Do High Taxes Lock-in Capital Gains? Evidence from a Flat Rate Tax System

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January 31, 2007

Abstract

The purpose of this paper is to study, using a comprehensive Swedish panel data set, whether investors are less willing to realize capital gains when the marginal tax rate on capital gains is relatively high. In Sweden capital gains are taxed independently of ordinary income at a flat rate, making it possible to avoid endogenity problems and to include direct measures of capital gains taxation in the empirical analysis. The results indicate that a 10% increase in capital gains tax rate reduces the number of realizations of capital gains with 8.7% and the realized amount, given the decision to realize, with 1.9%. In addition, wealthy individuals seem to respond more to changes in capital gains tax rates than less-wealthy individuals.

Keywords: capital gains realizations; tax avoidance; panel data

JEL-codes: H24; H31

1 Introduction

It has long been realized (see e.g., Seltzer, 1951; Holt and Shelton, 1962) that higher capital gain tax rates can create a lock-in effect, i.e., investors are less willing to realize capital gains when the marginal tax rate on capital gains is relatively high. This lock-in effect may create welfare losses since investors have portfolios that are not well diversified (Auerbach, 1988), reduce tax revenues because capital gains realizations are highly sensitive to tax rates (Feldstein et al., 1980; Hendershott et al., 1991), and prevent investors from undertaking new investments (Meade, 1990).

Previous empirical studies have found that realizations of capital gains are negatively correlated with the capital gains tax rate. They have, however, also produced results that are inconclusive considering how responsive realizations of capital gains are to tax rates. Cross-section studies (e.g., Feldstein et al., 1980; and Minarik, 1981) seem to indicate that realizations of capital gains are highly sensitive to marginal tax rates on capital gains, while time-series studies (e.g., Auerbach, 1989; Jones, 1989; and Gillingham and Greenlees, 1992) indicate that realizations of capital gains are less responsive to tax rates.

The purpose of this paper is to study how marginal taxes affected realizations of capital gains in Sweden during the period 1993-1995. Sweden is particularly interesting to study because a major tax reform was implemented in 1991. According to the 1991 tax reform, capital gains became taxed separately from ordinary income at a flat rate of 30 %. The Swedish policymakers also implemented several capital gain tax rates changes during the beginning of the 1990s, making it possible to empirically test whether high taxes reduces realizations of capital gains.

Previous empirical studies on the possible lock-in effect of higher capital gains tax rates have primarily used data from the US. In the US tax system individual capital gains are taxed jointly for the household members as ordinary income at progressive rates. This means that an investor have an incentive to realize capital gains when the sum of the household members ordinary income is temporary low. Auten and Clotfelter (1982) and Burman and Randolph (1994) suggested that previous results have been contradictory because cross-section studies have primarily measured the transitory effect on capital gains realizations behavior, while time-serie studies essentially have measured the permanent effect. Auten and Clotfelter (1982) and Burman and Randolph (1994) used panel data to distinguish between these effects and their results indicated that the transitory effect generally was much larger than the estimated permanent effect. However, as noted by Auten and Clotfelter (1982, p. 629), even then: *"The definition of the correct marginal tax rate on realizations of capital gains is not unambiguous"*.

Another problem that arise in the US tax setting is that assets with relatively large accumulated gains are more costly to sell compared to assets with smaller accumulated gains. The data usually do not contain any information regarding specific assets in an individual portfolio, meaning that previous studies have not been able to control for the size of accrued gains. In addition, when capital gains are taxed as ordinary income subject to a progressive tax scale, realizations of capital gains and marginal tax rates on capital gains are clearly endogenously determined.

The Swedish flat rate tax system solves several of the methodological problems associated with previous studies. First, the effects of capital gains taxes on realization behavior cannot in a flat rate tax system be explained by temporary low incomes. Tax changes in Sweden during the 1990s thus provide an opportunity to include a direct measure of the tax treatment of capital gains in the empirical analysis. In addition, when capital gains are taxed independently of ordinary income at a flat rate, the marginal tax rate does not depend on the level of accrued capital gains and the realization of capital gains are clearly not endogenously determined. Hence, the Swedish institutional tax setting during the 1990s provides us with an unique opportunity to test whether changes in the taxation of capital gains influence realizations of capital gains. The US tax system is, moreover, based on joint taxation; whereas household members are taxed individually in Sweden. This makes it possible to test for gender differences in realization behavior.

To study the possible lock-in effect of capital gains tax rates, we used data from LINDA (Longitudinal INdividual DAta for Sweden) during the period 1992-1995. LINDA is a comprehensive register-based longitudinal data set that cover approximately 3.35 % of the Swedish population annually. Thus, in addition to the benefits of studying a flat rate tax system, we also have access to a much larger and more comprehensive data-set in comparision to previous empirical studies.

The results indicate that higher taxes on capital gains prevent investors from realizing capital gains. According to the estimated elasticities, a 10% increase in the capital gains tax rate will reduce realizations with 8.7% and the realized amount, given that the individual has decided to realize capital gains, with 1.9%. In addition, older individuals and individuals with high taxable income seem to realize capital gains relatively often. On the other hand, no gender difference in the decision whether to realize any capital gains is found, but the results indicate that women realize smaller amounts of capital gains compared to men.

Capital gains realization behavior seem, moreover, to be different between individuals that have taxable wealth and those that have no registered taxable wealth. According to the results, wealthy individuals are more sensitive to changes in capital gains tax rates than less-wealthy individuals. This finding is in accordance with results previously presented by Auerbach and Siegel (2000), indicating that tax avoidance strategies are more common among wealthy tax-payers. It also seems to exist a gender difference in realization behavior between individuals that have reported taxable wealth and those that have not.

The paper is organized as follows: Section 2 contains a description of the data and the tax policy changes in Sweden during the 1990s. The empirical methods for studying how sensitive realizations of capital gains in Sweden were to marginal tax rate changes are described in Section 3. The results corresponding to the full sample are presented and commented in Section 4, while the results for the wealthy and less-wealthy individuals, respectively, are presented in Section 5. Finally, Section 6 concludes the paper.

2 Data and Institutional Details

In 1991, policymakers in Sweden implemented a tax reform that has been classified (see Agell et al., 1998, p. 1) as the " *"most far-reaching tax reform in any western industrialized country"* in recent decades.

Capital gains were before the 1991 tax reform, as in most other countries, taxed as ordinary income at progressive rates; creating incentives for investors to realize their capital gains when their income was temporarily low. In addition, long-term capital gains were taxed more favorably compared to short-term capital gains since investors were allowed to exclude 60% of capital gains realized after two years.

All this changed with the 1991 tax reform. In fact, the Swedish tax reform in 1991 was more comprehensive than the often studied US Tax Reform Act of 1986. In the latter reform, tax cuts were estimated to reduce revenues with 1-2% of GDP; whereas pre-estimates of the 1991 tax reform in Sweden suggested a revenue loss of approximately 6% of GDP due to rate cuts (see Agell et al., 1998). The 1991 tax reform meant that marginal tax rates were dramatically lowered, various tax shelters were eliminated, the value added tax (VAT) was broadened, and the corporate tax rate was reduced from 57% to 30%.

A notable feature of the Swedish tax reform was that ordinary income and capital income became taxed separately, with capital gains taxed at a flat rate of 30%. However, already in 1992 the newly elected non-socialistic government reduced the capital gains tax-rate to 25% and it was further reduced to 12.5% in 1994. Uniform 30% taxes were reinstated when the

Social democratic party regained legislative power in 1995.

To test whether high taxes on capital gains creates a lock-in effect, we use Longitudinal INdividual DAta for Sweden (LINDA) during the period 1993-1995. The years after 1995 are excluded because of the rapid transformation of the Swedish capital market from 1996 onwards. In 1996, the first internet stock-trading site was opened in Sweden and it was soon followed by several others. This means that it has been a drastic decrease in capital market transaction costs after 1995. This might cause bias in our estimations of capital gains taxation on realization behavior since we do not have access to any empirical measure of transaction costs at the individual level.

LINDA is a very comprehensive panel data set that consists of two different samples; a population sample and an immigrant sample. The former, a representative sample for the population in Sweden (including immigrants), is used in this study. The population sample covers approximately 3.35% of the Swedish population annually. For each sampled individual, information on all family members have been added to the data set. This means that LINDA, on average, cover 697,956 individuals per year during the sample period.

The main data source in LINDA is the Income Register (Inkomst- och förmögenhetsstatistiken). The Income Register is based on the tax reports that all residing individuals in Sweden are obliged to send to the Swedish Tax Authority (Riksskatteverket, RSV). LINDA also include a number of individual background characteristics from the Population and Housing census (Folk- och bostadsräkningen), such as age, sex, marital status, education and household size.

LINDA has some drawbacks. The income data in LINDA are based on filed tax reports. This means that the data are contingent on the tax legislation in a particular year, i.e., definitions may change over time due to changes in tax legislation. Capital gains include, moreover, income from sales of stocks, bonds, and real estate. We would have preferred to be able to discern the different kinds of capital income since the responsiveness to tax changes may be different for stocks than, for example, real estates. Another consideration is that wealth is only reported if it exceeds 800,000 SEK. In addition, wealth cannot be disaggregated into the different sources of wealth (e.g., stocks, real estate, bonds) that can have very different characteristics and therefore different roles in the portfolio.

Definitions of all the variables included in the empirical analysis, as well as means and standard deviations, are given in Table 1. The variables included are further discussed in Section 3.

Table 1 About Here

3 Empirical model

In every period a number of investors will choose not to realize any capital gains, which creates a censoring problem. Following Burman and Randolph (1994), the following two-step selection model was used to analyze the decision to realize net gains together with the amount of capital gains realizations

$$
\begin{aligned}
R_{it}^{*} &= \alpha_0 + \alpha_1 R_{it-1} + \alpha_2 \tau_t^g + \boldsymbol{\alpha}_{3j}\mathbf{X}_{it} + \varepsilon_1 && && (1)\\
\ln G_{it} &= \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 \tau_t^g + \boldsymbol{\beta}_{2j}\mathbf{X}_{it} + \gamma Mills + \varepsilon_2 && \text{if } R^{*} > 0 && (2)\\
G_{it} &= 0 && \text{otherwise} &&
\end{aligned}
$$

where R_{it}^{*} is a latent index of the decision to realize capital gains and G_{it} represents net capital gains realized by individual i at time t. The purpose of this paper is to study changes in individual realization behavior due to changes in capital gains taxation, *ceteris paribus.* As such, we want to exclude increases/decreases in capital gains realizations due to changes in the underlying stock portfolio. Since we do not have any individual measure on the value of the individual stock portfolio, the amount of capital gains realized have been discounted using the OMX stock index using the year 1992 as the base.

In Heckman selection models, of the type specified above, the criterion function should contain at least one variable that is not in the level equation. As such, the decision whether to realize any capital gains is assumed to be determined by realizations of capital gains in the previous period (R_{it-1}). The capital gains tax rate (τ_t^g) and a vector of non-tax variables ($\mathbf{X}_{it}$) are included in both equations. Equation (1) and (2) are estimated using Heckmans two-step procedure. This means that an inverse mills ratio is included in the second step to control for sample selectivity. Finally, α_0-α_{3j}, $\boldsymbol{\beta}_0$-$\boldsymbol{\beta}_{2j}$ ($j = 1, 2, ..., 9$) and γ are parameters to be estimated, while $\varepsilon_1$and ε_2 are normally distributed error terms. From the estimations of equation (1) and (2), elasticities of the type $\partial \ln G_{it} / \partial \ln x_{it}$ are calculated. The resulting elasticities give the percentage change in capital gains realized when x_{it} changes by 1%.

$\mathbf{X}_{it}$ is a vector of non-tax variables that are assumed to influence both the decision whether to realize any net gains and the amount realized given that the individual has decided to realize net gains. The vector include household size, age, dividend payments, wealth, income, marital status, sex, educational attainment and interest deductions. Dividend payments, wealth and income are lagged one period in order to avoid possible endogenity problems.

When estimating equation (1) and (2), τ_t^g is expected to be negatively related to both the decision to realize capital gains and the amount of capital gains realized. It is also expected that individuals that have decided to realize capital gains in period $t-1$ are more likely to realize capital gains in period t.

Turning to the vector of non-tax variables, we expect that individuals with relatively high income, wealth, and dividend payments relatively often realize higher amounts of capital gains compared to individuals with lower income, wealth, and dividend payments. Interest deductions is included as an explanatory variable to provide indirect information on whether the portfolio include real estate property that are relatively costly to sell.

In the US tax setting, older individuals have an incentive not to realize capital gains in later part of life as capital gains are not taxed at death, the so-called step-up in basis in death (see Auten and Joulfaian, 2001). However, no such incentive exist in the Swedish tax system. According to the life-cycle hypothesis, this suggest that older individuals should be more likely to realize capital gains, and to realize higher amounts, compared to younger individuals. Capital gains realization behavior may also depend on the level of educational attainment. It is possible that highly educated individuals are more active investors compared to individuals with less education. It is, therefore, expected that educational attainment is positively related to the decision to realize capital gains as well as the realized amount of capital gains. Household size and marital status are other household characteristics that are included in the estimated model as control variables. Finally, sex is included as an explanatory variable to test whether there seem to exist gender differences in capital gains realization behavior.

4 Results from our primary specification

The estimation results from equation (1) and (2), i.e., the determinants of the decision whether to realize any capital gains and the amount of capital gains realizations given that the individual has decided to realize capital gains, are presented in Table 2.

Table 2 About Here

As the tax effects are the main focus of this paper, let us start by presenting the estimated tax coefficients and their corresponding elasticities. The coefficient associated with τ_t^g is negative in the criterion function, indicating that individuals are less likely to realize capital gains when the capital gains tax rate is relatively high. In addition, given that individuals have decided to realize gains, the results from the level equation indicate that they realize less capital gains when the capital gains tax rate is high. These results support previous findings from the US (Auten and Clotfelter, 1982; Burman and Randolph, 1994; Bogart and Gentry, 1995; Auerbach and Siegel, 2000), suggesting that higher taxes on capital gains create a lock-in effect.

The estimated tax elasticity in the criterion and level equation is -0.87 and -0.19, respectively. This implies that a 10% increase in the capital gains tax rate will reduce realizations of capital gains with 8.7% and the amount of realized gains with 1.9%. Changes in capital gains tax rates thus seem to have a larger effect on the decision whether the individual should realize any capital gains. The estimated tax elasticity with respect to capital gains realizations is smaller than the transitory tax elasticities reported by Auten and Clotfelter (1982), Burman and Randolph (1994) and Auerbach and Siegel (2000), but larger than their reported permanent tax elasticities. Our estimated tax elasticity seem to be within the range of elasticities (-0.5 to -0.9) often reported in time-serie studies (see e.g., Auten and Cordes, 1991) and is slightly higher than the elasticity (-0.65) found by Bogart and Gentry (1995) when studying aggregated state-level realizations in the US.

Turning to the vector of non-tax variables, both the decision to realize capital gains and the amount realized seem to be positively related to individual income, wealth and dividend payments. These results are expected and in accordance with previous findings (see e.g., Auten and Clotfelter, 1982; Burman and Randolph, 1994). According to the presented elasticities in Table 2, a 10% increase in taxable income for the individual will increase realizations of capital gains with 2.3% and the amount realized with 0.6%;

while the size effects of taxable wealth and dividend payments are negligible. Moreover, as indicated by the parameter on R_{it-1}, individuals that have realized capital gains in period $t-1$ are more likely to realize capital gains in period t.

Other household characteristics that seem to influence capital gains realization behavior are age, marital status, and educational attainment. The results presented in Table 2 indicate that older individuals are more likely to realize capital gains and also to realize larger amounts of capital gains than younger individuals. The estimated elasticities suggest that this effect is rather large, a 10% age increase will increase capital gains realizations with 3.1% and the amount realized with 6.5%. This result is in accordance with the life-cycle hypothesis of saving and consumption, but in contrast to previous findings on US data (Auten and Clotfelter, 1982; Burman and Randolph, 1994).

The fact that age can have a different effect on capital gains realizations in US and Sweden can be explained by different institutional tax designs. In US, the capital gains tax can be avoided altogether at death (the so-called step-up in basis at death, see Auten and Joulfaian, 2001), while accrued capital gains in Sweden during the study period were taxed at death. Thus, older US taxpayers can avoid taxation by taking advantage of the step-up in basis at death, while Swedish taxpayers face no such incentive. The results indicate, moreover, that married individuals and taxpayers that have at least enrolled three years in higher education are more likely to realize capital gains and to realize larger amounts; while individuals that are living in large households realize smaller amounts of capital gains less often than individuals residing in small households, holding income and all other effects constant.

As described in Section 2, Swedish tax payers are taxed individually. This means that we, in contrast to previous studies, can study whether capital gains realization behavior differ between men and women. According to the results presented in Table 2, the estimated parameter associated with the gender dummy is not statistically significant at the conventional 5%-level in the criterion function. As such, there does not seem to exist a gender difference in the decision whether to realize any capital gains during the period under study. On the other hand, when women decide to realize capital gains, they seem to realize smaller amounts of capital gains compared to men.

Finally, the Mills-ratio coefficient is negative and statistically significant different from zero. This suggests that an empirical model that does not consider sample selectivity would have produced biased parameter estimates.[1]

5 Lock-in effects among the wealthy

The lock-in effect of taxes on capital gains realizations may differ between different subgroups of the population. It is, for example, well known that (see e.g., Auerbach et al., 2000) that tax avoidance strategies are more common among wealthy tax-payers. This is especially true for highly moveable tax

[1] Estimations for the period 1992 until 2001 have also been performed. All qualitative results remain, except for the effect of the capital gains tax on the amount of capital gains realized, which now turn out positive. Our interpretation of this result is that although the tax has been high during the end of the 1990s, the reduced transaction costs have made it less costly to realize capital gains, leading to increased amounts being realized.

bases such as capital gains. In comparison to other tax-payers, wealthy individuals also have less problems with liquidity constraints and often face lower transaction costs.

Auerbach and Siegel (2000) have previously shown that wealthy individuals in the US (>10 million US dollar) behave differently with respect to capital gains realizations than other tax payers. Their results indicated that the transitory elasticity of realizing capital gains with respect to the marginal tax rate was much higher for wealthy individuals, suggesting that this group engage more in tax avoidance strategies compared to other investors.

To study whether realization behavior differ between income classes in Sweden, we divided our sample into two different groups. One group of households have no reported taxable wealth, whereas the other group have taxable wealth (i.e., wealth that exceeds 800,000 SEK) registered at the Swedish tax authority.

The results presented in Table 3 and Table 4 show that 13.7% of the wealthy individuals realized capital gains during the study period; while the corresponding figure for the less-wealthy individuals was 6.3%.

Table 3 About Here

Table 4 About Here

The results regarding the effects of capital gains taxation on both the decision to realize, as well as the amount of capital gains realized, show that the group reporting taxable wealth are more responsive to changes in capital gains taxation. The elasticities presented in Table 3 and Table 4 indicate that a 10% increase in the capital gains tax rate reduces realizations of capital gains with 11.9% for the wealthy tax-payers, whereas the corresponding figure for the less-wealthy is 8%. The amount realized, given the decision to realize capital gains, is reduced by 3.2% and 1.4% for the wealthy and less-wealthy, respectively. These findings coincide with results previously presented by Auerbach and Siegel (2000).

When turning to the effects of family composition on realization behavior some other interesting results emerge. It seems to exist a gender difference in realization behavior between individuals that have reported taxable wealth and those that have not. According to the results presented in Table 3 and Table 4, it is less common for females than males to realize capital gains among wealthy tax-payers. However, in the group not reporting taxable wealth, the opposite result was found.

In addition, the effects of age on realization behavior is larger for the group reporting taxable wealth. The results indicate that a 10% increase in age is followed by a 9.3% increase in capital gains realizations among the wealthy individuals, whereas the size of this effect is 1.6% among the less-wealthy group. Two reasons come to mind. First, wealthy people face larger tax incentives to allocate capital income to later parts of life. Second, since there was an allowance of 10,000 SEK in the taxation of gifts during the years under study, older people might realize some of their capital each year and give this to their children in order to avoid taxation at death.

Finally, having low income and a large family increases both the probability to realize capital gains, as well as the amounts realized, more among the individuals that have no reported taxable wealth. The elasticities reported in Table 3 and 4 indicate that a 10% income increase correspond to a 3.1% increase in capital gains realizations, whereas the wealthy tax-payers only increase their capital gains realizations with 0.85%. A 10% increase in family size reduces capital gains realizations and the amount realized with 2.9% and 1.8%, respectively, for the group that have no reported taxable wealth. According to the estimation results, this effect is much smaller in size for wealthy individuals. It is likely that the less-wealthy group is more sensitive to changes in income and family size, which can explain these findings.

6 Discussion

A number of empirical studies (see e.g., Auten and Clotfelter, 1982; Burman and Randolph, 1994; Bogart and Gentry, 1995; Auerbach and Siegel, 2000) have previously studied the effect of taxation on capital gains realizations in the US. Capital gains are in the US tax system (as well as in most other tax systems) taxed as ordinary income at progressive tax rates, creating a number of methodological problems. It is, for example, difficult to empirically distinguish between transitory and permanent income, the size of accrued capital gains matter but cannot typically be controlled for, and realizations of capital gains and tax rates are clearly endogenously determined.

In this paper, we have used a comprehensive panel data set (LINDA) from Sweden covering, on average, 697,956 individuals per year during the period 1993-1995. It is argued that the Swedish flat rate tax system solves several of the methodological problems that have been present in previous studies based on US data. First, as capital gains are taxed separately from ordinary income at a flat tax rate, individuals cannot lower their marginal capital gains tax rate by realizing capital gains when their income is temporarily low. Hence, there is no need to distinguish between transitory and permanent income. In addition, the capital gains tax rate is clearly exogenously given in a flat rate tax system and the marginal tax rate on capital gains will not depend on the size of accrued gains. As the Swedish tax system is based on individually taxation, it is also possible to control for gender differences in capital gains realization behavior.

The results presented in this paper indicated that higher taxes on capital gains were associated with both less capital gains realizations and smaller amounts of capital gains realizations given that the individual had decided to realize gains. Our results thus confirm previous findings from the US, suggesting that higher capital gains taxes are associated with a lock-in effect. According to the results presented in the paper, a 10% tax increase will reduce capital gains realizations with 8.7%. This result is within the range of elasticities often reported in time-series studies.

A number of other household characteristics were also found to influence realizations of capital gains. Older individuals and individuals with high taxable income, for example, seemed to realize capital gains relatively often. These effects were also quite large in size, while the influence of wealth, dividend payments, interest deductions and education were rather small. The individual taxation of household members in the Swedish tax system also made it possible to study whether capital gains realization behavior differed between men and women. For the whole sample, no gender difference was found when the decision whether to realize any capital gains was studied.

However, when women decided to realize capital gains, they seemed to realize smaller amounts of capital gains compared to men

Finally, it was found that capital gains realization behavior differed between individuals that have taxable wealth and those that have no registered taxable wealth. According to the results, wealthy individuals seemed more sensitive to changes in capital gains tax rates than less-wealthy individuals. This indicates that tax avoidance strategies are more common among wealthy tax-payers.

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Table 1: Means, standard deviations and definitions of variables

Variable	Mean (SD)	Definition
Capital gains	2649	Realized capital gains, include net gains accrued from sales
	(91665)	of stocks, bonds, other securities and real estate.
Capital gains/OMX	4.89	Realized capital gains divided by the average value
	(1.48)	of the OMX Stockholm 30 share index in period t.
Capital gains tax rate	0.22	The tax on capital gains paid by individuals residing in
	(0.07)	Sweden.
Income (L)	98176	Taxable income from work and businesses in period t-1.
	(119578)	
Wealth (L)	77466	Taxable wealth in period t-1, recorded if wealth exceeds
	(1004732)	800,000 SEK.
Dividend payments (L)	480.56	The sum of dividend payments received in period t-1.
	(11097)	
Interest deductions	6299	
	(24219)	
Family size	3.25	Number of members in the household.
	(1.57)	
Age	33.18	Age of the individual
	(23.03)	
Sex (D)	0.51	Dummy, equal to one if the individual is a female.
	(0.50)	
Marital status (D)	0.42	Dummy, equal to one if married or cohabiting.
	(0.49)	
Education (D)	0.11	Dummy, equal to one if the individual has attended
	(0.24)	at least three years of higher education.

Table 2. Estimated coefficients and elasticities (standard errors in parantheses)

Independent variable	Criterion function	Elasticity	Level equation	Elasticity
Constant	-1.57		3.87	
	(0.007)		(0.028)	
Capital gains tax rate	-1.87	-0.87	-0.84	-0.19
	(0.019)	(0.009)	(0.045)	(0.01)
Income (L)	1.15E-06	0.23	6.46E-07	0.06
	(1.02E-08)	(0.002)	(2.36E-08)	(0.002)
Wealth (L)	7.42E-08	0.01	4.58E-08	0.004
	(1.00E-9)	(0.0002)	(1.42E-9)	(0.0001)
Dividend payments (L)	3.95E-06	0.004	4.38E-06	0.002
	(9.79E-08)	(0.0002)	(1.18E-07)	(0.0001)
Interest deductions	3.82E-06	0.05	-1.23E-06	-0.008
	(5.29E-08)	(0.0007)	(6.06E-08)	(0.0004)
Family size	-0.041	-0.27	-0.038	-0.12
	(0.001)	(0.009)	(0.003)	(0.01)
Age	0.004	0.31	0.020	0.65
	(0.0001)	(0.007)	(0.0002)	(0.01)
Sex (D)	0.0008	0.0009	-0.22	-0.11
	(0.003)	(0.003)	(0.008)	(0.004)
Marital status (D)	0.21	0.18	0.14	0.06
	(0.004)	(0.002)	(0.001)	(0.004)
Education (D)	0.24	0.06	0.27	0.03
	(0.005)	(0.001)	(0.01)	(0.001)
Previous capital gains	0.99	0.15		
	(0.004)	(0.0007)		
Mills ratio			0.15	
			(0.01)	
Number of obs.	2,093,867		151,462	

Table 2. Estimated coefficients and elasticities for the wealthy (standard errors in parantheses)

Independent variable	Criterion function	Elasticity	Level equation	Elasticity
Constant	-1.64		5.64	
	(0.023)		(0.071)	
Capital gains tax rate	-2.91	-1.19	-1.42	-0.32
	(0.05)	(0.023)	(0.11)	(0.024)
Income (L)	3.12E-07	0.085	2.01E-07	0.03
	(2.34E-08)	(0.006)	(2.88E-08)	(0.004)
Wealth (L)	3.19E-08	0.046	1.73E-08	0.014
	(1.05E-9)	(0.002)	(1.44E-9)	(0.001)
Dividend payments (L)	2.16E-06	0.011	2.99E-06	0.008
	(1.14E-07)	(0.0006)	(1.29E-07)	(0.0004)
Interest deductions	4.64E-06	0.039	-7.24E-07	-0.003
	(1.60E-07)	(0.001)	(1.39E-07)	(0.0006)
Family size	-0.005	-0.028	0.014	0.047
	(0.004)	(0.023)	(0.009)	(0.03)
Age	0.016	0.94	0.009	0.30
	(0.0003)	(0.018)	(0.0007)	(0.02)
Sex (D)	-0.06	-0.054	-0.21	-0.11
	(0.008)	(0.008)	(0.017)	(0.008)
Marital status (D)	0.20	0.19	-0.075	-0.04
	(0.012)	(0.011)	(0.024)	(0.012)
Education (D)	0.33	0.10	0.12	0.02
	(0.011)	(0.003)	(0.020)	(0.003)
Previous capital gains	0.97	0.33		
	(0.010)	(0.004)		
Mills ratio			-0.13	
			(0.02)	
Number of obs.	205,440		28,220	

Table 3. Estimated coefficients and elasticities for the less-wealthy (standard errors in parantheses)

Independent variable	Criterion function	Elasticity	Level equation	Elasticity
Constant	-1.57		3.23	
	(0.008)		(0.031)	
Capital gains tax rate	-1.70	-0.80	-0.63	-0.14
	(0.02)	(0.09)	(0.049)	(0.011)
Income (L)	1.60E-06	0.31	1.46E-06	0.14
	(1.13E-08)	(0.002)	(3.91E-08)	(0.004)
Wealth (L)	n/a	n/a	n/a	n/a
Dividend payments (L)	4.75E-06	0.002	6.87E-06	0.006
	(1.79E-07)	(0.00009)	(2.53E-07)	(0.00006)
Interest deductions	3.25E-06	0.048	-9.73E-07	-0.006
	(5.36E-08)	(0.0008)	(6.76E-08)	(0.0004)
Family size	-0.042	-0.29	-0.055	-0.18
	(0.001)	(0.009)	(0.004)	(0.012)
Age	0.002	0.16	0.018	0.59
	(0.0001)	(0.008)	(0.0003)	(0.01)
Sex (D)	0.024	0.025	-0.21	-0.11
	(0.003)	(0.003)	(0.008)	(0.004)
Marital status (D)	0.18	0.15	0.15	0.06
	(0.004)	(0.003)	(0.011)	(0.004)
Education (D)	0.19	0.043	0.24	0.025
	(0.005)	(0.001)	(0.011)	(0.001)
Previous capital gains	0.97	0.13		
	(0.004)	(0.0006)		
Mills ratio				
Number of obs.	1,888,427		123,242	