Internet Appendix to "Stock prices under pressure: How tax and interest rates drive seasonal variation in expected returns"

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1 Data Description

The raw US firm-level data come from four different databases. The first of these, the Center for Research in Securities Prices (CRSP) stock file, provides daily prices, shares outstanding, trading volumes, and returns for all NYSE, AMEX, and NASDAQ listed stocks. The second database, the Compustat North America annual file, contains the relevant accounting information for most publicly traded US stocks. The third database is the Trade and Quote (TAQ) trade-level data, which is used to compute the selling pressure variable. The fourth database contains the trades and positions of individual investors from a large discount brokerage, described in Odean (1998).[2]

We measure the log book-to-market equity ratio (denoting the transformed quantity by BM in contrast to simple book-to-market by BE/ME) as of the end of June in year t. We measure BE for the fiscal year ending in calendar year $t-1$, and ME (market value of equity) at the end of June of year t. Following Fama and French, we define BE as stockholders' equity, plus balance sheet deferred taxes (Compustat data item 74) and investment tax credit (data item 208) (if available), plus post-retirement benefit liabilities (data item 330) (if available), minus the book value of preferred stock.[3] We require each firm-year observation to have a valid past BE/ME ratio that must be positive in value. Moreover, in order to eliminate likely data errors, we censor the BE/ME variables of these firms to the range (.01,100) by adjusting the book value. To avoid influential observations created by the log transform, we first shrink the BE/ME towards one by defining $BM \equiv \log[(.9BE + .1ME)/ME]$.

As mentioned in the paper, we examine individual trading behavior using two data sources. First, we follow Lee and Ready (1991) and Hvidkjaer (2005) to form a selling pressure variable from the 1993-2005 TAQ dataset. Buy versus sell trades are

[2] We thank Terry Odean for providing the database.

[3] Depending on availability, we use redemption (data item 56), liquidation (data item 10), or par value (data item 130) (in that order) for the book value of preferred stock. We calculate stockholders' equity used in the above formula as follows. We prefer the stockholders' equity number reported by Moody's, or Compustat (data item 216). If neither one is available, we measure stockholders' equity as the book value of common equity (data item 60) plus the book value of preferred stock. (Note that the preferred stock is added at this stage, because it is later subtracted in the book equity formula.) If common equity is not available, we compute stockholders' equity as the book value of assets (data item 6) minus total liabilities (data item 181), all from Compustat.

identified in terms of their relation to the midpoint of the bid-ask spread. We classify trades as individual or institutional based on trade size, identifying individual trades as those trades under a $10,000 cutoff. We define selling pressure ($Sell$) as the ratio of sell trades to all trades for that classification. Second, we analyze individual investor trades using the Odean dataset, which contains the 1.27 million transactions of retail clients of a US based brokerage from 1991 until 1996. We identify purchase and sell orders at the firm-level using CUSIP codes.

The raw UK firm-level data come from the Compustat Global database. We obtain daily prices, shares outstanding, trading volumes, and returns from the Security Data tables. We obtain accounting information from the Fundamentals Annual tables in order to construct log book-to-market equity (BM) and book-to-market (BE/ME) ratios as defined for the US.

2 Alternative specifications of the tax-selling premium

In this section, we analyze the behavior of our proposed variable γ and its relation to interest rates and capital gains tax rates in the US data. The analysis in the main body of the paper is based on the one-year Fama-Bliss interest rate, but we also considered other proxies for interest rates. These alternative proxies include seasonally-unadjusted rates on auto loans, personal loans, and credit card loans and are available from the Federal Reserve Table "Terms of Credit at Commercial Banks and Finance Companies".[4] Specifically, auto loans are 48-month new auto loans provided by commercial banks. Personal loans are 24-month personal loans provided by commercial banks. The last proxy we consider is the rate on credit card loans from credit card companies.

Our primary interest rate, our capital gains tax rate and the resulting γ are plotted in Figure IA.1 using the one-year Fama-Bliss interest rate. Figure IA.2 shows γ for each of four alternative interest proxies that also include credit risk. All five proxies

[4] http://www.federalreserve.gov/releases/g19/Current/

for γ appear persistent but stationary. Generally speaking, the significant common variation in the five proxies for γ over this period suggests a possibly large time-series variation in the incentives for tax-motivated selling. One advantage of the Fama-Bliss proxy is that this is the only proxy with the desired constant one-year horizon. Nevertheless, all versions are highly correlated. The alternative to the Fama-Bliss γ with the lowest correlation is the credit card γ, but correlation remains high at 0.73. A noticeable difference among these series can be seen in 2008 when the Fama-Bliss γ is at its lowest level, but all the other measures are essentially stable relative to the previous year or even slightly higher as in the case of the Auto Financing rate. In 2008, one might expect (and in actuality there was) a wide cross-sectional variation in interest rates among individuals as there was a wide range of credit worthiness. Indeed, a rate with a credit component may better capture the relatively strong performance of our Section 3.3 TAX factor since the onset of the financial crisis.

We find that most of the time-series variation in γ is due to changes in interest rates although capital gains tax rates also explain part of the variation. Table IA.I provides regression analysis of the relation between γ and its components. The linear model explains 93% of the variation in γ. A variance decomposition analysis based on this regression shows that the component of interest rates that is orthogonal to tax rate variation explains 38% of the total variation in γ while the corresponding number for variation attributable to tax rates is 24%. Based on this comparison, interest rates are more important than tax rates in explaining variation in γ. Table IA.I also reports descriptive statistics for our tax-selling variable, γ, as well as for its two components. Interest rates had significant variation during this time period. The maximum capital gains tax rate varies from 20% to almost 40% over this period. While not shown, most of the time-variation in the UK version of γ is also due to changes in interest rates since the UK capital gains tax rate changes only once in our sample.

3 Estimated taxes and tax-loss selling

In this section, we analyze whether the interest rate channel remains the important driver of time variation in turn-of-the-year mispricing linked to tax-loss selling once quarterly estimated tax payments are taken into account. The relative importance of the interest channel depends on the discounting horizon of the marginal seller.[5] We show that investors who pay estimated taxes may have a wide range of discounting horizons depending on how their income varies over time. The typical estimated taxpayer with stable year-on-year income is likely to have a horizon close to three months, while investors may have longer horizons following a recession or may have horizons even shorter than three months if they forecast a recession.[6] We should note that it may be optimal for investors who derive large amounts of their income from asset sales to make sure that their realizations are stable over time. Therefore, a three-month discounting is very plausible for sophisticated investors, but we do not tie ourselves to any discounting period because it is possible to construct cases with different discounting periods as we see below. The results here are consistent with the importance of the NBER dummy used in our empirical tests.

The typical taxpayer pays the majority of their tax through a wage withholding system where tax is automatically subtracted from gross income by an employer. For income which is not subject to withholding such as gains from the sale of assets, taxpayers are required to make quarterly estimated tax payments. These estimated tax payments are due on April 15, June 15, September 15, and January 15. When investors must pay estimated taxes, the determination of the relevant horizon becomes significantly more complex and dependent on the time evolution of their taxable income. In general, we should expect the discounting horizon to be shorter and this follows directly from the fact that the last quarterly estimated tax payment for the current tax year (year t) is due January 15 of year $t+1$ and the first estimated tax

[5]The determination of the marginal seller will depend on equilibrium considerations, so it is both possible that the marginal seller pays or does not pay estimated taxes. It is however relevant for this determination that investors that do not pay estimated taxes may be willing to sell losing stocks at lower prices due to their usually longer deferral horizon.

[6]We thank an anonymous referee for suggesting the first of these particular examples (see Case 1).

payment for the subsequent tax year (year $t + 1$) is due April 15 of year $t + 1$. Thus it may be the case that deferring a sale from December of year t to January of year $t + 1$ only moves the tax consequences arising from the sale from January 15 to April 15. Taken at face value, this discounting of only three months would make the effect smaller than the one for investors that do not pay estimated taxes.

Here we consider the effect of deferring a sale from December of year t to January of year $t+1$. We assume that this sale would generate a capital loss that could reduce the tax liability by offsetting either realized capital gains or taxable income, assuming that the investor is below the loss limit. In order to measure the impact of this sale, we need to compute the effect on the estimated tax due in January 15 of year $t+1$ and the following estimated tax payments and tax return payments. To do so, we need to account for all the safe harbors available to the investor when paying estimated taxes. Interestingly, estimated tax payments for each tax quarter are not only tied to income in that tax quarter, but also to the income of the previous tax quarters in the same and the previous tax year. The general rule determining the minimum year $t + 1$ quarterly estimated tax payment is that it must be the smaller of 22.5% of whatever year $t+1$'s tax turns out to be (the current-year safe harbor) *or* 25% of the tax paid in year t (the prior-year safe harbor) (see page 48 of IRS Publication 505 and AIIM rules for the annualization method to avoid underpayment penalty when taxpayers have uneven income).[7] Therefore, the effect of the deferring a sale depends on the income variation over time of a particular investor.

Table IA.II measures the effective discounting horizon when delaying a sale from December year t to January year $t + 1$ under the current quarterly estimated tax payment system. We consider multiple examples to provide an idea of the range of possible horizons and the intuition for these differences. The effective discounting horizon will depend on the particular numerical example, so we consider a few illustrative cases. In these cases, we need to make assumptions for income in every quarter of years t and $t - 1$, as the estimated tax due January 15 of year $t + 1$ that is based on taxable income in year t may be limited by by the prior-year safe harbor. We

[7]Taxpayers with adjusted gross income more than \$150,000 (\$75,000 if married filing a separate return) compare 22.5% of this years tax to 27.5% of last year's tax in order to calculate the minimum estimated tax payment.

make a few simplifying assumptions, but implications are qualitatively the same if all details of the tax system are accounted for. For example, we assume that estimated tax quarters are aligned with calendar quarters to make income even in all quarters in the main case (Case 1). We also ignore exemptions and assume that the tax rate is 25%.

Case 1 of Table IA.II assumes that income is stable at \$100 per quarter in every quarter of years $t-1,\ t,\ t+1$ and $t+2$. The investor is deciding whether to defer a capital loss of \$100 from December of year t to January of year $t+1$. If the sale happens in December, the investor would reduce his taxable income in year t from \$400 to \$300 by wiping out the taxable income in the last quarter of year t. This results in his total year t tax liability being \$75. There is no estimated tax payment to make on January 15 of year $t+1$ and only \$7.50 to pay on April 15 of year $t+1$ due to the remaining tax return payment. Estimated taxes due on April 15 of year $t+1$ and following quarters of the same year would be reduced to \$18.75 as the prior-year safe harbor would be binding. As income returns to \$400 in year $t+1$, this investor would need to pay an additional \$25 when his annual tax return is filed with payment due on April 15 of year $t+2$.

If instead, the sale happens in January, the investor would reduce his taxable income to \$0 in the first quarter of $t+1$ and pay no estimated taxes on April 15 of year $t+1$ because the \$100 capital loss wipes out his taxable income. Estimated taxes due on the following three quarters would be \$22.5 due to our simplifying assumption that tax quarters match calendar quarters and that AIIM rules are adjusted accordingly. There will be an effect on the tax payments in year t+2 due to the reduction in taxable income in t+1 and the safe harbor of last year's tax. If we compute the difference between the tax payments in the two scenarios and discount it back to January 15 of $t+1$ at 6% per annum, we find a net present value of \$0.49, corresponding to a discounting horizon of roughly 4.5 months, which is not much longer than three months. It is slightly longer than three months due to the effect on taxes to be paid in years $t+2$ and $t+3$.

However, we do not tie ourselves to any discounting period because it is possible to construct cases with different discounting periods. In particular, we consider two additional hypothetical cases where income is stable within each tax year but varies across tax years. Case 2 of Table IA.II assumes that quarterly income was \$100 in year t but \$110 in the years before and after year t. Case 3 of Table IA.II assumes that quarterly income is \$100 in in year $t+1$ but \$110 in the previous and following years. Therefore, case 2 assumes that investors are making decisions just following a recession, while case 3 assumes that investors are predicting a recession in the following year. The implications are very different in terms of the effective discounting horizon. Case 2 has a discounting horizon of 7.5 months as the prior-year safe harbor is binding. In general, when the prior-year safe harbor is binding and income is likely to increase in the coming year, the effective horizon is longer. In fact, the effect is larger with a deeper recession in the previous year and the effective discounting horizon can be longer than 12 months in extreme scenarios. On the other hand, the discounting horizon of case 3 is actually negative, as the reduction in income in year t has no effect on the estimated tax payments in year $t+1$. At the same time, a reduction of income in year $t+1$ has an effect of lowering estimated taxes in year $t+2$ which is only compensated with a larger tax return payment in year $t+3$. This last effect reduces the present value of accelerating the sale to December of year t, making it optimal to defer the loss realization to the following year.

Overall, we expect the discount horizon of estimated tax payers to be dependent on economic conditions not only during the turn of the tax year, but also at the turn of the non-year-end tax quarters. However, the maximum discount horizon should be in general shorter at the non-year-end tax quarter as the implication for future years' estimated taxes becomes irrelevant in this decision. If so, the effect on the current year's estimated taxes depends on the safe harbor that is binding. In this case, a three-month period is likely an upper bound on the discounting horizon.

4 Quarterly Tax Horizon

Though we do not tie ourselves to any specific horizon, nevertheless, in Table IA.III, we re-estimate our main results using a quarterly discount rate instead of an annual discount rate. We find that the statistical significance of our results remains effectively the same. We do note that our model predicts that the coefficient on the tax premium is 1.0 and -1.0 for the periods before and after the turn of the tax period. Since we examine 10 days surrounding the turn of each tax period, we should therefore find a coefficient before and after the turn of a tax period of 0.1 and -0.1 respectively. If we assume quarterly discounting, we instead find that the absolute magnitude of the corresponding coefficients is much greater than 0.1. One possible interpretation is that the data are inconsistent with quarterly discounting. Of course, another possible conclusion is simply that our model is misspecified.

5 Anticipated changes in capital gains tax rates

In this section, we analyze whether incorporating anticipated tax rate changes at the turn of the year affects our conclusions. In some cases, investors knew with near certainty at the end of December what the change in the capital gains tax rate will be in the following year. If that is the case, then it is straightforward to show that our tax-selling premium, $\gamma = \tau \frac{(1-B)}{(1-B\tau)}$, becomes $\gamma = \frac{(\tau_t - \tau_{t+1} B)}{(1-B\tau_{t+1})}$. In Tables IA.V and IA.VI we reestimate Table II from the main paper using this two-tax-rate formulation. Table IA.V uses this two-tax-rate formula for γ except for those major tax rate changes which, based on our analysis, were retroactive (1976, 1997, and 2003). For those three major tax rate changes, we continue to use the one-rate formulation. We find that results are qualitatively the same and remain statistically significant, though slightly weaker. As even retroactive tax rates could be anticipated, Table IA.VI uses the two-tax-rate formula in every case with similar results. Overall, we conclude that taking into account anticipation of tax rate changes across the turn of the year does not eliminate our results. Marginally weaker results when our tax-selling premium is adjusted for changes in tax rates are, however, consistent with investors not anticipating changes in tax rates.

6 Changes in Selling Pressure

Our framework indicates that we should expect $\gamma * g$ to forecast the level of selling pressure. Nevertheless, we also find that results remain statistically significant even when we forecast changes in selling pressure. In this case, we are analyzing whether the change in selling pressure of low/negative capital gains overhang stocks increases as we approach the end of the year. Table IA.VII shows that this increase indeed occurs, as coefficients in December are all negative. The selling pressure of low overhang stocks increases over the course of December (negative coefficients), but suddenly declines in the first week of January (positive coefficient). Note that the slope on the NYE dummy interaction is positive and highly statistically significant, implying a large change in selling pressure just before the turn of the year. Note that these effects are much stronger in the case of the level of selling pressure. Some of the pressure may start increasing before we approach the last two weeks of the year.

Table IA.I: Descriptive Statistics and Correlations of Macro Variables (1954-2014)
We compute the tax-selling premium, $\gamma = \tau\frac{(1-B)}{(1-B\tau)}$, using the highest long-term capital gains tax rate, τ, from the IRS and the one-year interest rate, r, from the Fama-Bliss dataset to compute a one-year discount factor, B. As the tax rate changes at most once a year, we report below sample characteristics of γ and its components as well as regression output using values as of the end of December of each year. Therefore, the sample consists of 60 years of data from 1954 to 2014. t-statistics are in parentheses. Panel A shows simple descriptive statistics. Panel B estimates the linear relation between interest rates and capital gains tax rates. Panel C shows that a linear approximation explains 93% of the variance in γ. Panel D shows that interest rates explain much of the variation in γ.

Panel A: Descriptive Statistics

Variable	N	Mean	Std. Dev.	Minimum	Maximum
r	60	0.050	0.031	0.000	0.129
τ	60	0.252	0.066	0.154	0.399
γ	60	0.017	0.013	0.000	0.060

Panel B: Regression: $r = a + b\tau + e$

	Intercept	τ		R^2
Coefficient	-0.009	0.236		0.25
t-statistic	(-0.68)	(4.50)		

Panel D: Variance Decomposition of $\gamma = a + br + c\tau + e$

	$R^2 =$	$b^2\frac{Var(r)}{Var(\gamma)}$	$+c^2\frac{Var(\tau)}{Var(\gamma)}$	$+2bc\frac{Cov(r,\tau)}{Var(\gamma)}$
	0.93	0.38	0.24	0.30

Table IA.II: Analysis of Estimated Taxes

We calculate the relevant discounting horizon for an investor who is deciding whether to realize a capital loss before or after the turn of the year (from t to $t+1$). Our analysis studies three hypothetical cases that arise depending upon income that the investor has received before the capital loss realization and expects to receive in the future assuming perfect foresight. We assume that the capital loss reduces taxable income by \$100. We consider how all safe harbor rules affect estimated tax and tax return payments in the following quarters. In all cases, we make a few simplifying assumptions: tax quarters coincide with calendar quarters; there are no exemptions; and the tax rate is 25%. Present value is the present value discounted at 6% per annum of the difference in tax payments across the December (where capital loss is realized in December of year t) and January (where capital loss is realized in January of year $t+1$) cases. Effective horizon (months) is the effective discounting horizon measured in months. First, we calculate the ratio of present value of anticipating the sale to the reduction in tax payments in December of year t. Effective horizon is then calculated as $12 * ln(1 + ratio)/\ln(1.06)$.

Case 1

Year	Quarter	Prev. Quarter Income	Taxes (Dec loss)	Taxes (Jan loss)	Diff
t-1	Q2	100	22.50	22.50	0.00
	Q3	100	22.50	22.50	0.00
	Q4	100	22.50	22.50	0.00
t	Q1	100	22.50	22.50	0.00
	Q2	100	32.50	32.50	0.00
	Q3	100	22.50	22.50	0.00
	Q4	100	22.50	22.50	0.00
t+1	Q1	100	0.00	22.50	-22.50
	Q2	100	26.25	10.00	16.25
	Q3	100	18.75	22.50	-3.75
	Q4	100	18.75	22.50	-3.75
t+2	Q1	100	18.75	22.50	-3.75
	Q2	100	47.50	26.25	21.25
	Q3	100	22.50	18.75	3.75
	Q4	100	22.50	18.75	3.75
t+3	Q1	100	22.50	18.75	3.75
	Q2	100	32.50	47.50	-15.00
	Q3	100	22.50	22.50	0.00
	Q4	100	22.50	22.50	0.00
t+4	Q1	100	22.50	22.50	0.00
	Q2	100	32.50	32.50	0.00
Present Value					-0.49
Effective Horizon (months)					4.47

Case 2

Year	Quarter	Prev. Quarter Income	Taxes (Dec loss)	Taxes (Jan loss)	Diff
t-1	Q2	110	24.75	24.75	0.00
	Q3	110	24.75	24.75	0.00
	Q4	110	24.75	24.75	0.00
t	Q1	110	24.75	24.75	0.00
	Q2	100	33.50	33.50	0.00
	Q3	100	22.50	22.50	0.00
	Q4	100	22.50	22.50	0.00
t+1	Q1	100	0.00	22.50	-22.50
	Q2	110	26.25	12.25	14.00
	Q3	110	18.75	24.75	-6.00
	Q4	110	18.75	24.75	-6.00
t+2	Q1	110	18.75	24.75	-6.00
	Q2	110	59.75	29.75	30.00
	Q3	110	24.75	21.25	3.50
	Q4	110	24.75	21.25	3.50
t+3	Q1	110	24.75	21.25	3.50
	Q2	110	35.75	49.75	-14.00
	Q3	110	24.75	24.75	0.00
	Q4	110	24.75	24.75	0.00
t+4	Q1	110	24.75	24.75	0.00
	Q2	110	35.75	35.75	0.00
Present Value					-0.84
Effective Horizon (months)					7.53

Case 3

Year	Quarter	Prev. Quarter Income	Taxes (Dec loss)	Taxes (Jan loss)	Diff
t-1	Q2	110	24.75	24.75	0.00
	Q3	110	24.75	24.75	0.00
	Q4	110	24.75	24.75	0.00
t	Q1	110	24.75	24.75	0.00
	Q2	110	35.75	35.75	0.00
	Q3	110	24.75	24.75	0.00
	Q4	110	24.75	24.75	0.00
t+1	Q1	110	2.25	24.75	-22.50
	Q2	100	29.75	11.00	18.75
	Q3	100	21.25	22.50	-1.25
	Q4	100	21.25	22.50	-1.25
t+2	Q1	100	21.25	22.50	-1.25
	Q2	110	39.75	26.25	13.50
	Q3	110	24.75	18.75	6.00
	Q4	110	24.75	18.75	6.00
t+3	Q1	110	24.75	18.75	6.00
	Q2	110	35.75	59.75	-24.00
	Q3	110	24.75	24.75	0.00
	Q4	110	24.75	24.75	0.00
t+4	Q1	110	24.75	24.75	0.00
	Q2	110	35.75	35.75	0.00
Present Value					0.14
Effective Horizon (months)					-1.34

Table IA.III: Pooled Return Regressions with Quarterly Discounting (1954-2014)

We report the results from pooled regressions of day t stock returns on $t-1$ characteristics. Characteristics are measured on a weekly basis for conciseness. All firm-specific variables, defined in Table I, are cross-sectionally demeaned, and when appropriate, interacted with our proposed tax-selling premium variable, $\gamma_t = \tau_t \left(\frac{1-B_t}{1-B_t\tau_t}\right)$, a function of capital gains tax rates (τ_t) and interest rates ($r_t = \frac{1}{B_t} - 1$) as derived in Section 1 of the paper, and with dummy variables for different periods of the year. The interest rate is the three-month T-bill rate. The dummy variables are RoY for the rest of the year, $Qtr(X)$ for the X weeks relative to the quarter-end, $Yr(X)$ for the X weeks relative to the year-end, XE for the business day before Christmas and NYE for the business day before New Year's Day. t-statistics (in parentheses) are robust to cross-correlation in the residuals using the clustered standard errors of Rogers (1983, 1993). The sample starts in February of 1954 and ends in January of 2014. Panel A presents regressions of daily returns onto interactions of the calendar dummies, g and γ, along with several firm-specific variables as controls. Panel B shows sub-sample analysis of regression (4) in Panel A. Regressions (1) through (4) in Panel B correspond to sub-periods 1963-2014, 1954-1985, 1986-2014, and 1993-2014, respectively. Regression (1) in Panel C includes interactions between the calendar dummy variables and a stock's average relative (to price) bid-ask spread ($\frac{bid-ask}{P}$) during month $t-1$. Regressions (2) and (3) in Panel C account for a possible trend in the effect of g on returns. Regression (4) in Panel C analyzes whether the interactive effect of γ can be explained simply through interactions with its components, interest rates (r) or capital gains tax rates (τ) individually. Panel D controls for interactions with variables reflecting changes in tax laws as described in Section 3.1.1 of the text. For Panel A, these regressions generally take the form

$$\begin{aligned}
r_{i,t} \quad = \quad & a_1\gamma_{t-1}g_{i,t-1}RoY \\
& + a_2\gamma_{t-1}g_{i,t-1}Qtr(-2) + a_3\gamma_{t-1}g_{i,t-1}Qtr(+2) \\
& + a_4\gamma_{t-1}g_{i,t-1}Yr(-2) + a_5\gamma_{t-1}g_{i,t-1}Yr(+2) \\
& + a_6\gamma_{t-1}g_{i,t-1}RoYNBER \\
& + a_7\gamma_{t-1}g_{i,t-1}Qtr(-2)NBER + a_8\gamma_{t-1}g_{i,t-1}Qtr(+2)NBER \\
& + a_9\gamma_{t-1}g_{i,t-1}Yr(-2)NBER + a_{10}\gamma_{t-1}g_{i,t-1}Yr(+2)NBER \\
& + a_{11}\gamma_{t-1}g_{i,t-1}XE + a_{12}\gamma_{t-1}g_{i,t-1}NYE \\
& + a_{13}\gamma_{t-1} + a_{14}g_{i,t-1} \\
& + a_{15}\ln BM_{i,t-1} + a_{16}\ln ME_{i,t-1} + a_{17}\ln ME_{i,t-1}Jan \\
& + a_{18}r_{i,-1:0} + a_{19}r_{i,-12:-1} + a_{20}r_{i,-36:-12} + a_{21}\overline{V}_{i,t-1} + \varepsilon_{i,t}
\end{aligned}$$

Panel A

	(1)	(2)	(3)	(4)
$\gamma * g * RoY$	0.028	0.034	0.033	0.029
	(2.06)	(2.44)	(2.31)	(1.81)
$\gamma * g * Qtr(-2)$	0.030	0.033	0.028	0.002
	(1.53)	(1.71)	(1.42)	(0.06)
$\gamma * g * Qtr(+2)$	0.023	0.025	0.029	0.028
	(1.39)	(1.41)	(1.62)	(1.45)
$\gamma * g * Yr(-2)$	0.205	0.198	0.203	0.157
	(6.87)	(6.51)	(6.64)	(3.69)
$\gamma * g * Yr(+2)$	-0.410	-0.399	-0.394	-0.378
	(-5.12)	(-5.13)	(-5.10)	(-4.96)
$\gamma * g * RoY * NBER$				0.010
				(0.60)
$\gamma * g * Qtr(-2) * NBER$				0.081
				(2.35)
$\gamma * g * Qtr(+2) * NBER$				-0.001
				(-0.04)
$\gamma * g * Yr(-2) * NBER$				0.132
				(2.06)
$\gamma * g * Yr(+2) * NBER$				-0.102
				(-0.37)
$\gamma * g * XE$	-0.507	-0.493	-0.497	-0.499
	(-6.63)	(-6.02)	(-6.03)	(-6.26)
$\gamma * g * NYE$	-1.064	-1.014	-1.018	-1.021
	(-4.69)	(-3.96)	(-3.97)	(-4.15)
γ	0.000	-0.004	-0.005	-0.005
	(-3.36)	(-2.89)	(-3.35)	(-3.35)
g	-0.001	-0.001	-0.001	-0.001
	(-10.00)	(-8.52)	(-8.75)	(-8.67)
$\ln BM$		0.015	0.016	0.016
		(3.72)	(4.03)	(4.05)
$\ln ME$		-0.006	-0.005	-0.005
		(-5.35)	(-4.43)	(-4.36)
$\ln ME * Jan$		-0.009	-0.010	-0.010
		(-9.63)	(-9.85)	(-9.88)
$r_{-1:0}$			-0.003	-0.003
			(-5.58)	(-5.58)
$r_{-12:-1}$			0.000	0.000
			(4.31)	(4.35)
$r_{-36:-12}$			0.000	0.000
			(-1.48)	(-1.44)
$\overline{V}$			-0.001	-0.001
			(-2.57)	(-2.59)

Panel B

	(1) 1963-2014	(2) 1963-1985	(3) 1986-2014	(4) 1993-2014
$\gamma * g * RoY$	0.033	0.017	-0.005	-0.171
	(2.05)	(0.61)	(-0.23)	(-3.73)
$\gamma * g * Qtr(-2)$	0.006	-0.005	-0.034	-0.311
	(0.24)	(-0.14)	(-1.16)	(-4.58)
$\gamma * g * Qtr(+2)$	0.031	0.042	-0.031	-0.256
	(1.58)	(1.51)	(-1.03)	(-3.21)
$\gamma * g * Yr(-2)$	0.160	0.088	0.179	0.559
	(3.75)	(1.99)	(2.27)	(2.76)
$\gamma * g * Yr(+2)$	-0.369	-0.442	-0.355	-1.172
	(-4.89)	(-4.81)	(-3.15)	(-4.89)
$\gamma * g * RoY * NBER$	0.007	0.029	0.014	0.149
	(0.45)	(1.07)	(0.70)	(1.38)
$\gamma * g * Qtr(-2) * NBER$	0.078	0.065	0.101	0.486
	(2.28)	(1.26)	(2.33)	(4.09)
$\gamma * g * Qtr(+2) * NBER$	-0.003	0.018	0.009	0.309
	(-0.08)	(0.54)	(0.20)	(1.25)
$\gamma * g * Yr(-2) * NBER$	0.128	0.194	0.079	-0.405
	(2.00)	(2.20)	(0.85)	(-0.44)
$\gamma * g * Yr(+2) * NBER$	-0.096	0.134	-0.177	-0.821
	(-0.35)	(0.56)	(-0.49)	(-3.49)
$\gamma * g * XE$	-0.492	-0.395	-0.576	-1.004
	(-6.26)	(-4.05)	(-5.43)	(-2.69)
$\gamma * g * NYE$	-1.018	-1.170	-0.889	-3.865
	(-4.13)	(-8.07)	(-2.28)	(-5.98)
γ	-0.010	0.003	-0.020	-0.017
	(-4.45)	(1.62)	(-4.35)	(-3.38)
g	-0.001	0.000	-0.001	0.000
	(-8.68)	(-1.74)	(-6.83)	(-2.95)
$\ln BM$	0.020	0.018	0.022	0.022
	(4.45)	(3.93)	(3.73)	(3.15)
$\ln ME$	-0.006	-0.006	-0.008	-0.010
	(-4.74)	(-2.95)	(-4.35)	(-4.91)
$\ln ME * Jan$	-0.010	-0.014	-0.009	-0.007
	(-9.68)	(-8.78)	(-6.39)	(-5.27)
$r_{-1:0}$	-0.003	-0.005	-0.002	-0.002
	(-5.43)	(-16.83)	(-4.55)	(-3.69)
$r_{-12:-1}$	0.000	0.001	0.000	0.000
	(3.99)	(6.66)	(2.50)	(2.00)
$r_{-36:-12}$	0.000	0.000	0.000	0.000
	(-1.38)	(0.56)	(-1.72)	(-1.87)
$\overline{V}$	-0.001	-0.003	-0.001	-0.001
	(-2.27)	(-3.21)	(-1.71)	(-1.71)

Panel C

	(1)		(2)	(3)		(4)	
		interact $\gamma * g$ with $\frac{bid-ask}{P}$			interact g with $trend$	replace γ with both	
						r	τ
$\gamma * g * RoY$	0.026	0.000	0.000	0.013	-0.004	0.127	-0.004
	(1.66)	(-0.03)	(-0.01)	(0.83)	(-3.87)	(3.67)	(-4.29)
$\gamma * g * Qtr(-2)$	0.011	-0.077	-0.027	-0.009	-0.005	0.100	-0.005
	(0.43)	(-1.13)	(-1.10)	(-0.37)	(-2.36)	(1.85)	(-3.58)
$\gamma * g * Qtr(+2)$	0.033	-0.047	0.001	0.016	-0.006	0.027	-0.003
	(1.61)	(-0.80)	(0.04)	(0.84)	(-3.39)	(0.42)	(-1.75)
$\gamma * g * Yr(-2)$	0.170	-0.070	0.127	0.121	0.005	0.212	-0.003
	(4.36)	(-1.09)	(2.79)	(3.23)	(0.83)	(1.20)	(-0.97)
$\gamma * g * Yr(+2)$	-0.483	0.537	-0.409	-0.389	-0.008	0.038	-0.012
	(-6.10)	(5.30)	(-5.16)	(-4.75)	(-0.79)	(0.17)	(-3.39)
$\gamma * g * RoY * NBER$	0.011		0.015	0.022		-0.094	0.002
	(0.65)		(0.93)	(1.37)		(-1.38)	(1.40)
$\gamma * g * Qtr(-2) * NBER$	0.085		0.087	0.090		-0.203	0.006
	(2.52)		(2.54)	(2.72)		(-1.67)	(2.48)
$\gamma * g * Qtr(+2) * NBER$	0.002		0.004	0.011		-0.336	0.006
	(0.05)		(0.11)	(0.38)		(-2.00)	(1.84)
$\gamma * g * Yr(-2) * NBER$	0.131		0.137	0.131		0.300	-0.001
	(2.08)		(2.13)	(1.85)		(0.54)	(-0.16)
$\gamma * g * Yr(+2) * NBER$	-0.119		-0.091	-0.054		1.430	-0.036
	(-0.45)		(-0.33)	(-0.20)		(1.17)	(-1.36)
$\gamma * g * XE$	-0.495		-0.499	-0.463		-0.489	
	(-5.00)		(-6.26)	(-6.51)		(-5.54)	
$\gamma * g * NYE$	-1.229		-1.021	-0.983		-1.011	
	(-7.25)		(-4.14)	(-4.45)		(-4.18)	
γ	-0.005		-0.006	-0.006		-0.005	
	(-2.48)		(-3.54)	(-3.73)		(-3.20)	
g	-0.001		-0.001	-0.001		0.000	
	(-8.56)		(-4.22)	(-6.16)		(-0.04)	
$g * trend$			0.000				
			(-2.24)				
$\ln BM$	0.009		0.017	0.017		0.014	
	(3.14)		(4.28)	(4.51)		(3.73)	
$\ln ME$	-0.005		-0.006	-0.006		-0.006	
	(-3.91)		(-4.64)	(-4.60)		(-4.65)	
$\ln ME * Jan$	-0.009		-0.010	-0.010		-0.009	
	(-9.18)		(-9.85)	(-9.74)		(-9.47)	
$r_{-1:0}$	-0.003		-0.003	-0.003		-0.003	
	(-5.34)		(-5.58)	(-5.57)		(-5.55)	
$r_{-12:-1}$	0.000		0.000	0.000		0.000	
	(4.31)		(4.20)	(4.25)		(4.10)	
$r_{-36:-12}$	0.000		0.000	0.000		0.000	
	(-1.40)		(-1.61)	(-1.53)		(-1.51)	
$\overline{V}$	-0.001		-0.001	-0.001		-0.001	
	(-2.65)		(-2.40)	(-2.49)		(-2.62)	

Panel D

		Interact $\gamma * g$ with			
		$NBER$	$LTHold$	$LTDeduct$	$LossLimit$
$\gamma * g * RoY$	0.015	0.029	-0.076	-0.027	0.073
	(0.91)	(1.75)	(-3.77)	(-2.07)	(4.03)
$\gamma * g * Qtr(-2)$	-0.001	0.098	-0.117	0.021	0.055
	(-0.06)	(2.90)	(-3.51)	(0.88)	(1.83)
$\gamma * g * Qtr(+2)$	0.019	0.016	-0.038	-0.033	0.024
	(0.93)	(0.53)	(-1.00)	(-1.42)	(0.70)
$\gamma * g * Yr(-2)$	0.151	0.133	-0.069	0.068	0.013
	(3.37)	(1.91)	(-1.79)	(2.25)	(0.32)
$\gamma * g * Yr(+2)$	-0.390	-0.145	0.068	-0.089	0.045
	(-5.05)	(-0.49)	(0.51)	(-0.77)	(0.45)
$\gamma * g * XE$	-0.499				
	(-6.15)				
$\gamma * g * NYE$	-1.021				
	(-4.17)				
γ	-0.011				
	(-4.54)				
g	-0.001				
	(-7.26)				
$\ln BM$	0.015				
	(3.89)				
$\ln ME$	-0.006				
	(-5.14)				
$\ln ME * Jan$	-0.010				
	(-9.91)				
$r_{-1:0}$	-0.003				
	(-5.58)				
$r_{-12:-1}$	0.000				
	(4.16)				
$r_{-36:-12}$	0.000				
	(-1.68)				
$\overline{V}$	-0.001				
	(-2.75)				
$Column\ Variable$			0.000	0.000	0.000
			(4.83)	(-2.31)	(1.25)

Table IA.IV: Pooled Return Regressions with Weekly Interactions (1954-2014)

We report the results from pooled regressions of day t stock returns on $t-1$ characteristics. Characteristics are measured on a weekly basis for conciseness. All firm-specific variables, defined in Table I, are cross-sectionally demeaned, and when appropriate, interacted with our proposed tax-selling premium variable, $\gamma_t = \tau_t \left(\frac{1-B_t}{1-B_t\tau_t}\right)$, a function of capital gains tax rates (τ_t) and interest rates ($r_t = \frac{1}{B_t} - 1$) as derived in Section 1 of the paper, and with dummy variables for different periods of the year. The dummy variables are RoY for the rest of the year, $QW(X)$ for week X relative to the quarter-end and $YW(X)$ for week X relative to the year-end. t-statistics (in parentheses) are robust to cross-correlation in the residuals using the clustered standard errors of Rogers (1983, 1993). The sample starts in February of 1954 and ends in January of 2014. Regression (1) corresponds to the full sample period, and regressions (2) through (5) correspond to sub-periods 1963-2014, 1954-1985, 1986-2014, and 1993-2014, respectively. For conciseness, we do not report estimates for the control variables. These regressions generally take the form

$$
\begin{aligned}
r_{i,t} \quad = \quad & a_1\gamma_{t-1}g_{i,t-1}RoY \\
& + a_2\gamma_{t-1}g_{i,t-1}QW(-4) + a_3\gamma_{t-1}g_{i,t-1}QW(-3) \\
& + a_4\gamma_{t-1}g_{i,t-1}QW(-2) + a_5\gamma_{t-1}g_{i,t-1}QW(-1) \\
& + a_6\gamma_{t-1}g_{i,t-1}QW(+1) + a_7\gamma_{t-1}g_{i,t-1}QW(+2) \\
& + a_8\gamma_{t-1}g_{i,t-1}QW(+3) + a_9\gamma_{t-1}g_{i,t-1}QW(+4) \\
& + a_{10}\gamma_{t-1}g_{i,t-1}YW(-4) + a_{11}\gamma_{t-1}g_{i,t-1}YW(-3) \\
& + a_{12}\gamma_{t-1}g_{i,t-1}YW(-2) + a_{13}\gamma_{t-1}g_{i,t-1}YW(-1) \\
& + a_{14}\gamma_{t-1}g_{i,t-1}YW(+1) + a_{15}\gamma_{t-1}g_{i,t-1}YW(+2) \\
& + a_{16}\gamma_{t-1}g_{i,t-1}YW(+3) + a_{17}\gamma_{t-1}g_{i,t-1}YW(+4) \\
& + a_{18}\gamma_{t-1}g_{i,t-1}RoYNBER \\
& + a_{19}\gamma_{t-1}g_{i,t-1}QW(-4)NBER + a_{20}\gamma_{t-1}g_{i,t-1}QW(-3)NBER \\
& + a_{21}\gamma_{t-1}g_{i,t-1}QW(-2)NBER + a_{22}\gamma_{t-1}g_{i,t-1}QW(-1)NBER \\
& + a_{23}\gamma_{t-1}g_{i,t-1}QW(+1)NBER + a_{24}\gamma_{t-1}g_{i,t-1}QW(+2)NBER \\
& + a_{25}\gamma_{t-1}g_{i,t-1}QW(+3)NBER + a_{26}\gamma_{t-1}g_{i,t-1}QW(+4)NBER \\
& + a_{27}\gamma_{t-1}g_{i,t-1}YW(-4)NBER + a_{28}\gamma_{t-1}g_{i,t-1}YW(-3)NBER \\
& + a_{29}\gamma_{t-1}g_{i,t-1}YW(-2)NBER + a_{30}\gamma_{t-1}g_{i,t-1}YW(-1)NBER \\
& + a_{31}\gamma_{t-1}g_{i,t-1}YW(+1)NBER + a_{32}\gamma_{t-1}g_{i,t-1}YW(+2)NBER \\
& + a_{33}\gamma_{t-1}g_{i,t-1}YW(+3)NBER + a_{34}\gamma_{t-1}g_{i,t-1}YW(+4)NBER \\
& + a_{35}\gamma_{t-1}g_{i,t-1}XE + a_{36}\gamma_{t-1}g_{i,t-1}NYE \\
& + a_{37}\gamma_{t-1} + a_{38}g_{i,t-1} \\
& + a_{39}\ln BM_{i,t-1} + a_{40}\ln ME_{i,t-1} + a_{41}\ln ME_{i,t-1}Jan \\
& + a_{42}r_{i,-1:0} + a_{43}r_{i,-12:-1} + a_{44}r_{i,-36:-12} + a_{45}\overline{V}_{i,t-1} + \varepsilon_{i,t}
\end{aligned}
$$

	(1) (1954-2014)		(2) (1963-2014)		(3) (1963-1985)		(4) (1986-2014)		(5) (1993-2014)	
		interact $\gamma * g$ with $NBER$		interact $\gamma * g$ with $NBER$		interact $\gamma * g$ with $NBER$		interact $\gamma * g$ with $NBER$		interact $\gamma * g$ with $NBER$
$\gamma * g * RoY$	0.009	-0.001	0.010	-0.002	0.006	-0.006	-0.004	0.005	-0.051	0.042
	(1.77)	(-0.26)	(1.96)	(-0.38)	(0.81)	(-0.56)	(-0.53)	(0.75)	(-3.49)	(1.37)
$\gamma * g * QW(-4)$	0.014	0.053	0.018	0.051	-0.005	0.017	-0.005	0.019	-0.191	0.053
	(0.53)	(1.42)	(0.66)	(1.37)	(-0.38)	(1.04)	(-0.53)	(1.89)	(-1.77)	(0.29)
$\gamma * g * QW(-3)$	-0.016	0.114	-0.011	0.112	-0.019	0.028	-0.016	0.045	-0.187	0.753
	(-0.54)	(1.96)	(-0.36)	(1.91)	(-1.14)	(1.28)	(-1.39)	(2.68)	(-1.98)	(3.99)
$\gamma * g * QW(-2)$	0.002	0.014	0.003	0.013	0.022	0.055	-0.049	0.054	-0.076	0.097
	(0.24)	(1.27)	(0.41)	(1.21)	(0.54)	(0.80)	(-1.44)	(1.40)	(-3.45)	(3.86)
$\gamma * g * QW(-1)$	-0.004	0.036	-0.003	0.035	-0.063	0.084	-0.029	0.159	-0.094	0.178
	(-0.40)	(2.69)	(-0.30)	(2.62)	(-0.93)	(0.99)	(-0.66)	(3.02)	(-4.79)	(2.84)
$\gamma * g * QW(+1)$	0.004	0.007	0.005	0.007	0.012	0.067	-0.049	0.035	-0.070	0.098
	(0.67)	(0.63)	(0.77)	(0.64)	(0.36)	(1.60)	(-1.32)	(0.61)	(-2.70)	(1.66)
$\gamma * g * QW(+2)$	0.012	-0.011	0.013	-0.012	0.049	-0.020	-0.026	-0.013	-0.060	-0.018
	(1.60)	(-0.82)	(1.70)	(-0.90)	(1.46)	(-0.52)	(-0.62)	(-0.18)	(-2.19)	(-0.17)
$\gamma * g * QW(+3)$	0.018	-0.008	0.019	-0.009	0.021	-0.004	0.002	-0.005	-0.028	-0.030
	(2.97)	(-1.01)	(3.14)	(-1.11)	(2.13)	(-0.42)	(0.28)	(-0.58)	(-1.26)	(-0.42)
$\gamma * g * QW(+4)$	0.008	0.009	0.009	0.008	-0.003	-0.002	0.002	0.015	-0.034	0.076
	(1.09)	(0.95)	(1.21)	(0.89)	(-0.26)	(-0.14)	(0.15)	(1.14)	(-1.25)	(1.14)
$\gamma * g * YW(-4)$	0.053	-0.041	0.054	-0.043	0.045	0.024	0.044	-0.062	0.048	-0.072
	(4.46)	(-1.44)	(4.52)	(-1.55)	(2.65)	(0.97)	(2.75)	(-4.05)	(1.34)	(-1.93)
$\gamma * g * YW(-3)$	0.052	-0.057	0.052	-0.057	0.049	0.019	0.038	-0.079	-0.003	0.008
	(6.07)	(-1.77)	(6.12)	(-1.78)	(3.86)	(0.91)	(3.62)	(-8.00)	(-0.09)	(0.18)
$\gamma * g * YW(-2)$	0.059	-0.005	0.060	-0.006	0.025	0.018	0.075	-0.026	0.162	0.206
	(3.42)	(-0.26)	(3.45)	(-0.32)	(3.02)	(3.21)	(2.38)	(-0.79)	(1.88)	(2.36)
$\gamma * g * YW(-1)$	0.025	0.071	0.026	0.070	0.019	0.086	0.013	0.063	0.076	-0.405
	(1.56)	(5.24)	(1.63)	(5.16)	(0.98)	(3.81)	(0.60)	(3.45)	(1.89)	(-11.71)
$\gamma * g * YW(+1)$	-0.167	-0.017	-0.164	-0.014	-0.192	-0.042	-0.156	-0.017	-0.482	-0.088
	(-4.88)	(-0.14)	(-4.88)	(-0.12)	(-6.77)	(-0.61)	(-2.93)	(-0.12)	(-13.26)	(-2.49)
$\gamma * g * YW(+2)$	-0.033	-0.036	-0.032	-0.035	-0.053	0.093	-0.033	-0.069	-0.093	-0.459
	(-2.75)	(-0.40)	(-2.63)	(-0.40)	(-4.65)	(2.55)	(-1.80)	(-0.57)	(-2.44)	(-12.14)
$\gamma * g * YW(+3)$	-0.026	0.001	-0.025	0.000	-0.061	0.068	-0.020	-0.020	-0.117	-0.129
	(-1.65)	(0.02)	(-1.57)	(-0.01)	(-3.49)	(2.19)	(-1.07)	(-0.42)	(-3.26)	(-3.46)
$\gamma * g * YW(+4)$	-0.060	0.075	-0.059	0.074	-0.116	0.142	-0.048	0.053	-0.144	0.042
	(-3.38)	(3.41)	(-3.30)	(3.40)	(-5.94)	(3.31)	(-2.65)	(2.37)	(-4.33)	(1.28)
$\gamma * g * XE$	-0.130		-0.128		-0.114		-0.137		-0.182	
	(-7.00)		(-7.02)		(-4.85)		(-5.18)		(-2.27)	
$\gamma * g * NYE$	-0.267		-0.266		-0.327		-0.217		-0.865	
	(-3.96)		(-3.94)		(-9.83)		(-2.21)		(-4.03)	

Table IA.V: Two tax rates case, but excluding retroactive changes (1954-2014)

We report the results from pooled regressions of day t stock returns on $t-1$ characteristics. Characteristics are measured on a weekly basis for conciseness. All firm-specific variables, defined in Table I, are cross-sectionally demeaned, and when appropriate, interacted with our two-tax-rate tax-selling premium variable (γ) as described in Section 5 of the Appendix, and with dummy variables for different periods of the year. The dummy variables are RoY for the rest of the year, $Qtr(X)$ for the X weeks relative to the quarter-end, $Yr(X)$ for the X weeks relative to the year-end, XE for the business day before Christmas and NYE for the business day before New Year's Day. For those years (1976, 1997, and 2003) where the tax rate change in year $t+1$ was made retroactively, we replace τ_{t+1} with τ_t. t-statistics (in parentheses) are robust to cross-correlation in the residuals using the clustered standard errors of Rogers (1983, 1993). The sample starts in February of 1954 and ends in January of 2014. Regression (1) corresponds to the full sample period, and regressions (2) through (5) correspond to sub-periods 1963-2014, 1954-1985, 1986-2014, and 1993-2014, respectively. These regressions generally take the form

$$
\begin{aligned}
r_{i,t} \quad = \quad & a_1\gamma_{t-1}g_{i,t-1}RoY \\
& + a_2\gamma_{t-1}g_{i,t-1}Qtr(-2) + a_3\gamma_{t-1}g_{i,t-1}Qtr(+2) \\
& + a_4\gamma_{t-1}g_{i,t-1}Yr(-2) + a_5\gamma_{t-1}g_{i,t-1}Yr(+2) \\
& + a_6\gamma_{t-1}g_{i,t-1}RoYNBER \\
& + a_7\gamma_{t-1}g_{i,t-1}Qtr(-2)NBER + a_8\gamma_{t-1}g_{i,t-1}Qtr(+2)NBER \\
& + a_9\gamma_{t-1}g_{i,t-1}Yr(-2)NBER + a_{10}\gamma_{t-1}g_{i,t-1}Yr(+2)NBER \\
& + a_{11}\gamma_{t-1}g_{i,t-1}XE + a_{12}\gamma_{t-1}g_{i,t-1}NYE \\
& + a_{13}\gamma_{t-1} + a_{14}g_{i,t-1} \\
& + a_{15}\ln BM_{i,t-1} + a_{16}\ln ME_{i,t-1} + a_{17}\ln ME_{i,t-1}Jan \\
& + a_{18}r_{i,-1:0} + a_{19}r_{i,-12:-1} + a_{20}r_{i,-36:-12} + a_{21}\overline{V}_{i,t-1} + \varepsilon_{i,t}
\end{aligned}
$$

	(1) 1954-2014	(2) 1963-2014	(3) 1963-1985	(4) 1986-2014	(5) 1993-2014
$\gamma * g * RoY$	-0.001	-0.001	0.001	-0.005	-0.052
	(-0.70)	(-0.61)	(0.23)	(-2.68)	(-4.26)
$\gamma * g * Qtr(-2)$	-0.007	-0.006	-0.003	-0.011	-0.090
	(-2.01)	(-1.98)	(-0.49)	(-2.85)	(-5.07)
$\gamma * g * Qtr(+2)$	0.004	0.004	0.010	-0.002	-0.069
	(1.18)	(1.15)	(1.54)	(-0.51)	(-3.21)
$\gamma * g * Yr(-2)$	0.026	0.026	0.024	0.024	0.126
	(2.90)	(2.88)	(2.74)	(1.87)	(2.27)
$\gamma * g * Yr(+2)$	-0.055	-0.054	-0.088	-0.039	-0.290
	(-2.76)	(-2.73)	(-3.80)	(-1.77)	(-4.41)
$\gamma * g * RoY * NBER$	0.008	0.008	0.007	0.010	0.034
	(1.97)	(1.87)	(0.86)	(1.97)	(1.26)
$\gamma * g * Qtr(-2) * NBER$	0.027	0.026	0.016	0.031	0.138
	(3.31)	(3.26)	(1.09)	(3.23)	(3.67)
$\gamma * g * Qtr(+2) * NBER$	-0.001	-0.001	0.003	-0.004	0.048
	(-0.10)	(-0.13)	(0.35)	(-0.38)	(0.75)
$\gamma * g * Yr(-2) * NBER$	0.029	0.028	0.033	0.026	-0.098
	(2.33)	(2.25)	(1.52)	(1.81)	(-0.45)
$\gamma * g * Yr(+2) * NBER$	-0.082	-0.079	-0.028	-0.098	-0.274
	(-1.03)	(-1.00)	(-0.40)	(-1.04)	(-4.27)
$\gamma * g * XE$	-0.080	-0.079	-0.072	-0.082	-0.252
	(-3.15)	(-3.12)	(-3.91)	(-2.15)	(-2.57)
$\gamma * g * NYE$	-0.173	-0.172	-0.268	-0.119	-0.957
	(-2.65)	(-2.64)	(-5.00)	(-1.65)	(-4.39)
γ	0.000	-0.001	0.000	0.000	-0.005
	(-2.81)	(-3.46)	(-0.52)	(-1.16)	(-3.58)
g	-0.001	-0.001	0.000	-0.001	0.000
	(-10.56)	(-10.53)	(-2.18)	(-10.30)	(-2.24)
$\ln BM$	0.016	0.020	0.017	0.022	0.023
	(4.03)	(4.46)	(3.80)	(3.79)	(3.24)
$\ln ME$	-0.005	-0.006	-0.006	-0.007	-0.010
	(-4.02)	(-4.30)	(-2.77)	(-4.13)	(-4.76)
$\ln ME * Jan$	-0.011	-0.012	-0.015	-0.010	-0.008
	(-9.85)	(-9.67)	(-7.94)	(-6.76)	(-5.31)
$r_{-1:0}$	-0.003	-0.003	-0.005	-0.002	-0.002
	(-5.58)	(-5.43)	(-16.78)	(-4.55)	(-3.68)
$r_{-12:-1}$	0.000	0.000	0.001	0.000	0.000
	(4.48)	(4.13)	(6.95)	(2.52)	(2.07)
$r_{-36:-12}$	0.000	0.000	0.000	0.000	0.000
	(-1.29)	(-1.23)	(0.81)	(-1.74)	(-1.81)
$\overline{V}$	-0.001	-0.001	-0.003	-0.001	-0.001
	(-2.69)	(-2.34)	(-3.43)	(-1.69)	(-1.73)

Table IA.VI: Two tax rates case (1954-2014)

We report the results from pooled regressions of day t stock returns on $t-1$ characteristics. Characteristics are measured on a weekly basis for conciseness. All firm-specific variables, defined in Table I, are cross-sectionally demeaned, and when appropriate, interacted with our two-tax-rate tax-selling premium variable (γ) as described in Section 5 of the Appendix, and with dummy variables for different periods of the year. The dummy variables are RoY for the rest of the year, $Qtr(X)$ for the X weeks relative to the quarter-end, $Yr(X)$ for the X weeks relative to the year-end, XE for the business day before Christmas and NYE for the business day before New Year's Day. t-statistics (in parentheses) are robust to cross-correlation in the residuals using the clustered standard errors of Rogers (1983, 1993). The sample starts in February of 1954 and ends in January of 2014. Regression (1) corresponds to the full sample period, and regressions (2) through (5) correspond to sub-periods 1963-2014, 1954-1985, 1986-2014, and 1993-2014, respectively. These regressions generally take the form

$$\begin{aligned}
r_{i,t} \quad = \quad & a_1\gamma_{t-1}g_{i,t-1}RoY \\
& + a_2\gamma_{t-1}g_{i,t-1}Qtr(-2) + a_3\gamma_{t-1}g_{i,t-1}Qtr(+2) \\
& + a_4\gamma_{t-1}g_{i,t-1}Yr(-2) + a_5\gamma_{t-1}g_{i,t-1}Yr(+2) \\
& + a_6\gamma_{t-1}g_{i,t-1}RoYNBER \\
& + a_7\gamma_{t-1}g_{i,t-1}Qtr(-2)NBER + a_8\gamma_{t-1}g_{i,t-1}Qtr(+2)NBER \\
& + a_9\gamma_{t-1}g_{i,t-1}Yr(-2)NBER + a_{10}\gamma_{t-1}g_{i,t-1}Yr(+2)NBER \\
& + a_{11}\gamma_{t-1}g_{i,t-1}XE + a_{12}\gamma_{t-1}g_{i,t-1}NYE \\
& + a_{13}\gamma_{t-1} + a_{14}g_{i,t-1} \\
& + a_{15}\ln BM_{i,t-1} + a_{16}\ln ME_{i,t-1} + a_{17}\ln ME_{i,t-1}Jan \\
& + a_{18}r_{i,-1:0} + a_{19}r_{i,-12:-1} + a_{20}r_{i,-36:-12} + a_{21}\overline{V}_{i,t-1} + \varepsilon_{i,t}
\end{aligned}$$

	(1) 1954-2014	(2) 1963-2014	(3) 1954-1985	(4) 1986-2014	(5) 1993-2014
$\gamma * g * RoY$	0.002	0.003	0.007	0.002	0.005
	(1.26)	(1.32)	(1.68)	(0.97)	(1.49)
$\gamma * g * Qtr(-2)$	-0.004	-0.004	0.001	-0.004	-0.003
	(-1.20)	(-1.16)	(0.13)	(-1.17)	(-0.54)
$\gamma * g * Qtr(+2)$	0.010	0.010	0.013	0.010	0.015
	(3.74)	(3.73)	(2.31)	(3.06)	(3.98)
$\gamma * g * Yr(-2)$	0.029	0.029	0.027	0.029	0.038
	(4.77)	(4.74)	(3.58)	(3.93)	(4.97)
$\gamma * g * Yr(+2)$	-0.027	-0.026	-0.073	-0.017	-0.015
	(-2.20)	(-2.18)	(-2.98)	(-1.71)	(-1.44)
$\gamma * g * RoY * NBER$	0.011	0.011	0.001	0.015	0.046
	(2.44)	(2.34)	(0.11)	(1.92)	(1.58)
$\gamma * g * Qtr(-2) * NBER$	0.029	0.029	0.010	0.048	0.112
	(3.57)	(3.50)	(0.93)	(3.15)	(3.12)
$\gamma * g * Qtr(+2) * NBER$	0.002	0.002	0.001	-0.009	0.027
	(0.26)	(0.21)	(0.16)	(-0.52)	(0.42)
$\gamma * g * Yr(-2) * NBER$	0.023	0.021	0.016	0.046	-0.003
	(1.85)	(1.72)	(0.90)	(2.47)	(-0.01)
$\gamma * g * Yr(+2) * NBER$	-0.098	-0.095	-0.018	-0.115	-0.504
	(-1.44)	(-1.41)	(-0.33)	(-1.26)	(-35.80)
$\gamma * g * XE$	-0.061	-0.060	-0.063	-0.060	-0.057
	(-3.77)	(-3.73)	(-2.91)	(-3.06)	(-3.01)
$\gamma * g * NYE$	-0.115	-0.115	-0.200	-0.093	-0.122
	(-2.84)	(-2.83)	(-2.84)	(-2.62)	(-2.18)
γ	0.000	0.000	0.000	0.000	-0.001
	(-0.82)	(-1.98)	(0.58)	(-0.12)	(-3.66)
g	-0.001	-0.001	-0.001	-0.001	-0.001
	(-12.82)	(-12.77)	(-3.62)	(-11.53)	(-7.13)
$\ln BM$	0.016	0.020	0.017	0.022	0.020
	(4.06)	(4.51)	(3.76)	(3.75)	(2.80)
$\ln ME$	-0.005	-0.005	-0.005	-0.007	-0.012
	(-3.95)	(-4.23)	(-2.50)	(-4.03)	(-5.61)
$\ln ME * Jan$	-0.012	-0.012	-0.016	-0.010	-0.009
	(-10.31)	(-10.09)	(-8.08)	(-6.86)	(-5.87)
$r_{-1:0}$	-0.003	-0.003	-0.005	-0.002	-0.002
	(-5.58)	(-5.43)	(-16.70)	(-4.55)	(-3.68)
$r_{-12:-1}$	0.000	0.000	0.001	0.000	0.000
	(4.47)	(4.11)	(6.97)	(2.60)	(1.64)
$r_{-36:-12}$	0.000	0.000	0.000	0.000	0.000
	(-1.34)	(-1.28)	(0.79)	(-1.68)	(-2.26)
$\overline{V}$	-0.001	-0.001	-0.003	-0.001	-0.001
	(-2.64)	(-2.28)	(-3.41)	(-1.68)	(-1.32)

Table IA.VII: Pooled Selling Pressure Regression Estimates (1993-2005)

We report the results from pooled regressions of the day t change in selling pressure (for all, small, or large sized trades) on $t-1$ characteristics. Characteristics are measured on a weekly basis for conciseness. All firm-specific variables, defined in Table I, are cross-sectionally demeaned, and when appropriate, interacted with our proposed tax-selling premium variable, $\gamma_t = \tau_t \left(\frac{1-B_t}{1-B_t\tau_t}\right)$, a function of capital gains tax rates (τ_t) and interest rates ($r_t = \frac{1}{B_t} - 1$) as derived in Section 1 of the paper, and with dummy variables for different periods of the year. The dummy variables are RoY for the rest of the year, $Qtr(X)$ for the X weeks relative to the quarter-end, $Yr(X)$ for the X weeks relative to the year-end, XE for the business day before Christmas and NYE for the business day before New Year's Day. t-statistics (in parentheses) are robust to simultaneous correlation both across firms and across years based on the method developed by Thompson (2011). The sample starts in February of 1993 and ends in January 2005. The specifications of these regressions are consistent with regressions (5) and (6) of Table II Panel A and take the form

$$
\begin{aligned}
Sell_{i,t} - Sell_{i,t-1} \quad = \quad & a_1\gamma_{t-1}g_{i,t-1}RoY \\
& + a_2\gamma_{t-1}g_{i,t-1}Qtr(-2) + a_3\gamma_{t-1}g_{i,t-1}Qtr(+2) \\
& + a_4\gamma_{t-1}g_{i,t-1}Yr(-2) + a_5\gamma_{t-1}g_{i,t-1}Yr(+2) \\
& + a_6\gamma_{t-1}g_{i,t-1}RoYNBER \\
& + a_7\gamma_{t-1}g_{i,t-1}Qtr(-2)NBER + a_8\gamma_{t-1}g_{i,t-1}Qtr(+2)NBER \\
& + a_9\gamma_{t-1}g_{i,t-1}Yr(-2)NBER + a_{10}\gamma_{t-1}g_{i,t-1}Yr(+2)NBER \\
& + a_{11}\gamma_{t-1}g_{i,t-1}XE + a_{12}\gamma_{t-1}g_{i,t-1}NYE \\
& + a_{13}\gamma_{t-1} + a_{14}g_{i,t-1} \\
& + a_{15}\ln BM_{i,t-1} + a_{16}\ln ME_{i,t-1} + a_{17}\ln ME_{i,t-1}Jan \\
& + a_{18}r_{i,-1:0} + a_{19}r_{i,-12:-1} + a_{20}r_{i,-36:-12} + a_{21}\overline{V}_{i,t-1} + \varepsilon_{i,t}
\end{aligned}
$$

	(1) all	(2) small	(3) large	(4) all	(5) small	(6) large
$\gamma * g * RoY$	-0.033	-0.048	0.032	-0.032	-0.047	0.035
	(-1.73)	(-2.52)	(0.73)	(-1.69)	(-2.43)	(0.78)
$\gamma * g * Qtr(-2)$	-0.010	0.002	0.325	-0.058	-0.042	0.252
	(-0.07)	(0.02)	(1.25)	(-0.42)	(-0.28)	(0.89)
$\gamma * g * Qtr(+2)$	-0.273	-0.307	-0.379	-0.271	-0.349	-0.487
	(-2.17)	(-2.31)	(-1.64)	(-1.96)	(-2.42)	(-2.03)
$\gamma * g * Yr(-2)$	-0.169	-0.132	-0.186	-0.175	-0.139	-0.176
	(-4.38)	(-3.55)	(-1.59)	(-4.50)	(-3.74)	(-1.48)
$\gamma * g * Yr(+2)$	0.208	0.194	0.032	0.249	0.241	0.054
	(2.34)	(2.29)	(0.36)	(1.82)	(1.86)	(0.45)
$\gamma * g * RoY * NBER$				0.023	0.018	-0.011
				(0.73)	(0.53)	(-0.21)
$\gamma * g * Qtr(-2) * NBER$				0.327	0.309	0.535
				(1.09)	(1.34)	(1.09)
$\gamma * g * Qtr(+2) * NBER$				0.084	0.385	1.124
				(0.35)	(1.56)	(2.54)
$\gamma * g * Yr(-2) * NBER$				0.187	0.205	-0.240
				(1.39)	(0.92)	(-1.42)
$\gamma * g * Yr(+2) * NBER$				-0.103	-0.115	-0.065
				(-0.76)	(-0.90)	(-0.56)
$\gamma * g * XE$	0.139	0.119	0.949	0.139	0.119	0.948
	(0.99)	(0.87)	(3.59)	(0.98)	(0.87)	(3.59)
$\gamma * g * NYE$	0.546	0.783	0.559	0.545	0.782	0.559
	(5.12)	(5.59)	(1.72)	(5.04)	(5.57)	(1.72)
γ	0.007	0.008	-0.010	0.006	0.007	-0.010
	(2.12)	(2.49)	(-1.06)	(2.06)	(2.42)	(-1.08)
g	0.000	0.000	-0.001	0.000	0.000	-0.001
	(-0.25)	(-0.01)	(-1.20)	(-0.49)	(-0.28)	(-1.22)
$\ln BM$	-0.010	-0.006	-0.028	-0.011	-0.006	-0.028
	(-0.89)	(-0.54)	(-1.72)	(-0.91)	(-0.56)	(-1.74)
$\ln ME$	0.030	0.029	0.007	0.030	0.029	0.007
	(4.76)	(3.88)	(0.93)	(4.79)	(3.89)	(0.94)
$\ln ME * Jan$	0.003	0.000	0.002	0.003	-0.001	0.002
	(1.51)	(-0.17)	(0.91)	(1.38)	(-0.31)	(0.80)
$r_{-1:0}$	0.013	0.011	0.012	0.013	0.011	0.012
	(10.77)	(10.55)	(12.72)	(10.77)	(10.55)	(12.71)
$r_{-12:-1}$	0.000	0.000	0.000	0.000	0.000	0.000
	(2.00)	(1.44)	(1.55)	(1.98)	(1.43)	(1.55)
$r_{-36:-12}$	0.000	0.000	0.000	0.000	0.000	0.000
	(-0.81)	(0.00)	(-0.50)	(-0.74)	(0.08)	(-0.45)
$\overline{V}$	0.000	0.001	-0.001	0.000	0.001	-0.001
	(0.43)	(0.62)	(-0.77)	(0.40)	(0.59)	(-0.80)

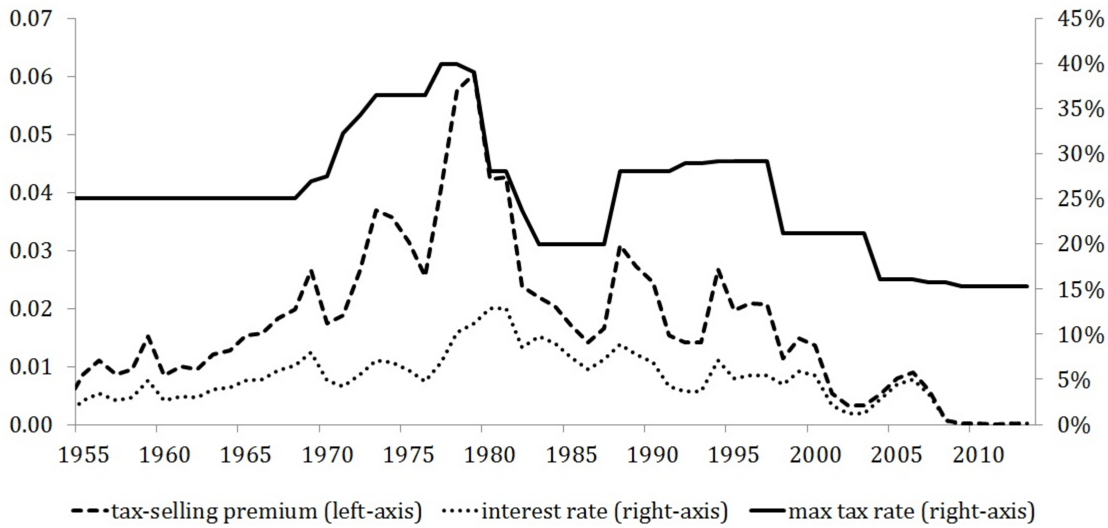

Figure A1: This figure shows the evolution of the tax-selling premium (γ) and its two components over the period 1954-2008. These components are the marginal seller's interest rate, proxied by the one-year Fama-Bliss interest rate, and the marginal seller's tax rate, proxied by the maximum capital gains tax rate.

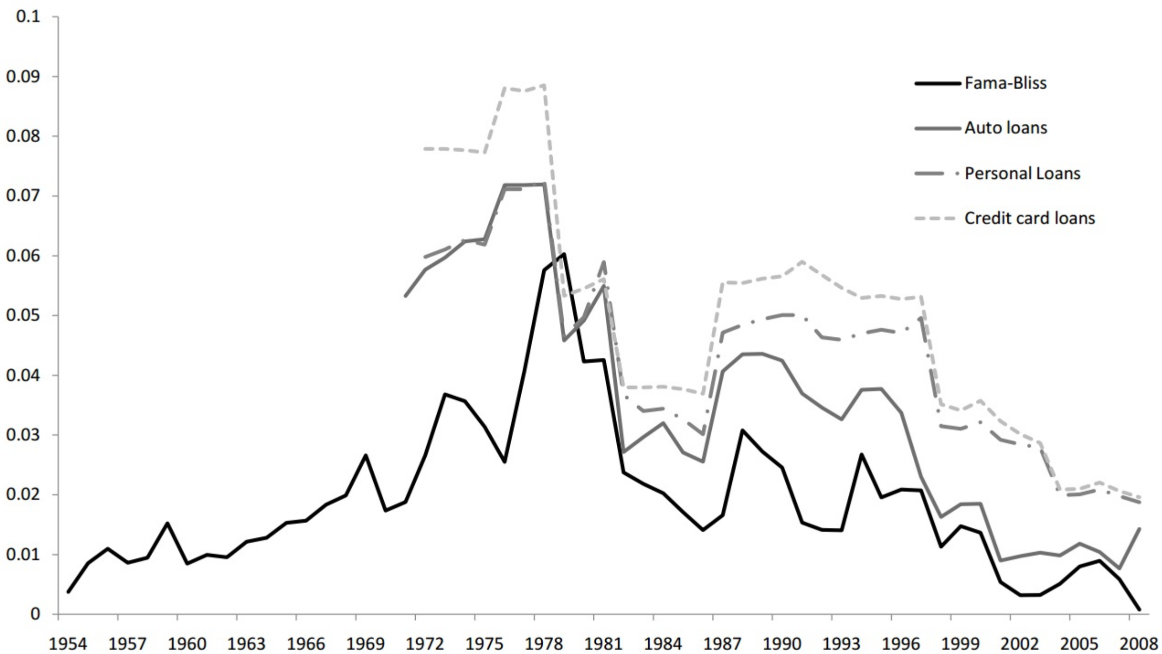

Figure A2: This figure shows the evolution of the tax-selling premium (γ) using different rates as proxies for the marginal seller's interest rate. In addition to the Fama-Bliss one-year rate, we consider annual rates on credit card loans, auto loans and personal loans. In contrast to the Fama-Bliss rate, which begins in 1954, data on auto loan rates begin in 1971, while data on personal loans and credit card rates begin in 1972. All data are the latest available rate as of the end of each year.