the extent to which higher income returns were oversampled. For example, when returns are population weighted, the mean amount of self employment income drops to $27,246, of which $25,574 comes from nonfarm income and $1,657 comes from farm income.

5 Estimation Method

To estimate the effect of a change in the net-of-tax rate on a taxpayer's reported self-employment income, regressions similar to those estimated in Gruber and Saez (2002), Giertz (2006), and Heim (2007) are run. This equation is of the form

$$\ln\left(\frac{I_{it'}^{SE}}{I_{it}^{SE}}\right) = \alpha + \beta \ln\left(\frac{1-\tau_{it'}}{1-\tau_{it}}\right) + \delta f\left(\overline{I_i^{totSE}}, I_{it}^{totSE}\right) + \gamma Z_{it} + \varepsilon_{it} \qquad (9)$$

are run, where *t* denotes the base year, and *t'* denotes the year three years subsequent to the base year, I_{it}^{SE} denotes reported self-employment income of a particular type in year *t*, I_{it}^{totSE} denotes total self-employment in year *t*, $\overline{I_i^{totSE}}$ denotes the average of total self-employment income over all years the taxpayer is observed, $1-\tau_{it}$ denotes the net-of-tax rate, and Z_{it} denotes other factors that might affect a taxpaying unit's income.

Note that, in this specification, estimates of β cannot be interpreted as the elasticity of self-employed income for all self-employed individuals as a whole, because I am using a selected sample of taxpayers who reported self-employment income in both years. If the self-employed individuals that were the most responsive to tax changes tended to be

more likely to leave self-employment after the tax increases in the 1990's, then the estimates in this paper would be downward biased estimates of the elasticity of self-employment income among all the self-employed.[14] Estimates of the elasticity of self-employment income among those who stay self-employed are interesting in their own right, however, because they reflect the responsiveness to tax rate changes among those who are consistently self-employed.

Several studies (including Moffitt and Wilhelm (2000), Gruber and Saez (2002), and Giertz (2004, 2006)) have noted the importance of controlling for exogenous income trends by income class and for mean reversion when estimating taxable income elasticities, and this logic applies equally to estimating the elasticity of self-employment income to changes in tax rates.

In order to control for income trends by income class, similar to Heim (2007), I include as independent variables a ten piece spline in average self-employment income across the years observed in the panel.[15] Average income is used as a proxy for the permanent income of the taxpayer, and as a result, the inclusion of these variables attempt to control for secular changes in the income distribution that differ depending on an individuals permanent income and that are due to factors other than changes in taxes.

To eliminate bias due to mean reversion at the high end of the income distribution, three dummy variables are included: a dummy for base year total self-employment income being between one and two times average total self-employment income, a

[14] Estimates from a selection-corrected regression (e.g. Heckman (1979)) would be preferable, as they would apply to the whole population of self-employed. Unfortunately, they would be unconvincing in the current setting, because the dataset used in this study contains no variables that can plausibly be thought of as affecting the decision to stay self-employed but not the decision of how much income to earn and report, and so identification would come solely from functional form restrictions.

[15] The importance of controlling for such trends has been noted by Goolsbee (2000) and Gruber and Saez (2002), among others.

dummy for base year total self-employment income being between two and three times average total self-employment income, and a dummy for base year total self-employment income being above three times average total self-employment income.

To account for the possible endogeneity of the change in net-of-tax rates to the change in self-employment income between t and t',[16] following Gruber and Saez (2002), the actual change in tax rates is instrumented for using the variable $\ln\left(\frac{1-\tau_{t'}^{t}}{1-\tau_{t}}\right)$, where $\tau_{t'}^{t}$ denotes the marginal tax rate observation i would have faced in year t' if all of the components of income had been the amounts in year t inflated by increases in the CPI. As such, the instrument reflects a difference in tax rates that is due solely to changes in tax law, and not due to taxpayer behavior.[17]

For the most part, estimates presented in this paper following the weighting scheme of Giertz (2006), where observations are weighted by their sampling importance multiplied by reported self-employment income in the base year, so that elasticities reflect the change that would occur to overall amount of reported self-employment income. Following Gruber and Saez (2002), to prevent any ultra-high income individual observation from having undue influence on the resulting estimates, the base year self-employment income amounts are truncated at $1 million when calculating weights. However, the results are robust to relaxing this truncation.

Table 2 presents the means and standard deviations in the change in net-of-tax share

[16] Note that, unlike in taxable income studies, marginal tax rates are not directly a function of self-employment income. This is because self-employment income is only a portion of total taxable income, and other sources of income or deductions also determine the marginal tax rate. However, endogeneity of the marginal tax rate is still possible in this setting, particularly for observations with only (or predominantly) self-employment income.

[17] Note that this instrument will also capture tax changes that result from individuals crossing unindexed thresholds, even if the tax law hasn't changed.

instrument are presented by total self-employment income group and year. In this table the increase in the net-of-tax share that resulted from TRA86 is apparent in the 1987-90 year pair, as are the decreases in the net-of-tax share that resulted from the OBRA90 and OBRA93 in the 1990-93, 1991-94, and 1992-95 pairs. As would be expected, given the nature of these tax changes, the change in the net-of-tax share is generally larger for higher income groups than for lower income groups. However, the standard deviation in the net-of-tax share instrument among the group of taxpayers with up to $50,000 in self-employment income is often greater than that for higher income groups, suggesting that individuals with all levels of income will contribute to the identification of the overall elasticity.

6 Results

6.1 Base Specification

Table 3 presents results from the base specification. The results are grouped by the sample used (all filers, joint filers, or single filers). When all filers are included in the estimation sample, the estimated elasticity of self-employment income is .518, and the coefficient is highly significant. Comparing this result to those generally found in the elasticity of taxable income literature, it appears that self-employment income is slightly more responsive to changes in tax rates than total income reported on tax forms. For example, Heim (2007), in an analogous specification, estimated the elasticity of total

income to the net-of-tax share to be .449, slightly lower than the elasticity found here.[18]

Looking at the self-employment income of joint and single filers separately, only the estimated elasticity for married filers is positive and significant, with an estimated elasticity of .548. The elasticity for single filers is estimated to be .043, but due to a large standard error is not significantly different from that of joint filers.

In Table 4, taxpayers in the sample are ranked according to their average self-employment income. Then, the net-of-tax share is interacted with a dummy variable that indicates self-employment income being in the one of the sixth through tenth deciles or in the bottom half of the distribution of self-employment income, in order to estimate separate elasticities by income group. In this table, only the estimated elasticities for the top two income groups are positive and significant, with estimated elasticitie of .734 and 1.122 for the tenth and ninth deciles, respectively. For joint filers, the top two income groups again have significant elasticity estimates. For single filers, none of the estimated elasticities are positive and significant, though standard errors are large throughout.

6.2 Robustness Checks

To check the robustness of the above results to some of the key specification choices that were made, several robustness checks to the specifications presented above are performed. The results from these specifications are presented in Table 5. In each panel, estimated elasticities are presented separately for all filers, and joint and single filers separately.

[18] A difference between these specifications, though, is that Heim (2007) only included those with greater than $50,000 of income in the base year.

In Panel (A), to examine whether the results differ depending on the set of years used, a specification was estimated with a one year difference between *t* and *t'*. Using a shorter lag has the advantage that underlying changes in the income distribution are likely to be less pronounced, making it more likely that the estimated coefficient is the tax effect. However, the estimated taxable income elasticities are more likely to be driven by shifting across two close years, and so it is less likely that the estimates capture a real response of taxpayers to changes in tax rates. In this specification, the estimated coefficient for all filers falls to .364, and is only marginally significant. However, it is not significantly different from the estimate in the base specification.

In Panels (B) and (C), the sample was cut to exclude those who were less likely to be affected by the OBRA90 and OBRA93 tax changes. In Panel (B), similar to Gruber and Saez (2002), the sample is cut to include only observations that report at least $10,000 of self-employment income in the base year, and in Panel (C), similar to Heim (2007), the sample is cut to include only those who report at least $50,000 in the base year. Cutting the sample to include those with income above $10,000 in the base year reduces the estimated elasticity for all filers slightly to .509, while cutting the sample to those with income above $50,000 in the base year increases the estimated elasticity to .711. Neither of these estimates, however, are statistically different from the estimate in the base specification.

In Panels (D) and (E), two alternate methods are used to control for mean reversion and secular trends in the income distribution. The specification in (D) follows Gruber and Saez (2002) in replacing the log average income variables and mean reversion dummy variables with a ten piece spline in the log of base year income (in the third

column of each section). This specification is based on a strategy for controlling for mean reversion suggested in Moffitt and Wilhelm (2000). When this is done, the elasticity estimates are highly significant but of the wrong sign. When ten piece splines in the log of lagged income (one year prior to the base year) and the deviation of base year log income from the log of lagged income are included, as was used in Kopczuk (2005), the estimated elasticity for all filers increases to .850, but is not significantly different from the estimate in the base specification.

6.3 Accounting for Shifting

As noted in the theoretical model, in addition to effect that changes in tax rates can have on real behavior and on the reporting of income, changes in tax rates can also induce taxpayers to shift income, either between tax bases, or between different years.

For example, if tax rates increase on corporate-source income, then individuals may shift income into the individual sector to take advantage of comparatively lower rates. If this shifting occurred at the time tax rates were also increasing in the individual sector, the result could be a downward bias in the estimated elasticity of self-employment income to the individual net-of-tax rate.

Fortunately for this study, for most years of the sample corporate tax rates were relatively stable. There are two exceptions to this, however. First, in 1988, as part of the phase-in of the Tax Reform Act of 1986, marginal tax rates fell for all levels of corporate income above $25,000.[19] Second, in 1993, as part of the Omnibus Budget Reconciliation

[19] Of course, at the same time there was a considerable amount of base broadening.

Act of 1993, marginal tax rates increased on corporate income above $10 million. Since these tax changes in the corporate sector occurred at the same time as changes in the individual sector, the estimates presented above may be biased by shifting from the corporate into the individual sector, though the direction of the bias is unclear.

To attempt to net out these effects, two changes to the sample are made. First, any observation that has a base year of 1987 or 1988 is dropped. Second, any observation that reported over $10 million in total self-employment income in the base year is dropped. The results from this specification are presented in Panel (A) of Table 6.

Comparing this table to Table 3, the estimated elasticities for all filers and joint filers have increased. The estimated elasticity for all filers is now 1.091, and for joint filers is 1.134, suggesting that not controlling for tax rate changes in the corporate sector may have biased the estimated elasticities in the base specification downward. However, due to large standard errors, these estimates are not significantly different from those in the base specification.

Consider next income shifting across years. Suppose that taxpayers are able to shift income across adjacent years in response to tax wedges between those years. In this case, the equation determining self-employment income (omitting non-tax variables) is

$$\ln\left(I_{it}^{SE}\right) = \beta \ln\left(1-\tau_{it}\right) + \beta^{f}\left[\ln\left(1-\tau_{it+1}\right) - \ln\left(1-\tau_{it}\right)\right] + \beta^{b}\left[\ln\left(1-\tau_{it}\right) - \ln\left(1-\tau_{it-1}\right)\right] + \varepsilon_{it} \quad (10)$$

where β captures the long run (or "real") effect of the tax rate on taxable income, β^{f} captures the change in taxable income that results from income being shifted into (out of) the current year because the net-of-tax share is lower (higher) one year forward, and β^{b} captures the change in taxable income that results from income having been shifted into

(out of) the current year because the net-of-tax share was lower (higher) one year back. I estimate this equation in difference form as

$$\Delta \ln\left(I_{it}^{SE}\right) = \beta \Delta \ln\left(1-\tau_{it}\right) + \beta^{f} \Delta\left[\ln\left(1-\tau_{it+1}\right) - \ln\left(1-\tau_{it}\right)\right] + \beta^{b} \Delta\left[\ln\left(1-\tau_{it}\right) - \ln\left(1-\tau_{it-1}\right)\right] + \varepsilon_{it} \quad (11)$$

using the difference between the current and adjacent years' synthetic tax rates as instruments for the additional difference terms.

The results from such an exercise are presented in Panels (B) and (C) of Table 6. In Panel (B), when only the one year forward difference in net-of-tax rates is added, the shifting forward elasticity is of the wrong sign and insignificant, with a large standard error. The long run elasticity is .690, which is larger than the elasticity in the base specification, but is insignificant and not significantly different from the estimate in the base specification due to a large standard error. In Panel (C), when both the one year forward and backward difference in net-of-tax shares are included, the estimated shifting forward elasticity is correctly signed, though insignificant, but the estimated shifting backward elasticity is wrongly signed and marginally significant. Again, the estimated long-run elasticity is larger than in the base specification, with a value of 1.058, but is again not significant due to a large standard error. Thus, the results do not provide any conclusive evidence that the base results were appreciably biased due to omission of adjacent years' tax rates.

6.4 Differences by Business Type and Composition of Income

To examine whether the responsiveness of self-employment income to tax rates differs

depending on the form of the business of the self-employed individual, or by whether self-employment income comprises a majority of the taxpayer's earned income, in Table 7 the sample is broken out by business type, whether there was a change in business form, and whether self-employment income comprised a majority or minority of the taxpayer's earned income.

In the left panel, observations are broken out according to whether, in the base year, they reported only sole proprietorship income, only partnership income, or both. For those who report only income from a sole proprietorship, the elasticity of self-employment income is estimated to be .339 and is insignificant, and for those with only partnership income, the estimated the elasticity is an insignificant .042. For those with both types of business income, however, the estimated elasticity is .827 and is highly significant. Though this estimate is not significantly different than those for taxpayers with only one business type, its higher magnitude makes intuitive sense, as taxpayers with additional types of businesses would plausibly have greater scope to react to tax changes, resulting in a larger behavioral response. The same pattern holds for joint filers, though the elasticity for sole proprietorship income only filers is now significant. For single filers, none of the estimated elasticities are significant.

In the center panel, observations are broken out according to whether the type(s) of business from which the individual was reporting income changed between the two years, to examine whether the responsiveness is greater among those whose business changed form. In this panel, it appears that the patterns of response are similar whether or not the taxpayer changed the type(s) of business from which self-employment income was received between the two years. Among those whose type(s) of business changed, the

elasticity of self-employment income was .453 (though with a large standard error), whereas the estimated elasticity was .390 among those for whom it did not change, and these estimates are not significantly different from each other.

The right panel divides the sample according to whether self employment income made up the majority or minority of earned income of the taxpayer. From this panel, it is apparent that those with a majority of income coming from self-employment tended to be more responsive to tax rate changes, with a highly significant elasticity of .591. The estimated elasticity for those with a minority of income from self-employment is .399, and is insignificant.

7 Conclusion

This paper used data from the Treasury Department's 1987-96 Family Panel of tax returns to estimate the responsiveness of self-employment income to tax changes. Results from the base specification suggest that the elasticity of self-employment income to the net-of-tax share is approximately .5, and that the response tends to be larger for joint filers, higher income filers, filers with at least some income from a sole proprietorship, and filers for whom the majority of income comes from self-employment. These results are generally robust to several specification changes, including changing the way income trends are accounted for, changing the income cutoff to be included in the sample, controlling for tax rates in the corporate sector, and controlling for shifting across years.

A couple of caveats should be kept in mind when interpreting these elasticities.

First, these results were estimated using taxpayers who earned self-employment income both before and after the tax change. If, as some papers suggest, there is also responsiveness to changes in tax rates on the extensive margin decision of whether to become self-employed, these results would not give the whole picture of the response of self-employment income to changes in tax rates. For example, if increases in tax rates lead more taxpayers to become self-employed (as some of the earlier literature has suggested), the estimates found here would be overestimates of the effect of the tax rate change on reported self-employment income. The reasoning is straightforward. If tax rates increase, self-employment income would significantly decrease among those that were already self-employed, but additional taxpayers would become self-employed, adding to the stock of self-employment income. Obviously, if as some more recent papers suggest, increases in tax rates lead to decreases in self-employment, the estimates here would be underestimates of the total effect of the tax change on self-employment income. However, a recent paper by Moore (2004) finds that two of the tax changes used in this analysis, OBRA90 and OBRA93, did not have a consistent significant effect on the decision to be self-employed, and so the magnitude of this bias is probably small.

Second, although this paper found a significant and sizable effect of tax rates on self-employment income, it may be that not all of this effect is due to a change in real activity. As was noted above, self-employed individuals may be able to evade taxes by not reporting all of their income, since unlike for regular wage and salary income, there is no third party that reports these amounts to the IRS. Thus, the effects that have been found in this paper could be (at least partly) due to taxpayers increasing their evasion when tax rates increase. Unfortunately, separating out the real effect from the evasion

effect is not possible using the Family Panel.

However, a back of the envelope calculation of the evasion effect can be performed using an estimate in Joulfaian and Rider (1998). In that paper, the authors used 1985 and 1988 Taxpayer Compliance Measurement Program data to estimate an elasticity of the self-employment business income gap to the marginal tax rate of .48. Since the average amount of income understatement was 25% of business income, this translates to an elasticity of business income to the marginal tax rate due to evasion of .12. Since the elasticities estimated in this paper generally exceeded 1, this calculation would suggest that the elasticity of real activity would be tempered somewhat, though not completely, if the evasion response could be netted out.

Overall, the results in this paper suggest that changes in tax rates do have a substantial impact on the reported income of the self-employed. Further, these results help to deepen our understanding of why and how much taxable income responds to tax rates.

Table 1: Sample Statistics

Variable	Unweighted		Population Weighted	
	Mean	Std. Dev.	Mean	Std. Dev.
Income Variables				
Self Employment Income	$322,615	$1,859,953	$27,246	$111,295
Non-Farm Income	$319,473	$1,858,370	$25,574	$111,096
Farm Income	$3,130	$155,135	$1,657	$13,438
Three Year Difference in Log of Self Employment Income	-0.189	1.314	-0.065	1.070
Avg. Inc. <= Income <= 2*Avg Inc.	0.430	0.495	0.449	0.497
2*Avg Inc. <= Income <= 3*Avg. Inc.	0.088	0.283	0.092	0.290
3*Avg. Inc. <= Income	0.059	0.235	0.048	0.213
Demographic Variables				
Age/100	0.516	0.120	0.478	0.123
Age Squared/1000	2.804	1.300	2.438	1.256
Married	0.919	0.273	0.845	0.362
Number of Children	1.120	1.276	1.084	1.237
Child Away from Home	0.008	0.090	0.006	0.079
Itemizer	0.836	0.370	0.539	0.499
Sex of Primary Filer (1=Female)	0.167	0.373	0.211	0.408
Census Division				
New England	0.066	0.249	0.053	0.224
Mid-Atlantic	0.192	0.394	0.136	0.343
East North Central	0.137	0.344	0.145	0.352
West North Central	0.065	0.247	0.108	0.311
South Atlantic	0.153	0.360	0.155	0.362
East South Central	0.048	0.214	0.059	0.235
West South Central	0.121	0.326	0.114	0.317
Mountain	0.046	0.210	0.061	0.240
Pacific	0.170	0.376	0.168	0.374
Total Number of Observations	77,388			

Table 2: Sample Statistics for Change in Net of Tax Share Instrument: Three Year Difference

Year	Above $0	$0 to $50K	$50K to $100K	$100K to $500K	$500K to $1M	$1M and above
1987-90	0.089	0.042	0.046	0.122	0.153	0.154
	(0.093)	(0.096)	(0.093)	(0.061)	(0.048)	(0.047)
	10,976	4,801	869	2,554	2,005	747
1988-91	-0.032	-0.011	-0.040	-0.043	-0.059	-0.057
	(0.059)	(0.061)	(0.070)	(0.043)	(0.044)	(0.060)
	11,025	4,947	961	2,648	1,713	756
1989-92	-0.030	-0.009	-0.033	-0.043	-0.062	-0.063
	(0.082)	(0.105)	(0.082)	(0.040)	(0.020)	(0.027)
	10,931	5,077	1,035	2,701	1,399	719
1990-93	-0.094	-0.041	-0.056	-0.135	-0.197	-0.198
	(0.104)	(0.084)	(0.096)	(0.098)	(0.049)	(0.037)
	10,633	5,072	999	2,571	1,324	667
1991-94	-0.077	-0.036	-0.042	-0.117	-0.169	-0.159
	(0.101)	(0.096)	(0.065)	(0.080)	(0.064)	(0.102)
	11,520	5,763	1,079	2,860	1,229	589
1992-95	-0.076	-0.039	-0.039	-0.113	-0.166	-0.163
	(0.096)	(0.098)	(0.063)	(0.068)	(0.059)	(0.068)
	11,329	5,735	1,111	2,824	1,083	576
1993-96	-0.014	-0.010	-0.003	-0.022	-0.025	-0.011
	(0.067)	(0.073)	(0.069)	(0.033)	(0.019)	(0.142)
	10,974	5,714	1,097	2,753	914	496

Note: Means, standard deviations, and number of observations reported. Income cuts are based on the Self-Employment Income variable.

Table 3: Estimation Results: Three Year Difference

	All Filers	Joint Filers	Single Filers
	(1)	(2)	(3)
$\Delta\ln(1-\tau)$	0.518***	0.548***	0.043
	(0.163)	(0.175)	(0.489)
Married	0.029		
	(0.028)		
Age/100	0.133	0.44	-0.807
	(0.530)	(0.592)	(1.021)
Age Squared/1000	-0.083	-0.121**	0.037
	(0.053)	(0.059)	(0.095)
Sex of Primary Filer	0.02	0.022	0.011
	(0.016)	(0.017)	(0.047)
Itemizer	-0.032*	-0.029	-0.052
	(0.018)	(0.020)	(0.044)
Number of Children	0.002	-0.004	0.153***
	(0.007)	(0.007)	(0.040)
Child Away from Home	-0.04	-0.038	-0.272***
	(0.041)	(0.049)	(0.103)
ln(Average Income)*First Decile	0.246***	0.249***	0.084
	(0.026)	(0.026)	(0.109)
ln(Average Income)*Second Decile	0.133***	0.141***	-0.025
	(0.021)	(0.021)	(0.089)
ln(Average Income)*Third Decile	0.078***	0.090***	-0.079
	(0.018)	(0.018)	(0.076)
ln(Average Income)*Fourth Decile	0.057***	0.065***	-0.077
	(0.017)	(0.017)	(0.071)
ln(Average Income)*Fifth Decile	0.039**	0.045***	-0.086
	(0.016)	(0.016)	(0.067)
ln(Average Income)*Sixth Decile	0.030**	0.037**	-0.091
	(0.015)	(0.015)	(0.063)
ln(Average Income)*Seventh Decile	0.021	0.027*	-0.094
	(0.015)	(0.015)	(0.060)
ln(Average Income)*Eighth Decile	0.02	0.027*	-0.091
	(0.014)	(0.014)	(0.057)
ln(Average Income)*Ninth Decile	0.017	0.023*	-0.086
	(0.013)	(0.013)	(0.054)
ln(Average Income)*Tenth Decile	0.020*	0.026**	-0.078
	(0.011)	(0.011)	(0.048)
Avg. Inc. <= Income < 2*Avg. Inc.	-0.612***	-0.608***	-0.632***
	(0.013)	(0.014)	(0.045)
2*Avg. Inc. <= Income < 3*Avg. Inc.	-1.532***	-1.522***	-1.581***
	(0.037)	(0.040)	(0.095)
3*Avg. Inc. <= Income	-2.589***	-2.565***	-2.722***
	(0.068)	(0.068)	(0.285)
Constant	0.377*	0.285	1.597***
	(0.220)	(0.272)	(0.562)
Observations	77,388	71,128	6,260

Notes: Robust standard errors are in parentheses. The change in the net of tax rate is instrumented in all specifications with the change in net of tax rate evaluated at the level of income in the base year (inflated by the CPI for the tax calculation in the later year). All specifications include region and year dummies.
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: Estimation Results: By Income Group

	All Filers	Joint Filers	Single Filers
	(1)	(2)	(3)
Δln(1-τ)*Tenth Decile	0.734***	0.746***	0.388
	(0.218)	(0.233)	(0.625)
Δln(1-τ)*Ninth Decile	1.122**	1.141**	1.016
	(0.474)	(0.503)	(1.493)
Δln(1-τ)*Eighth Decile	-1.419	-1.416	-1.524
	(0.863)	(0.963)	(1.483)
Δln(1-τ)*Seventh Decile	0.674	0.882	-1.076
	(1.045)	(1.282)	(1.486)
Δln(1-τ)*Sixth Decile	0.101	0.126	-0.274
	(0.194)	(0.192)	(1.306)
Δln(1-τ)*Bottom Half	0.131	0.239	-2.716
	(0.526)	(0.482)	(5.896)
Married	0.021		
	(0.028)		
Age/100	0.125	0.416	-0.944
	(0.530)	(0.597)	(1.065)
Age Squared/1000	-0.079	-0.115*	0.05
	(0.052)	(0.059)	(0.098)
Sex of Primary Filer	0.028	0.028	0.017
	(0.017)	(0.018)	(0.049)
Itemizer	-0.031*	-0.027	-0.062
	(0.019)	(0.021)	(0.046)
Number of Children	0.002	-0.004	0.148***
	(0.007)	(0.007)	(0.041)
Child Away from Home	-0.043	-0.042	-0.247**
	(0.043)	(0.051)	(0.108)
ln(Average Income)*First Decile	0.254***	0.257***	0.043
	(0.026)	(0.026)	(0.147)
ln(Average Income)*Second Decile	0.142***	0.149***	-0.027
	(0.021)	(0.021)	(0.094)
ln(Average Income)*Third Decile	0.087***	0.097***	-0.062
	(0.019)	(0.019)	(0.085)
ln(Average Income)*Fourth Decile	0.067***	0.072***	-0.06
	(0.018)	(0.018)	(0.079)
ln(Average Income)*Fifth Decile	0.047***	0.052***	-0.073
	(0.017)	(0.017)	(0.072)
ln(Average Income)*Sixth Decile	0.039**	0.045***	-0.08
	(0.016)	(0.016)	(0.067)
ln(Average Income)*Seventh Decile	0.029*	0.033**	-0.081
	(0.015)	(0.015)	(0.065)
ln(Average Income)*Eighth Decile	0.030**	0.034**	-0.072
	(0.015)	(0.015)	(0.063)
ln(Average Income)*Ninth Decile	0.024*	0.029**	-0.079
	(0.014)	(0.014)	(0.059)
ln(Average Income)*Tenth Decile	0.028**	0.032***	-0.068
	(0.012)	(0.012)	(0.051)
Avg. Inc. <= Income < 2*Avg. Inc.	-0.610***	-0.607***	-0.625***
	(0.014)	(0.015)	(0.051)
2*Avg. Inc. <= Income < 3*Avg. Inc.	-1.507***	-1.501***	-1.519***
	(0.038)	(0.041)	(0.103)
3*Avg. Inc. <= Income	-2.558***	-2.544***	-2.568***
	(0.070)	(0.070)	(0.312)
Constant	0.268	0.198	1.486**
	(0.228)	(0.282)	(0.621)
Observations	77,388	71,128	6,260

Notes: Robust standard errors are in parentheses. The change in the net of tax rate is instrumented in all specifications with the change in net of tax rate evaluated at the level of income in the base year (inflated by the CPI for the tax calculation in the later year). All specifications include region and year dummies.
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Robustness Checks

	All Filers	Joint Filers	Married Filers
	(1)	(2)	(3)
Base Specification			
$\Delta\ln(1-\tau)$	0.518***	0.548***	0.043
	(0.163)	(0.175)	(0.489)
Observations	77,388	71,128	6,260
Different Lag Structure			
(A) One Year Difference			
$\Delta\ln(1-\tau)$	0.363*	0.295	0.535
	(0.194)	(0.194)	(0.595)
Observations	119,381	108,804	10,577
Different Income Cutoffs			
(B) Base Year Income > $10,000			
$\Delta\ln(1-\tau)$	0.509***	0.529***	0.164
	(0.169)	(0.179)	(0.544)
Observations	58,558	54,212	4,346
(C) Base Year Income > $50,000			
$\Delta\ln(1-\tau)$	0.711***	0.698***	0.536
	(0.257)	(0.270)	(0.794)
Observations	40,279	37,660	2,619
Different Methods of Controlling for Income Trends			
(D) Spline of Base Year Income			
$\Delta\ln(1-\tau)$	-0.523***	-0.507**	-0.793*
	(0.184)	(0.197)	(0.460)
Observations	77,389	71,129	6,260
(E) Splines of Lagged and Deviation from Lagged Income			
$\Delta\ln(1-\tau)$	0.850**	0.851**	0.259
	(0.333)	(0.356)	(0.829)
Observations	57,142	52,699	4,443

Notes: Robust standard errors are in parentheses. The change in the net of tax rate is instrumented in all specifications with the change in net of tax rate evaluated at the level of income in the base year (inflated by the CPI for the tax calculation in the later year). All specifications include region and year dummies. Each specification includes controls for mean reversion and a ten piece spline in average self-employment income, unless otherwise noted.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 6: Robustness Checks: Accounting for Shifting across Tax Bases and Time

	All Filers	Joint Filers	Married Filers
	(1)	(2)	(3)
Base Specification			
$\Delta\ln(1-\tau)$	0.518***	0.548***	0.043
	(0.163)	(0.175)	(0.489)
Observations	77,388	71,128	6,260
Shifting Across Tax Bases			
(A) Cutting 87-88 and Income > $10 million			
$\Delta\ln(1-\tau)$	1.091***	1.134***	0.017
	(0.319)	(0.345)	(0.949)
Observations	55,293	50,828	4,465
Shifting Across Adjacent Years			
(B) Controlling for $\ln(1-\tau_{t+1})-\ln(1-\tau_t)$			
$\Delta\ln(1-\tau_t)$	0.690	0.814	-1.516
	(0.473)	(0.499)	(3.536)
$\Delta[\ln(1-\tau_{t+1})-\ln(1-\tau_t)]$	0.247	0.356	-2.216
	(0.531)	(0.559)	(3.905)
Observations	65,340	60,197	5,143
(C) Controlling for $\ln(1-\tau_{t+1})-\ln(1-\tau_t)$ and $\ln(1-\tau_t)-\ln(1-\tau_{t-1})$			
$\Delta\ln(1-\tau_t)$	1.058	1.277	-1.988
	(0.767)	(0.812)	(8.277)
$\Delta[\ln(1-\tau_{t+1})-\ln(1-\tau_t)]$	-0.316	-0.075	-6.093
	(0.826)	(0.879)	(9.079)
$\Delta[\ln(1-\tau_t)-\ln(1-\tau_{t-1})]$	-0.582*	-0.581*	-2.653
	(0.325)	(0.346)	(2.455)
Observations	54,129	50,025	4,104

Notes: Robust standard errors are in parentheses. The change in the net of tax rate is instrumented in all specifications with the change in net of tax rate evaluated at the level of income in the base year (inflated by the CPI for the tax calculation in the later year). All specifications include region and year dummies. Each specification includes controls for mean reversion and a ten piece spline in average self-employment income, unless otherwise noted.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 7: Three Year Difference, 1987-96: By Type and Share of Self-Employment Income

	Form In Base Year			Change In Form		Majority of Earned Income from Self-Employment	
	Sole Proprietorship Only	Partnership Only	Both	No	Yes	Yes	No
	(1)	(2)	(3)	(4)	(5)	(4)	(5)
All Filers							
$\Delta\ln(1-\tau_t)$	0.339	0.042	0.827**	0.390**	0.453	0.591***	0.399
	(0.228)	(0.461)	(0.347)	(0.154)	(0.542)	(0.186)	(0.322)
Observations	33,195	10,193	28,560	61,117	10,831	56,119	21,269
Joint Filers							
$\Delta\ln(1-\tau_t)$	0.412*	0.039	0.796**	0.424***	0.375	0.621***	0.445
	(0.249)	(0.479)	(0.361)	(0.164)	(0.559)	(0.202)	(0.340)
Observations	29,656	9,566	26,983	55,963	10,242	50,636	20,492
Single Filers							
$\Delta\ln(1-\tau_t)$	-0.197	-0.308	1.508	-0.048	1.269	0.142	-0.754
	(0.558)	(1.284)	(1.069)	(0.504)	(1.256)	(0.498)	(1.117)
Observations	3,539	627	1,577	5,154	589	5,483	777

Notes: Robust standard errors are in parentheses. The change in the net of tax rate is instrumented in all specifications with the change in net of tax rate evaluated at the level of income in the base year (inflated by the CPI for the tax calculation in the later year). All specifications include all demographic variables included in previous specifications, region and year dummies, and controls for mean reversion and a ten piece spline in average self-employment income.

* significant at 10%; ** significant at 5%; *** significant at 1%

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