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**Taxes, stock ownership, and payout policy:
Evidence from a 2011 tax reform in Japan**

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The views expressed in this paper are those of the authors and not those of the Ministry of Finance or the Policy Research Institute.

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Taxes, stock ownership, and payout policy: Evidence from a 2011 tax reform in Japan

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Abstract

The 2011 tax reform in Japan changed the definition of the large individual shareholders in the Japanese tax law. As a result of this tax reform, the top marginal tax rate on dividend income for individual investors whose ownership ratios were between 3 and 5% rose from 10 to 43.6%. This tax reform created an incentive for these investors to restrict their ownership stakes to below 3%. We find clear evidence of such ownership adjustments: 51.9% of 3-to-5%-stake investors sold their stocks before the tax hike. The percentage of sellers was 86.1% for those whose ownership ratios were between 3 and 3.1%. We exploit this tax reform to examine whether investors' tax preferences affected firms' payout policy. Individual investors who retained stakes of at or more than 3% after the tax reform had an incentive to encourage firms to pay fewer dividends because dividends were less valuable to them. We predict that firms with such investors would have reduced dividend payout, and find statistical evidence supporting this prediction. Our study provides new quasi-experimental evidence supporting the dividend clientele hypothesis.

JEL classifications: G32, G35, G38, H24, H25, H26

Keywords: large shareholder, payout policy, stock selling, natural experiment

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1. Introduction

A large body of studies provides evidence that tax incentives affect individual investors' stock holdings and trading (Poterba, 2001, 2002). While the primary focus of these studies, households and retail investors, are of importance, we know little about the behavior of large individual investors, whose stock transactions can have large consequences; Cronqvist and Falenbrach (2009) emphasize that a change in stock holdings by large investors has the potential to alter corporate policies. In this paper, we provide evidence that a tax on dividend affects stock trading of large individual holders and in turn influences firms' dividend payout policy, drawing on a tax reform in Japan.

The Japanese tax system distinguishes between large individual shareholders (LISs) and non-large individual shareholders (non-LISs). LISs refer to individual shareholders who own 3% or higher stakes of the corporation under the tax system since 2012. This 3% threshold is effective after the tax reform of October 2011, when the threshold fell from 5%. Non-LISs' dividend income is taxed at a flat rate of 10%, while LISs' dividend income is taxed at progressive personal income tax rates. The top tax rate in 2012 is 43.6% after claiming a tax credit for ameliorating the double taxation of corporate income. To avoid this tax increase, individual shareholders, whose ownership was between 3 and 5%, had an incentive to sell stocks before October 2011 so as to restrict their ownership ratio to below 3%.

To examine the causal impacts of the tax reform on stock selling, we extend the difference-in-differences (DID) analysis and consider the triple differences approach by taking advantage of three characteristics of the tax reform. First, the tax reform altered legislations on individual shareholders but not corporate shareholders. Second, the tax reform increased marginal tax rates on dividends only when their ownership is between 3 and 5%. Third, the tax

reform should affect investors in dividend-paying firms but not those in firms that do not pay out dividends.

We obtained information on shareholders from Nikkei NEEDS Large Shareholder Database. This dataset provides information on top shareholders of large firms, most of which are public, in Japan. The data contain up to the top 30 shareholders for each firm. Unlike in the U.S., where public firms must disclose shareholders who own 5% or more stakes, there is no minimum ownership threshold under which firms need not disclose the ownership ratio of the large shareholders in Japan. We obtained financial information of individual companies from Nikkei NEEDS FinancialQUEST. The main analysis employs the data from 2011 and 2012. The final sample consists of 23,540 large investors and 1,534 firms.

We found evidence consistent with our hypothesis: an individual who owned between 3 to 5% stakes in dividend-paying firms had a statistically higher chance of selling stocks. More than half of the individual investors who previously held between 3 to 5% stakes sold stocks as a result of the tax reform so that they could maintain their status as non-LISs after the tax reform. This incentive was stronger among individual investors whose ownership was slightly above 3%: when the ownership was between 3 and 3.5%, 64.0% of the large individual shareholders sold stocks; the percentage increases to 86.1% for those individual investors whose ownership is between 3 and 3.1%. We have tried a falsification test using data from a pair of years between which no dividend tax change took place. These results support that taxes affect stock selling.

The 2011 tax reform allows us to examine how taxes affect payout policy. Given that not all the investors that are affected by the tax reform sell stocks, perhaps due to non-tax reasons, the change in the tax code creates a cross sectional variation in investors' tax preferences on payout policy. Those investors who retain ownership ratio of 3 to 5% after the tax reform have an incentive to encourage managers to reduce dividends because the after-tax value of the dividends

decreases. We find statistically significant evidence supporting this hypothesis. However, the impacts are not economically large: a one-percentage-point increase in dividend tax rate leads to a decline in the dividend-to-market capitalization ratio of 0.005 percentage points, which is negligible comparing to the mean of 2.2 percentage points.

Our paper contributes to the literature in several ways. First, various empirical studies show that taxes affect stock transactions.¹ However, none of these papers focus on stock transactions by large individual investors. Studying their tax incentives is important because they have considerable influence to change payout policy possibly for their own benefits. In addition, this is the first paper to use a quasi-experiment for identification to study the relationship between taxes and stock transactions. Second, we find evidence that tax incentives affect payout policy. This finding is in line with the findings in the U.S. (Chetty and Saez, 2005; Pérez-González, 2003).² We use a time-series variation in investors' tax preferences to identify the tax clientele effect.³ Thus, our paper is relatively immune to criticism that the observed correlation is caused by third factors such as managerial quality.

The rest of this paper is organized as follows. Section 2 explains background information and develops hypothesis. Section 3 explains research design and describes data. Section 4 shows the

¹ Related papers include the following: Barber and Odean (2004); Callaghan and Barry (2003); Desai and Dharmapala (2011); Hu, McLean, Pontiff, and Wang (2014); Ivković, Poterba, and Weisbenner (2005); Jin (2006); Korkeamaki, Liljeblom, and Pasternack (2010); Poterba and Samwick (2003); Poterba and Weisbenner (2001); and Starks, Yong, and Zheng (2006).

² Barclay, Holderness, and Sheehan (2009) study trades of large shares from individuals to corporations. Since the variation used in our paper is a reduction in stock holdings by individual shareholders, the authors use similar variation with ours. They find no evidence that the change in ownership caused by these transactions affects payout policy. Brown, Liang, and Weisbenner (2007) use the 2003 dividend tax cut in the U.S. as a source of exogenous change in after-tax value of dividends. They test whether a change in dividend policy in 2003 is a function of managerial ownership. They provide evidence that firms with higher managerial ownership are more likely to increase dividends. However, they do not find evidence that the impact of the dividend tax cut is a function of individual investors' ownership, although the tax cut can benefit all individual investors. Our finding is not consistent with the survey evidence by Brav, Graham, Harvey, and Michaely (2005) that taxes do not have first-order importance in payout policy.

³ Recent papers that discuss tax clientele effects include the following: Allen, Bernardo, and Welch (2000); Baker and Wurgler (2005); and Graham and Kumar (2006).

estimation results. Section 5 concludes.

2. Background and hypothesis

The tax system in Japan makes a distinction among three types of shareholders: large individual shareholders (LISs); non-large individual shareholders (non-LISs); and institutional investors. The difference between LISs and non-LISs is key in this paper. LISs refer to individual investors who own 3% or a higher level of corporate stocks under the current tax system. This 3% threshold is effective from the October 2011 tax reform. The threshold was 5% from March 2003 to the end of September 2011. In other words, the tax reform changes the tax status of individual shareholders whose ownership is between 3 and 5% from non-LISs into LISs.

The distinction between LISs and non-LISs has an important implication on the marginal tax rates on dividend income and capital gains income. Table 1 describes the tax rates for each class of investors as of 2012.⁴ Table 1 shows that the top marginal tax rates on dividends for non-LISs (10%) are considerably lower than those for LISs (43.6%).⁵

This unique tax schedule leads to several hypotheses. First, LISs have an incentive to become non-LISs to reduce the tax burden on dividend income. We test this prediction by examining whether non-LISs whose ownership is between 3 and 5% before the tax reform sell stocks to maintain their tax status as non-LISs after the tax reform. Given that the tax reform is relevant

⁴ There are no considerable time-series variations in the tax rates between 2003 and 2012. An example of a change in the tax rates is observed in 2007, when the top personal income tax rates were increased by three percentage points.

⁵ This disparity in tax rates is caused by a difference in the availability of two types of tax accounts between non-LISs and LISs. The first tax account is used for ordinary income. Income on this account is subject to the personal income taxes the top rate of which is 50%. The second tax account is prepared to eliminate progressivity from tax schedules for a certain type of income, and a flat tax rate of 10% is applied. Among non-LISs, both dividend income and capital gains income are eligible on this tax account. Therefore, non-LISs do not pay the ordinary personal income taxes for dividend income. In contrast, among LISs, only capital gains are eligible on this second tax account. Consequently, LISs' dividends are taxed as ordinary income. Although a dividend tax deduction of a maximum of 6.4% is available, the resulting top dividend tax rates for LISs are 43.6%. One might be concerned about the validity of the assumption that the top tax rates apply to large individual shareholders. Our data show that the average total dividend payments of individual firms are 2.66 billion yen in our final sample. Therefore, large individual investors whose ownership ratio is 3% receive 79.8 million yen of dividends. This amount exceeds the minimum income level at which the top tax rates apply (18 million yen). Thus, using the top tax rates in our analysis is appropriate.

only for dividend income, we expect that the change in tax code affects investors' incentives to sell stocks only when the firms pay dividends. Therefore, we test whether those individual investors sell stocks on the condition that the firms pay dividends.

The 2011 tax reform allows us to further examine hypotheses about tax clienteles. Suppose that some LISs do not sell stocks, and therefore they remain in the company as LISs after the tax reform. Those LISs have an incentive to encourage managers to decrease dividends because the after-tax value of dividends declines after the tax reform.⁶ In addition, LISs have an incentive to encourage managers to increase share repurchases. This is because share repurchases are more tax advantageous than dividends. More specifically, the dividends tax rates increase from 10% to 43.6% while the tax rate on capital gains remain the same and it is 10%.

3. Research design and data

Our main hypothesis examines if non-LISs maintain their tax status after the 2011 October tax reform by selling stocks. The unit of observations in this analysis is investors. The regressand is a dummy variable that takes one when the investor's ownership ratio is less than 3%. The main regressor is the interaction term of the following three dummies: a dummy variable that takes one when the ownership ratio is 3% or higher and lower than 5%; a dummy variable that takes one when the investors are individuals; and a dummy variable that takes one when the firms pay dividends. About the ceiling of the second dummy variable, we also use 3.5%, or 3.1% instead of 5%. The regression equation is represented by

$$own3low_{ijt} = \beta_1 own3toN_{ijt-1} \times ind_{ijt-1} \times div_{it-1} + \beta_2 X_{ijt-1} + investorFE_k + \epsilon_{ijt} \quad (1)$$

⁶ Alternatively, these LISs can encourage managers to increase dividends to maintain their after-tax gains from dividends. However, this behavioral response appears not to be rational because such behavior decreases firm value. Thus, we do not consider this possibility in our paper.

where subscript i represents the firm, subscript j represents the investor, subscript t represents the year, subscript k represents the investor type⁷, own_{3low} is a dummy variable that takes one when the investor's ownership ratio is less than 3%, own_{3toN} is a dummy variable that takes one when the investor's ownership ratio is 3% or higher and less than $N\%$ ($N=5, 4, \text{ or } 3.1$), ind is a dummy variable that takes one when the investor is an individual, div is a dummy variable that takes one when the firm pays positive dividends, X includes other variables ($own_{3toN} \times ind$, $own_{3toN} \times div$, $ind \times div$, own_{3toN} , and div),⁸ $investorFE$ represents investor type fixed effect, and ε represents error terms. We use the linear probability model and the Probit model for estimation.⁹ We do not cluster standard errors but clustering does not affect our findings.

We also test whether LISs that retain over 3% of the ownership stakes after the tax reform encourage managers to change payout policy that is tax favorable for the investors. Note that the unit of observations is firms in this analysis because we are interested in individual firms' decisions on payout policy rather than investors' decisions. One of the main regressors in this analysis is a dummy variable that takes one when there remain LISs that retain their stakes of between 3 and 5% after the tax reform. More specifically, the dummy variable takes one when there are LISs that hold ownership stakes of between 3 and 5% both before the tax reform and after the tax reform. We also include a dummy variable that takes one when the firms pay dividends, and the interaction of these two dummies because the tax reform is relevant for dividend income.

The regressand represents a change in payout ratio. The payout variable can be either

⁷ Investor type refers to either individuals, business corporations, banks, insurance companies, securities companies, financial holding companies, other financial institutions, trust accounts, foreigners, governments, stock holding association, public entities, or others.

⁸ Note that we do not include the variable "ind" in matrix X because it is captured by the investor fixed effect.

⁹ Because we include interaction terms in non-linear models, we use the estimation methods developed by Cornelißen and Sonderhof (2009), and Ai and Norton (2003) to interpret the coefficients from the Probit model as appropriate partial effects.

dividends or share repurchases divided by lagged market capitalization. We use the first difference in the payout-to-market capitalization ratio as the regressand because we are interested in a change in payout policy before and after the tax reform. Other variables that can affect a change in payout policy are taken from Brown, Liang, and Weisbenner (2007). The variables are as follows: market to book ratio that is market capitalization plus liabilities divided by assets; cash flow that is after-tax profit plus depreciation divided by lagged assets; cash holdings that is cash on hand divided by lagged assets; leverage that is liabilities divided by lagged assets; past stock return that is the stock return of the past two years; monthly stock price volatility that is the monthly stock price volatility across the previous five years; and the log of market capitalization. We use a change in these variables as regressors because the regressand is a change in payout policy. The regression equation is represented by

$$D.payout_{it} = \beta_1 indown3_{it,t-1} \times div_{it-1} + \beta_2 div_{it-1} + \beta_3 D.X_{it} + \epsilon_{it} \quad (2)$$

where subscript *i* represents the firm, subscript *t* represents the year, “D.” represents the one-year difference operator, payout represents either dividends divided by lagged market capitalization or share repurchases divided by lagged market capitalization, *indown3* is a dummy variable that takes one if the firm has an LIS both before the tax reform and after the tax reform, *div* is a dummy variable that takes one when the firm pays a positive dividend, *X* includes control variables (market to book ratio, cash flow, cash holdings, leverage, past stock return, monthly stock price volatility, and log of market capitalization), and ϵ represents error terms.

We use Nikkei NEEDS Large Shareholder Database collected by Nikkei Digital Media Inc. This dataset discloses ownership information of the maximum of the top 30 largest

shareholders.¹⁰ The average number of investors reported in the data per firm is 22.8.¹¹ We create an identification code using the name of the large investors to construct a panel data set. We keep observations of those whose fiscal year ends in March, which is most common in Japan, to make a fair comparison of the impacts of the tax reform in 2011 October. In other words, the years of 2011 and 2012 respectively refer to March 2011 and March 2012 in our paper.¹² The total numbers of investors and that of firms in 2012 were respectively 23540 and 1534.

An advantage of this data set is that it does not impose any restriction on the lower bound of the ownership ratio of investors about which firms must disclose. This is in contrast to the data in the U.S., where corporations need to disclose the ownership information of only those investors whose ownership stakes are 5% or higher. Our data show that the average lowest ownership stakes of the large shareholders across firms is 0.94%. Thus, this database discloses more detailed information than commonly used data sets in the U.S. We also use Nikkei NEEDS FinancialQUEST as the sources of other information on financial statements.

We present several graphs to provide suggestive evidence that ownership structure is affected by the tax reform. Graphically, we expect to see a bunching just below the thresholds where non-LISs change into LISs. Graph 1 presents evidence supporting our hypothesis. The left graph and the right graph respectively show the distribution of individual investors' ownership in 2011 and in 2012. The width of each bin is 0.02%. In the left graph, we see a bunching just below 5% ownership. On the other hand, we see that the bunching point is moved from 5% to 3% in the right graph. This comparison suggests that the tax reform encourages individual investors to sell

¹⁰ We therefore drop investor-level observations when we cannot make a distinction based on the names of the investors. This issue happens for example when the data report the name of the investors as just an "Individual Investor."

¹¹ The Japanese law requires firms to report information on the top ten largest investors. Nikkei Digital Media collects more information by sending questionnaires to corporations. This procedure causes a difference in the number of large investors reported in the data.

¹² Our findings are not affected when we include firms whose fiscal year end is not March.

stocks.

A potential concern is that this change in ownership is observed among non-individual investors as well. In this case, it is doubtful that the tax reform has an impact that is consistent with our hypothesis, because the tax reform should affect only individual investors' incentives. Graph 2 presents the distribution of non-individual investors' ownership in 2011 and in 2012. These graphs suggest that the distributions in these two years are almost identical. These observations suggest that the tax reform affects incentives to sell stocks only among individual investors.

Table 2 describes summary statistics. Panel A reports summary statistics when the unit of observations is investors. This sample is used for equation (1). Panel B reports statistics when the unit of observations is firms. This sample is used for equation (2). Panel A shows that 8.3% of the total investors are individuals. Given that the total number of observations is 23540, the number of individual investors is close to 2000. In the total sample, the ratio of investors whose ownership is between 3 and 5% is 16.4%. An unreported table shows that the number of individual investors whose ownership is between 3 and 5% is about 350. In addition, nearly 90% of firms pay dividends. Therefore, we have considerable variation in the main regressor.

4. Results

Table 3 presents the estimation results. Columns (1) - (2) use the dummy variable that takes one when the ownership is between 3 and 5% as the main element of the regressor. Columns (3) - (4) and (5) - (6) respectively use the dummy variable that takes one when the ownership is between 3 and 3.5% and between 3 and 3.1% as the main element of the regressor. The odd numbered columns use the linear probability model and the even numbered columns use the Probit model.

Columns (1) - (2) show that about half of the individual investors whose ownership is

between 3 and 5% sell stocks so that their ownership ratio drops below 3% when the firms pay dividends. Other columns show that the likelihood that investors sell stocks increases as the ownership ratio becomes closer to 3%. Column (4) and (6) show that 64.0% of the investors sell stocks when the ceiling of the ownership ratio is 3.5%, and the ratio further increases to 86.1% when the ceiling is 3.1%. These results support the hypothesis that the tax reform encourages investors that are affected by the reform to sell stocks. This table also shows that the individual investors do not sell stocks when the firms do not pay dividends. This finding provides additional support that the tax reform affects stock selling. Table 4 shows the estimation results of the falsification tests when we use the year 2010 in Panel A and the year 2012 in Panel B. None of the coefficients on the triple-interaction terms are positive or significant. These results provide stronger support that the tax reforms affect stock selling.

Table 5 shows the estimation results on the relationship between the change in ownership induced by the tax reform and payout policy. Columns (1) - (2) use dividends as the regressand whereas columns (3) - (4) use share repurchases as the regressand. Columns (2) and (4) include an interaction term of an individual top dummy variable, which takes one when the individual investors who retain stakes between 3 and 5% after the tax reform are the largest investors, with the main interaction term used in columns (1) and (3).

Column (1) provides support that the change in ownership reduces dividends. This finding is consistent with the tax clientele hypothesis. Column (1) suggests that those firms that are affected by the tax reform reduce the dividends-to-market capitalization ratio by 0.165 points. Given that the top tax rates on dividend income are increased by 33.6 points, a one-point increase in dividend tax rate reduces the dividends-to-market capitalization ratio by 0.005 points. This finding suggests that the economic significance is not necessarily large.

In contrast, these firms do not change their policy on share repurchases. This might be

because these individual investors are less likely to sell stocks in the near future and therefore the capital gains are not realized, given that these investors do not sell stocks as a result of the tax increase.

Column (2) provides evidence that our finding in column (1) remains the same regardless of whether the individual investors who retain the 3 to 5% of stakes are the largest investors or not. This result suggests that the control power over future dividend policy does not yield our findings. This argument supports that the tax incentives affect payout policy.

5. Conclusion

We employed the Japanese tax reform that raised the dividend tax rates for individual investors whose ownership ratio was in between 3% to 5% to test whether taxes affected stock selling and payout policy. We provided clear evidence that the affected investors sold stocks to avoid the increase in tax burden. We then provided evidence that firms changed their dividend policy to take into consideration the tax incentives of the investors who maintain their ownership ratio of 3% or higher. However, the impacts of taxes on dividends are not economically large. This second finding poses a question on what can explain this small impact of taxes on payout policy.

This paper abstracted from stock sales to a third party and to a related party. As disclosed in financial statements, founders and their families often hold their stake indirectly through what is known as “asset management companies”. We suspect that not a small fraction of “sales” documented in this paper would have taken place between related parties and that the substance of ownership did not change in many cases. While constructing dataset on asset holding companies is a challenge and is beyond the scope of the current paper, we think it would be valuable to document the extent of tax avoidance through such vehicles with questionable substance in understanding the distributional consequence of the dividend tax reform of 2011.

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Table 1
Tax rates in 2012

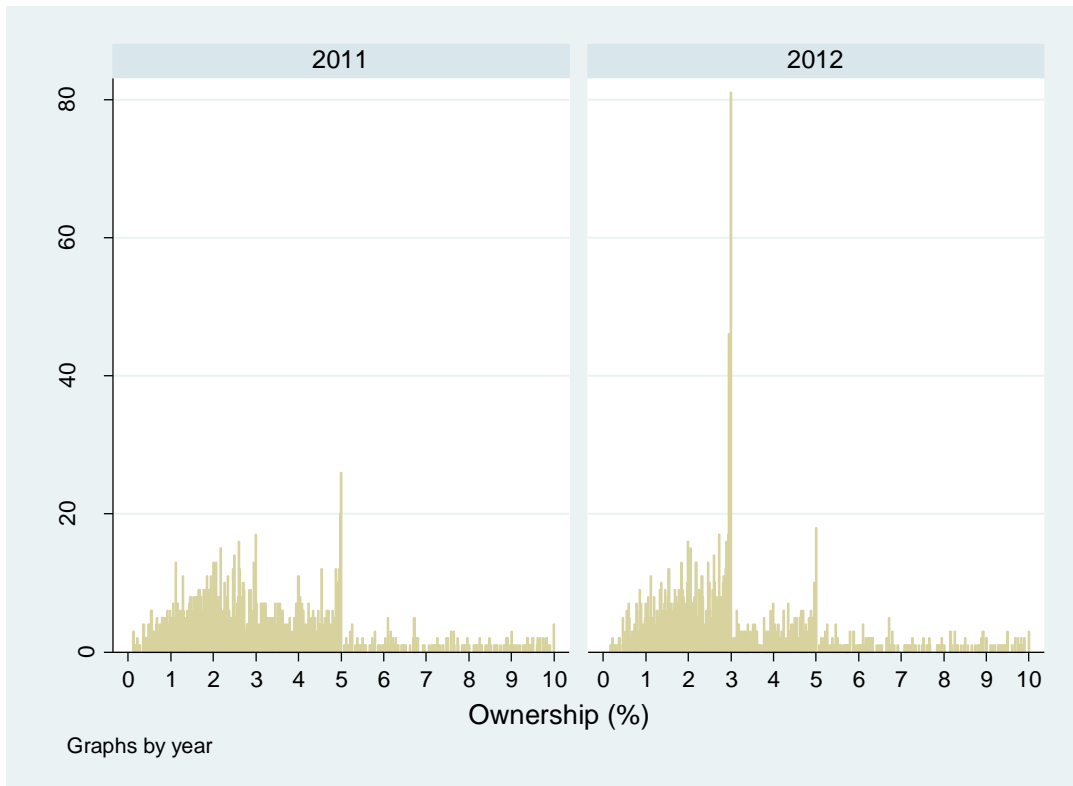
This table reports top marginal tax rates on dividend income and capital gains income for large individual shareholders (LISs), non-large individual shareholders (Non-LISs), and institutional investors, respectively. The year periods are in 2011-2012. LISs refer to individual investors who own 3% or a higher level of corporate stocks. This 3% threshold is effective from the 2011 October tax reform. The threshold was 5% from 2003 March to the end of 2011 September.

	Dividend income	Capital gains
Large individual shareholders (LISs)	43.6%	10%
Non-large individual shareholders (Non-LISs)	10%	10%
Institutional investors	19.5%	38%

Graph 1

Ownership of individual investors

These graphs describe the distribution of ownership ratios among individual investors. The left panel uses the data in 2011 and the right panel uses the data in 2012. The width of the bin is 0.02.



Graph 2:
Ownership of non-individual investors

These graphs describe the distribution of ownership ratios among non-individual investors. The left panel uses the data in 2011 and the right panel uses the data in 2012. The width of the bin is 0.02.

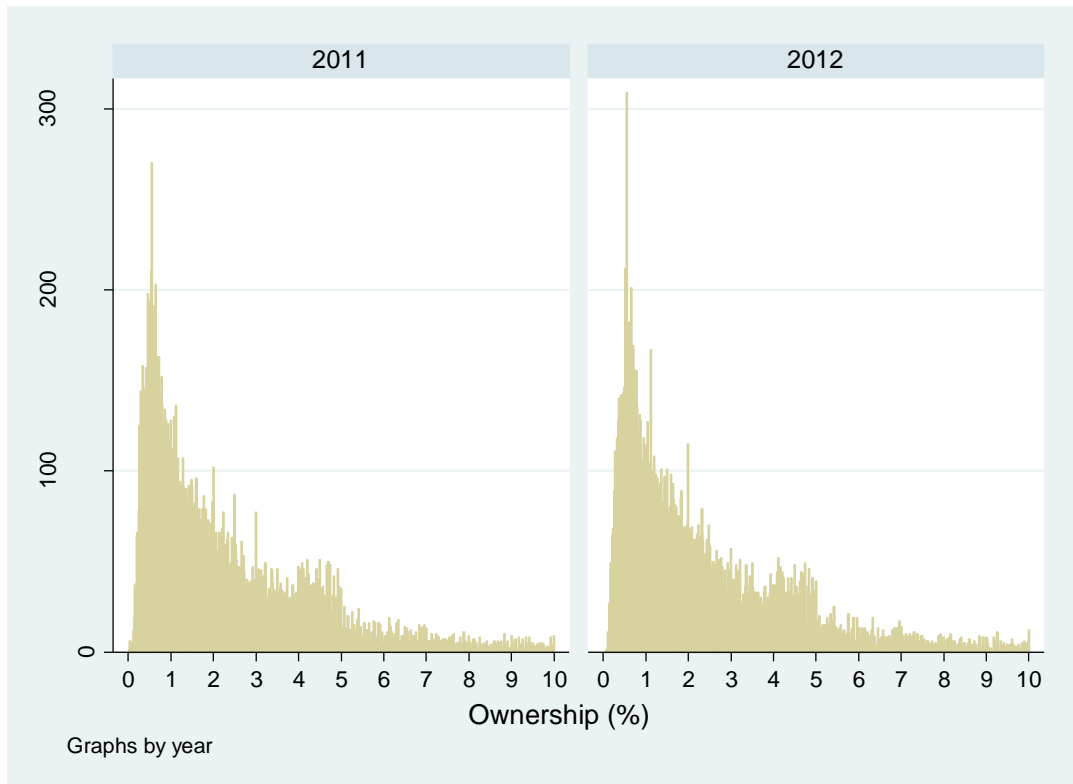


Table 2
Summary statistics

This table reports summary statistics in 2012. Panels A and B respectively report summary statistics at the investor-level observations and at the firm-level observations. The definition of the four dummy variables in Panel A is self-explanatory. In Panel B, “market to book ratio” refers to market capitalization plus liabilities divided by assets, “cash flow” refers to after-tax profit plus depreciation divided by lagged assets, “cash holdings” refer to cash on hand divided by lagged assets, “leverage refers” to liabilities divided by lagged assets, “past stock return” refers to stock return of the most recent two years, and “monthly stock price volatility” refers to monthly stock price volatility across the previous five years. The term “difference” refers to the difference in the variable between in 2012 and in 2011.

Variable	Mean	SD
Panel A (investor level observation: N = 23540)		
Ownership ratio less than 3% dummy	0.712	0.453
Individual investor dummy	0.083	0.275
Ownership ratio 3-5% dummy	0.164	0.370
Dividend paid dummy	0.876	0.329
Panel B (firm level observation: N = 1534)		
Difference in dividend by market capitalization	0.190	1.426
Difference in share repurchases divided by market capitalization	-0.028	1.411
Dividend divided by market capitalization	2.239	1.756
Share repurchases divided by market capitalization	0.367	1.227
Individual with 3-5% ownership dummy	0.124	0.330
Dividend paid dummy	0.870	0.337
Difference in market to book ratio	0.004	0.167
Difference in cash flow	-0.215	5.284
Difference in cash on hand	-0.038	5.287
Difference in leverage	1.501	9.593
Difference in market capitalization	0.038	0.245
Difference in market volatility	-1.388	3.528
Difference in five-year stock return	12.099	28.697

Table 3:
Taxes and stock selling

This table presents estimation results to examine whether individual investors sell stock as a result of the tax reform. We use the data in 2012. The unit of observations is investors. We use either the linear probability model or the probit model developed by Cornelißen and Sonderhof (2009), and Ai and Norton (2003). The regressand is a dummy variable that takes one when the investor's ownership ratio is less than 3%. The regressors include the following variables: own3toN is a dummy variable that takes one when the investor's ownership ratio is 3% or higher and less than N% (N=5, 4, or 3.1); ind that a dummy variable that takes one when the investor is an individual; div that is a dummy variable that takes one when the firm pays positive dividends; and the interaction terms of the dummies (own3toN×ind, ind×div, own3toN, and div). We do not report the coefficient estimates of the interaction terms or the dummy variables. Robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Ownership ratio less than 3% dummy					
	(1)	(2)	(3)	(4)	(5)	(6)
own3to5*ind*div	0.459*** (0.049)	1.962*** (0.352)				
own3to3.5*ind*div			0.562*** (0.071)	5.134*** (0.224)		
own3to3.1*ind*div					0.787*** (0.142)	5.681*** (0.423)
own3to5*div	-0.036 (0.022)	-0.223** (0.110)				
own3to3.5*div			-0.038 (0.044)	-0.179 (0.158)		
own3to3.1*div					-0.075 (0.106)	-0.287 (0.319)
Other variables included?	Yes	Yes	Yes	Yes	Yes	Yes
Investor type fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Partial effect	0.459***	0.519***	0.562***	0.640***	0.787***	0.861***
Estimation method	Linear	Probit	Linear	Probit	Linear	Probit
N	23540	23540	23540	23540	23540	23540

Table 4**Taxes and stock selling: Falsification test**

This table presents estimation results to examine whether individual investors sell stock as a result of the tax reform in the framework of the falsification test. We use the data of 2010 in Panel A and the data of 2012 in Panel B. The unit of observations is investors. We use either the linear probability model or the probit model developed by Cornelißen and Sonderhof (2009), and Ai and Norton (2003). The regressand is a dummy variable that takes one when the investor's ownership ratio is less than 3%. The regressors include the following variables: own3toN is a dummy variable that takes one when the investor's ownership ratio is 3% or higher and less than N% (N=5, 4, or 3.1); ind that a dummy variable that takes one when the investor is an individual; div that is a dummy variable that takes one when the firm pays positive dividends; and the interaction terms of the dummies (own3toN×ind, ind×div, own3toN, and div). We do not report the coefficient estimates of the interaction terms or the dummy variables. Robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: year of 2010						
	Ownership ratio less than the 3% dummy					
	(1)	(2)	(3)	(4)	(5)	(6)
own3to5*ind*div	0.008 (0.050)	-0.431 (0.279)				
own3to3.5*ind*div			-0.008 (0.112)	-0.330 (0.414)		
own3to3.1*ind*div					-0.269 (0.368)	-1.130 (1.049)
own3to5*div	0.020 (0.017)	0.080 (0.106)				
own3to3.5*div			0.006 (0.039)	-0.010 (0.149)		
own3to3.1*div					-0.029 (0.088)	-0.187 (0.317)
Other variables included?	Yes	Yes	Yes	Yes	Yes	Yes
Investor type fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Partial effect	0.008	-0.039	-0.008	-0.034	-0.269	-0.300
Estimation method	Linear	Probit	Linear	Probit	Linear	Probit
N	22783	22783	22783	22783	22783	22783

Table 4 – Continued

Panel B: year 2012						
	Ownership ratio less than 3% dummy					
	(1)	(2)	(3)	(4)	(5)	(6)
own3to5*ind*div	0.033 (0.065)	0.071 (0.265)				
own3to3.5*ind*div			0.013 (0.146)	0.001 (0.428)		
own3to3.1*ind*div					-0.241 (0.299)	-0.669 (0.848)
own3to5*div	0.002 (0.021)	0.044 (0.115)				
own3to3.5*div			-0.006 (0.043)	0.016 (0.160)		
own3to3.1*div					0.068 (0.093)	0.227 (0.339)
Other variables included?	Yes	Yes	Yes	Yes	Yes	Yes
Investor type fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Partial effect	0.033	0.010	0.013	-0.011	-0.241	-0.232
Estimation method	Linear	Probit	Linear	Probit	Linear	Probit
N	23258	23258	23258	23258	23258	23258

Table 5:
Taxes and payout policy

This table presents estimation results to examine whether the investors that are affected by the tax reform but that do not sell stocks change payout policy. We use the data in 2012. The unit of observations is firms. We use OLS for estimation. The regressand is the first difference in either dividends or stock repurchases. Both of them are divided by lagged market capitalization. The main regressor is a dummy variable that takes one when the firm has individual investors that maintain their status as non-LISs both before the tax reform and after the tax reform, and the firm pays dividends. We also include an interaction term of this variable with an individual top dummy variable, which takes one when the individual investors who retain the stakes after the tax reform are the largest investors, in some columns. We include the first difference in the following variables as controls: market to book ratio that is market capitalization plus liabilities divided by assets; cash flow that is after-tax profit plus depreciation divided by lagged assets; cash holdings that are cash on hand divided by lagged assets; leverage that is liabilities divided by lagged assets, log of market capitalization, past stock return that is stock return of the most recent two years; and monthly stock price volatility that is monthly stock price volatility across the previous five years. Robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Diff in Dividends/Marketcap		Diff in Repurchases/Marketcap	
	(1)	(2)	(3)	(4)
Individual top*Individual with 3-5% ownership*Dividend paid		-0.034 (0.170)		0.037 (0.197)
Individual with 3-5% ownership*Dividend paid	-0.165** (0.080)	-0.158* (0.086)	-0.139 (0.132)	-0.146 (0.157)
Dividend paid	-0.103 (0.102)	-0.103 (0.102)	-0.119 (0.091)	-0.119 (0.091)
Diff in market to book ratio	-0.812** (0.325)	-0.812** (0.325)	0.021 (0.475)	0.020 (0.476)
Diff in cash flow	0.029*** (0.010)	0.029*** (0.010)	0.006 (0.008)	0.006 (0.008)
Diff in cash on hand	0.006 (0.007)	0.006 (0.007)	-0.023*** (0.009)	-0.023*** (0.009)
Diff in leverage	0.005 (0.005)	0.005 (0.005)	-0.001 (0.005)	-0.001 (0.005)
Diff in ln (market capitalization)	1.779*** (0.266)	1.778*** (0.266)	0.448 (0.293)	0.450 (0.294)
Diff in stock volatility	-0.026*** (0.010)	-0.026*** (0.010)	-0.019** (0.009)	-0.019** (0.009)
Diff in 5-year stock return	0.000 (0.002)	0.000 (0.002)	-0.002 (0.002)	-0.002 (0.002)
N	1534	1534	1534	1534