Taxation and Dividend Policy: The Muting Effect of Diverse Ownership Structure

Martin Jacob

Roni Michaely

Annette Alstadsæter*

This draft: September 2014

ABSTRACT

Policymakers frequently try to use dividend tax changes to affect payout policy. However, empirical evidence finds the effect to be much smaller than theory implies. Using identification strategy that exploits a large exogenous shock to dividend taxation and comprehensive proprietary data on ownership structure and owners' tax preference, we show that absent of conflicting objectives between managers and owners, dividend taxation has a large effect on payouts. The impact becomes insignificant as the number of owners increases. Differential tax preferences across owners is one factor. However, even when owners have the same tax preferences, disperse ownership significantly reduces the impact of dividend taxation; plausibly due to coordination problems across owners and conflicting objectives of owners and managers. Our results explain why previous evidence on the impact of dividend taxation has been so elusive. Taxation has a first order impact on payout policy, but disperse ownership mutes its impact substantially.

Keywords: Payout Policy, Dividend Taxes, Agency Costs

JEL classification: G30, G35, H24, H25

* Jacob is at WHU – Otto Beisheim School of Management (martin.jacob@whu.edu), Michaely is at the Samuel Curtis Johnson School of Management, Cornell University (rm34@cornell.edu) and IDC; and Alstadsæter is at the University of Oslo (annette.alstadsater@medisin.uio.no) We thank Michael Roberts, and seminar participants the 2014 Multinational Finance Society in Prague and the Summer Finance Conference 2014 in Herzliya for helpful comments.

1. Introduction

Policy makers frequently use changes in capital taxation to affect dividend payout. For example, when introducing the 2003 tax cut in the U.S., President George W. Bush argued that the double taxation of corporate dividends "*may […] discourage the payment of dividends*" even though dividends "*provide a number of important benefits to investors*".[1] Consistent with the argument in the political debate, theory suggests a large effect of dividend taxation on payout (Modigliani and Miller 1961, Harberger 1962, 1966, Feldstein 1970, Poterba and Summers 1985, Chetty and Saez 2010). However, empirical and survey evidence suggest that relative taxation of dividends and capital gains do not play an important role, or even no role at all in managers' payout decisions (see Auerbach 2003, Chetty and Saez 2005; Julio and Ikenberry 2004; Brav, Graham, Harvey, and Michaely 2005, 2008, Yagan 2013, Edgerton 2013, among many others). This is a puzzling result. We would expect managers to consider the after-tax cash flows to shareholders as, ultimately, those cash flows affect valuation.

In this paper, we suggest that the nature of the data on widely held firms may inadvertently cloud the direct effect of taxes on payout even when using quasi-natural experiments such as the U.S. 2003 tax cut. We empirically show that absent of conflicting objectives between managers and owners, dividend taxation matters for payout: For firms where there is no separation of ownership and control, the impact of dividend taxation on payout decisions is large and significant. As ownership becomes more dispersed, we find that dividend policies are less sensitive to taxation. As a result, dividend tax elasticity is a declining function of ownership.

Our results provide a possible explanation why the empirical evidence on the impact of dividend taxation has been so elusive. While prior empirical findings are correct, the factors driving these results are different than how they were interpreted previously. The diverse ownership structure of many corporations blur the identification of the causal effect of taxation on dividend payout, consistent with Chetty and Saez (2005) suggestion that "*principal-agent issues appear to play an important role in corporate responses to taxation*".

We use a unique setting to examine the interaction between ownership structure and dividend taxation. Our data cover all Swedish unlisted closely held corporations, ranging from firms without conflicts of interest to firms with more dispersed ownership.[2] Our sample firms represent an important part of the Swedish economy as about 60% of all corporations

[1] Pages 202–203, Chapter 5 of the February 2003 Economic Report of the President.

[2] A non-listed corporation is a closely held if four or fewer shareholders possess at least 50% of the voting rights and if at least one shareholder is active in the daily operation of the firm.

are closely held firms; and our sample firms account for more than half of the taxable income of the entire Swedish private sector. We analyze how payout responses to an exogenous tax shock differ across the spectrum of ownership. We use proprietary data with detailed tax information on all closely held corporations and their active owner-managers, as well as dividend and wage payout to the owners. The dataset combines owner-level tax information, demographic characteristics, firm characteristics, and we are able to link tax return information from the corporate level to the individual level. Our data are unique in several dimensions. First, we know the ownership structure of the entire spectrum of the firms in our sample; in contrast to previous studies with limited information on institutional and/or insider ownership (Chetty and Saez 2005, Grinstein and Michaely 2005),. Second, we have detailed individual income tax information for practically every owner.[3] We are able to exactly measure the marginal income tax rate on payout and directly relate it to the firm's dividend policy. Third, in addition to dividend payout, we also observe other cash distributions to owners in the form of wages.

Using this detailed ownership and individual tax information, our identification strategy exploits a large policy shock that changed dividend taxation in Sweden in 2006. The reform contained two changes concerning dividend taxation. First, the combined dividend tax rate was reduced from 49.6% prior to 2006 to 42.4% after the reform. Second, the dividend allowance—the amount of dividends that can be paid out at this reduced dividend tax rate—more than doubled. The tax reform created an incentive for highly taxed shareholders to increase dividends since dividends are taxed at a much lower tax rate than wages (51% or higher) in the post-reform era.

We use this exogenous policy change to identify how the interaction of ownership structure and taxation affects payout policy of closely held corporations. Our research design exploits differences in ownership structure and in owner-managers' tax preferences. Our empirical strategy uses a difference-in-difference-in-difference (DDD) approach. The first difference compares dividend payout of closely held corporations before and after the tax reform. The second difference uses differences in tax preferences for dividends across owners. We expect that owner-managers increase dividends from before to after the reform if they are subject to high income taxes on wages. The third difference exploits the heterogeneity in ownership structure. To be more precise, we allow the response to the tax reform (first difference) depending on the tax preference (second difference) to vary across firms that differ in ownership dispersion.

[3] We have information on the active owners of closely held corporations. In over 80% of our sample firms, active owners own 100% of the firm. On average, 90% of firms' shares are owned by active owners.

Our results show that owners of wholly-owned firms increase dividend payout following the tax reform if they are subject to high taxes on labor income. The economic effects we find are large and suggest that taxes have a first-order effect on dividend payout. Around the reform, owner-managers of wholly owned firms with tax preference for dividends increased the ratio of dividends relative to total cash to shareholders (dividend compensation ratio) by about 4 percentage points. This is an increase of 33% relative to their pre-reform average dividend compensation ratio of 11.7%. This tax sensitivity gradually decreases in the number in owners of a firm. For example, in a firm with three owners, owner-managers with the same tax preference for dividends increased their dividend compensation ratio only by 1.7 percentage points—less than half of the effect for firms with one owner. This effect is economically and statistically different from the response of wholly owned firms. Once the firm has four or more owners, the individual owner's tax preference does not shape the payout policy of the firm.

Why does ownership dispersion cause a reduction in dividend tax sensitivity? The first possible explanation we explore is conflicting interests between owners about the form of payout—dividends versus wages. Wages to owners have two objectives. First, they serve as compensation for labor supply. Second, similar to the role repurchases play in public firms they are an alternative channel to distribute cash to shareholders. One reason why diverse-ownership firms do not fully respond to changes in dividend taxation is that they have lower propensity to optimize the trade-off between dividends and wages. Owner-managers in corporations with one owner can maximize the after-tax profit by easily substituting dividends and wages. The more owners there are in a firm, the more complex is this maximization process. For example, different levels of owners' involvement in the daily operations of the firms make it difficult to substitute dividends with wages because some owners do not receive wages, while others receive wages (about 62% of owners in our sample receive some payout in the form of wages). However, even if all owners in dispersed firms receive wages, coordination across owners, and consequently, the optimization of payout are more difficult in firms with dispersed ownership than in wholly owned firms. The resulting increase in coordination costs may then decrease substitutability and, thus, tax elasticity of dividends and wages; similar to the effect of adjustment costs on labor supply elasticity (Chetty, Friedman, Olsen, and Pistaferri 2011).

To examine how the interaction between ownership structure and taxation affects substitutability between dividends and wages, we again exploit the exogenous policy shock on dividend taxation. The evidence shows that the rate of substitution of wages and dividends

is a decreasing function of the number of owners: Firms with only one owner show an economically significant one to one substitution between dividends and wages. For the same tax preferences, owners of firms with five owners do not exhibit any substitution, despite the significant tax advantage of paying more cash out through dividends rather than wages. For wholly owned firms, the magnitude of the decrease in the wage compensation ratio (–3.7 percentage points) is similar to increase in dividend payout (+3.9 percentage points). This suggests that owner-managers in very closely held firms substitute wages with dividends. Firms with more diverse ownership experience a reduced response of wage compensation; even when tax preferences suggest they should increase dividends and reduce wages. Holding the marginal tax on dividends and wages constant, the propensity to substitute wages with dividends decreases by 55% for firms with three owners relative to wholly owned firms. Ultimately, owners in firms with five owners do not adjust their dividend-wage mix according to their own tax preferences. This latter finding is consistent with the Michaely and Roberts (2012) result for unlisted UK firms. That owners in firms with many owners have limited abilities to substitute dividends and wages may explain, at least in part, why the dividend tax elasticity declines in the number of owners in closely held firms.

Further analysis suggests that also conflicts between managers and owners can affect the tax sensitivity of dividends. We find that even in firms with one owner the dividend payout is less responsive to taxation when there is a separation of ownership and control. Managers may have incentives to retain earnings and overinvest even though owners would prefer dividend payout (e.g., Easterbrook 1984, Jensen 1986, La Porta, Shleifer, Vishny, and López de Silanes 2000, Chetty and Saez 2010).

The third possibility why ownership dispersion causes a reduction in dividend tax sensitivity is the tax clientele effect (e.g., Elton and Gruber 1970, Allen, Bernardo, and Welch 2000) resulting in heterogeneity in tax preferences across owners. This tax heterogeneity can affect the sensitivity of dividends to tax changes. We show empirically that when tax preferences for dividends in firms with many owners are aligned, dividend policy is more responsive than in firms where tax preferences are heterogeneous across owners. We also observe that substitutability of dividends and wages, in ways that optimize after tax cash flows is significantly more pronounced for those firms with more homogenous tax preferences across owners.

However, heterogeneity in tax preferences is not the entire explanation. We test how firms that differ in the number of owners but where all owners have homogeneous tax preferences for dividends respond to the tax reform. We find that firms with many owners

increase dividend payout in response to the tax reform when tax preferences for dividends are homogeneous across owners. Importantly, our results show that wholly owned firms respond more strongly to the reform than firms with more dispersed ownership, even when the tax preferences are the same. We find the similar declining tax elasticity in number of owners even when the dominating shareholder has tax preferences for dividends. Thus, dividend tax sensitivity is a function of ownership even when tax preferences are homogenous or when there is a dominating shareholder. Taken together, our findings imply that coordination problems, heterogeneity in tax preferences, as well as conflicting interests between managers and owners are three possible mechanisms explaining why dividend tax elasticity declines in the number of owners.

The findings of this paper enable us to start to close the gap between the theoretical prediction of a significant tax effect and the empirical findings that dividend taxation are of second order importance. It is diverse ownership that reduces the dividend tax elasticity. These findings are also important to policy makers who frequently use dividend taxation to affect disposable income and corporate investments. The mechanism we uncover—that the propensity to substitute between payout channels decreases as ownership becomes more dispersed and that heterogeneous tax preferences across owners decrease the tax responsiveness of firms—suggest when and why tax policy may be more effective. Dividend taxation appears to be an effective tool to affect payout policy of wholly owned firms or firms with few owners, where dividend taxation can then improve the allocation of capital and investment across firms (Chetty and Saez 2010). Our findings also suggest that theoretical and empirical work that try to understand the impact of taxation on payout policy are incomplete without considering ownership structure.

While the paper's investigation centers on private firms, which are an important sector of the economy in many countries[4], its findings go beyond this important sector and are relevant to publicly traded firms as well. We find that even with five owners, dividend taxation does not affect firms' dividend policy. Since public firms have multiple owners, our findings shed light on why changes in dividend taxation have very little impact on public firms' dividend policies. The explanations of the muted tax effect cover coordination among shareholders,

[4] According to the Worldbank, micro, small and medium-sized enterprises represent about 99% (95%) of all enterprises and about two-thirds (over half) of employment in EU (OECD) countries (source: http://siteresources.worldbank.org/CGCSRLP/Resources/SME_statistics.pdf). The U.S. Small Business Administration reports that in 1998 businesses with fewer than 500 employees accounted for more than half of U.S. GDP. In the UK, over 99% of firms are privately owned and they contribute more than half of the U.K. gross domestic product (Michaely and Roberts 2012), and in Germany, more than 99% of firms are small and medium enterprises that employ more than 60% of the private sector workers (source: German Federal Statistical Office).

conflict of interests between managers and shareholders, limited substitutability of payout channels, and heterogeneity in tax preferences. All these issues are also all relevant to public firms.

The paper is organized as follows. Section 2 discusses the institutional background, the tax system in Sweden, and the 2006 tax reform. Section 3 describes the data, defines variables, and provides summary statistics. Section 4 analyzes the tax responsiveness of dividends and its interaction with ownership structure. In Section 5, we investigate possible mechanisms behind our finding that diverse-ownership firms do not respond to changes in dividend taxation. Section 6 concludes.

2. Institutional Background and Taxation of Corporations in Sweden

There are about 315,000 corporations registered in Sweden that are subject to corporate taxes. A non-listed corporation is *closely held* for tax purposes if four or fewer shareholders possess at least 50% of the voting rights and if at least one shareholder is active in the daily operation of the firm.[5] Closely held corporations play an important role in the Swedish economy. In 2009, 64% of firms are closely held corporations and they generate over 50% of the taxable income of the entire private sector in Sweden.

Similar to the United States, Sweden has a classical corporate tax system. All corporations are subject to a proportional corporate income tax of 28% (26.3% as of 2009). Prior to the reform, dividends were taxed at a proportional tax of 30% at the individual level. This results in a combined dividend tax burden of 49.6%.[6] Since the dividend tax burden of 49.6% can be below the combined top marginal tax rate on wages (which can be as high as 67%, see Figure 1), owners may exploit the tax wedge and choose the least taxed payout channel. To limit this type of tax minimization in closely held corporations, the tax law defines an upper cap of dividends—the imputed dividend allowance—that can be taxed at dividends. The dividend allowance is calculated per firm based on wages to employees and on equity. It is allocated to owners according to the ownership share. For example, in 2004, the dividend allowance per firm was equal to 11.7% of nominal equity and 10% of wages paid to employees.[7] Any dividends in excess of the dividend allowance are taxed as wages. In

[5] According to the tax law, a shareholder is active if he contributes to the profit generation to a considerable extent. When calculating the critical ownership percentage of 50%, family members and active owners count as one shareholder.

[6] $49.6\% = 28\% + (1 - 28\%) \times 30\%$.

[7] The imputed interest on nominal equity results from the interest rate on government bonds plus a risk premium of 7 percentage points (5 percentage points before 2004). The wage base of the dividend allowance excludes wages to owners.

case dividend payout is below the dividend allowance, unused allowance can be carried forward indefinitely with interest.

[Insert Figure 1 about here]

In 2006, there were two main changes to dividend taxation of closely held corporations. First, the dividend tax rate for closely held corporations was cut from 30% to 20%.[8] This reduced the combined tax burden on dividends (within the dividend allowance) to 42.4%. Dividends in excess of the dividend allowance are still taxed at a combined tax burden of up to 68.7%. Table 1 summarizes dividend tax rates before and after the 2006 tax reform. Second, for the vast majority of firms, the dividend allowance increased substantially from before to after the reform and depending on the asset structure and the wages paid to employees, the increase could even be ten times or higher.[9] Figure 2 presents the average accumulated dividend allowances per owner before and after the reform. We split the sample into closely held corporations with one to five owners. The dividend allowance per owner substantially increases for all groups, and, most importantly, average increase in dividend allowance and average dividend allowance per owner are similar across groups.

[Insert Table 1 about here]

[Insert Figure 2 about here]

Additionally, owner-managers can pay out cash in the form of wages. Wages are tax deductible at the corporate level, but are subject to income taxes at the shareholder level. Figure 1 presents the progressive labor income tax schedule for years 2002 and 2008. The combined marginal tax burden on labor income ranges from 31.4% to 67.1% (2008 values).[10] There is one large and important kink in the tax schedule at which the marginal income tax rate increases by 20 percentage points from about 31% to 51%. The comparison of the tax rates on dividends and wages shows that if an owner's marginal income tax rate right of the kink, i.e. 51% or higher, he prefers dividends over wages (up to the dividend allowance). As the reform substantially increased the amount of dividends which can be paid out at the

[8] Taxation of dividend payout from listed firms remained unchanged around 2006. In 2006, the tax rate on dividends from unlisted, widely held corporations was cut from 30% to 25%. However, as our data do not include dividend payout from unlisted, widely held corporations, we cannot exploit this tax rate reduction.

[9] The 2006 reform increased both the wage-based allowance by more than 100% and capital based allowance. In addition, the 2006 reform introduced an optional method a fixed dividend allowance that amounts to SEK 64,950 in 2006 and that increased to SEK 120,000 in 2009. As is shown in Alstadsæter and Jacob (2012), an active owner could experience a tenfold (or higher) increase in the imputed dividend allowance.

[10] In our calculations, we account for contributions for health insurance, unemployment insurance, and a defined contribution pension plan at the corporate level. We neglect the standard deduction and the earned income tax credit as these do not alter the relative taxation of wages and dividends. See Alstadsæter and Jacob (2012), Appendix I, for a detailed description of the tax system and the calculations.

reduced rate of 42.4%, highly-taxed owner-managers are able to pay out significantly more dividends after the 2006 reform at the reduced rate. Owners who are subject only low wage taxation should not respond to the 2006 tax reform as they prefer wages over dividends.

3. Data and Sample Overview

3.1 Data

We base our study on the Firm Register and Individual Database (FRIDA) provided by Statistics Sweden (see, also, Alstadsæter and Jacob 2012). The data contain all corporate tax returns of all Swedish corporations over the period 2000–2009. Corporate tax returns comprise the tax balance sheet and profit and loss statements. We focus on unlisted, closely held corporations with at least one active owner. Our data have several unique features. Each active shareholder of a closely held corporation is required to file a tax form in which he declares dividend and wage income from (each of) his closely held corporation(s). Our data set allows us to link these forms to the full sample of the corresponding income tax returns of active owners of closely held corporations. The individual data cover income and tax variables, along with demographic characteristics such as age, gender, education, and family size. Through unique identifiers, we link information on firms and their shareholders to obtain the ownership structure.

Administrative tax data, such as FRIDA, have the advantage that all firms are required to file a corporate tax statement. Studies based on accounting data face the problem that data coverage of small firms is very poor due to lack of filing requirements for small enterprises (e.g., Michaely and Roberts 2012). However, our data have some limitations. From the corporate tax data set, we need to exclude public firms and private firms with very dispersed ownership (widely held corporations) as we have no data on dividend payout and no information on the ownership structure. Since we analyze the interaction of ownership structure and taxation in payout decisions, we require information on dividends to owners along with their tax status. Therefore, we focus on closely held corporations and their active owners.[11] Our data contain the number of active owners and their ownership share. Some firms could have additionally passive owners. However, 89% of shares in closely held corporations are held by active owners indicating that passive owners play a less important

[11] We exclude firm-years with negative values in total assets, nominal capital, sales, turnover, or scheduled depreciation. Using information from the K10-form, we derive the ownership share and the number of owners in a firm. Note that after the 2006 reform, some 5% of all shareholders overstate their ownership share to claim higher dividend allowances (Alstadsæter and Jacob 2013). This type of misreporting does not alter our results: excluding these cases.

role.[12] Hence, the vast majority of firms are fully owned by one or more active owners in a firm.

Our main data comprise the full sample of individual tax returns of owner–managers, with information on demographic characteristics, income composition, and most importantly for our study, information on wages and dividends from closely held corporations. We winsorize shareholder-level and firm-level variables at the 1% and 99% levels to control for outliers. Our final sample contains 1,365,882 observations for owner–managers of closely held corporations from 244,813 firms and 296,376 owner–managers.

3.2 Sample Overview

Table 2 presents summary statistics for payout variables, as well as firm-level and shareholder-level characteristics. We use the following payout variables: *Dividend CHC* is the amount of dividends (in SEK) received from closely held corporation(s); *Wages CHC* is the wage paid by closely held corporation(s) to the owner–manager (in SEK); *%Div Compensation* (*%Wage Compensation*) is the percentage of total compensation from the firm (wages and dividends) paid out as dividends (wages). If total compensation is 0, we set *%Div Compensation* and *%Wage Compensation* to 0.

[Insert Table 2 about here]

On average, owner–managers receive a wage of SEK 197,101 and a dividend of SEK 67,940 from their corporation.[13] On average, 62% of total compensation from the firm is in the form of owner-wages. Dividends comprise about 16% of total compensation from the firms. These statistics include both non-payers and payers. Therefore, the share of wages and dividends do not add to one.

As firm variables, we use measures for growth opportunities, internal funds, profitability, size, capital structure, and agency costs. Panel B of Table 2 summarizes our main firm-level variables. As our measure of ownership structure, we use the number of owners (*Owners*) in the firm (Jensen 1986). On average, a closely held corporation has 1.63 active owners. Since Tobin's q is not observable due to lack of market prices, we proxy growth opportunities through the percentage change in fixed assets from *t-1* to *t* (*Investments*).[14] We include

[12] This share is also similar across firms that differ in the number of active owners. For example, in firms with one active owner, 88% of shares are held by the active owner (2007 values). In firms with five active owners, they collectively held 86% of the shares. We, therefore, use owner and active-owners as synonyms throughout the paper.

[13] In 2006, SEK 7.36 are equal to USD 1.

[14] We control for depreciation when calculating investments. We define investments as the difference between fixed assets in year *t* minus prior year fixed assets plus prior year depreciation. We standardize investments by prior year fixed assets to obtain growth in fixed assets.

Cash_Assets, defined as cash and short-term investments over total assets, and *RE_Assets* (scaled by total assets) as measures for internal funds. We use taxable corporate income over total assets as the measure for profitability (*Profit_Assets*). We control for capital structure and include total book debt over total assets (*Leverage*). We use the natural logarithm of total assets (*Ln*(*Total Assets*)) and the number of employees (*Num Employees*) as measures of size. On average, firms hold 27% of their assets as cash and have a retained earnings (debt) to assets ratio of about 24% (67%). The average closely held corporation has about 6 employees. Investment varies considerably from 0% (25th percentile) to 64% (75th percentile).

Shareholder characteristics are summarized in Panel C of Table 2. Owner–managers derive on average 29.3% of their total income from sources outside the closely held corporation (*Relevance Non-CHC*). We use a dummy variable for the tax status of owner–managers (*High Tax*) which we set equal to one if the owner's marginal tax rate is about 51% and, hence, the owner prefers dividends over wages. Our summary statistics for *High Tax* in Table 2 indicate that 29.5% of owner–managers are subject to a marginal income tax rate of 51.5%. Some additional 18% are subject to the top marginal income tax rate (*Top Tax*) of about 67%. The majority of owner–managers participate in exactly one firm. On average, owner–managers hold shares in 1.18 closely held corporations.

4. Tax Sensitivity of Dividends

4.1 Tax Sensitivity and Ownership Structure—Graphical Evidence

To test how ownership structure affects tax sensitivity of dividend payout, we exploit differences in the shareholders' tax preference for dividend income. If an owner is subject to an income tax on wages of 51% or higher, the tax burden on dividends is below the tax burden on wages. The simplest test of how dividend taxation affects dividend payout is to split the sample into highly-taxed owners and owners subject to a low income tax on wages and to track the difference in dividend compensation over time. If taxation affects dividend payout, we would observe an increase in the difference between high-tax and low-tax owners around the tax reform. Panel A, Figure 3 plots this difference for the full sample of owners and the difference-in-difference (DD) estimate without any control variables. We use the tax status from the prior year to avoid that the tax status is endogenous to dividend payout.

[Insert Figure 3 about here]

Panel A, Figure 3 shows that prior to 2006, the difference in dividend compensation between owners with a marginal income tax rate above 51% and lower taxed owners is about

4.9 percentage points and is constant over time. After the reform, the difference doubles to about 8.9 percentage points and remains at this high level. The observations in Panel A, Figure 3 have two main implications. First, it appears as if there is a common trend before and after the reform in dividend compensation between the two groups. Second, the dividend tax cut increases the difference in dividend compensation in accordance with the tax preferences for dividends of highly-taxed owners. The corresponding DD estimate without control variables amounts to 0.05 and is statistically significant.

In Panel B to Panel F of Figure 3, we take advantage of the detailed ownership information in our data. To test how ownership dispersion affects the dividend tax elasticity, we split the sample into groups according to the number of owners ranging from one to five. We repeat the analysis from Panel A. If ownership dispersion mutes the dividend tax elasticity, we would observe declining DD estimates in the number of owners. Panel B, Figure 3 uses owners in wholly owned firms. As for the full sample, we observe a constant difference between high and low-tax owners prior to the reform and a sharp increase in the difference around the reform. The corresponding DD estimate amounts to 0.06. Panel C and Panel D repeat this analysis for owners in firms with two and three owners, respectively. We again observe a similar pattern to firms with one owner, but the DD estimates are smaller (0.05 and 0.043). The decrease in the dividend payout response to the 2006 tax cut is even more apparent when moving to owners of firms with four or five owners. While the DD estimate for wholly owned firms is 0.06, the DD estimate for owners in firms with four (five) owners decreases to 0.018 (0.020), less than a third of the effect in wholly owned firms.[15]

The graphical evidence in Figure 3 is a first indication that the dividend tax elasticity is a declining function of ownership. To illustrate this argument further, Figure 4 presents the triple difference. That is, we plot the difference between high-tax and low-tax owners (1st difference) between owners of wholly owned firms to owners of firms with multiple owners (2nd difference) over time. The comparison before to after the reform results in the third difference (DDD). The triple difference quantifies the decline in the dividend tax elasticity as ownership becomes more dispersed. Panel A, Figure 4 compares owners of wholly owned firms to owners in closely held firms with two owners. We observe a parallel trend prior to 2006 and an increase in the DD after the reform. That is, the reform response by owners of wholly owned firms is more pronounced than the response of owners in closely held corporations with two owners. The corresponding DDD estimate is 0.01 and is statistically significant. As the number of owners increases, the DDD estimate becomes larger. In each

[15] Table A.I of the Appendix presents average dividend compensation ratios for each group before and after the 2006 tax reform and DD estimates.

panel, we observe a common trend before the reform and a large increase around the reform (Panel B to Panel D, Figure 4). For example, the DDD estimate increases to 0.018 (0.043) when we contrast wholly owned firms to firms with three (four) owners. Overall, the positive and significant triple difference estimates indicate that an increase in the number of owners mutes tax responsiveness. In other words, owners of very closely held corporation appear to respond more strongly to the 2006 tax reform than owners of closely held corporations with more dispersed ownership even if both owners have a preference for dividends.

[Insert Figure 4 about here]

4.2 Tax Sensitivity and Ownership Structure—Tax Reform Analysis

We next analyze differences in tax responsiveness of dividend compensation across various ownership structures and control for owner-level as well as firm-level characteristics. Our empirical strategy uses a difference-in-difference-in-difference (DDD) approach as illustrated in Figure 3 and Figure 4. The *first difference* compares dividend payout of closely held corporations before and after the tax reform. The *second difference* compares differences in tax preferences for dividends across owners, which we operationalize by the dummy variable *High Tax*. The *third difference* exploits the heterogeneity in ownership structure. We thus estimate:

$$\begin{aligned} Payout_{i,t} = {} & \alpha_0 + \alpha_i + \alpha_t + \boldsymbol{\alpha} Post_t \times \boldsymbol{Owners}_{i,t} + \beta \Pi_{j,t} + \gamma \chi_{\mathrm{i,t}} \\ & + \alpha_1 Post_t \times High\ Tax_{i,t-1} \times Owners = 1_{i,t} \\ & + \alpha_2 Post_t \times High\ Tax_{i,t-1} \times Owners = 2_{i,t} \\ & + \alpha_3 Post_t \times High\ Tax_{i,t-1} \times Owners = 3_{i,t} \\ & + \alpha_4 Post_t \times High\ Tax_{i,t-1} \times Owners = 4_{i,t} \\ & + \alpha_5 Post_t \times High\ Tax_{i,t-1} \times Owners = 5_{i,t} + \varepsilon_{i,j,t} \end{aligned} \quad (1)$$

where the dependent variable is *%Div Compensation* for shareholder *i* in year *t*. We use the 2006 tax reform as exogenous event (*Post*). As the reform decreased dividend taxes and increased the amount of dividends that can be paid out, the reform provides incentives to increase dividend payout if the dividends are taxed at a lower rate as wages. This is the case when individuals are subject to a marginal tax rate of 51% (*High Tax* = 1).

To test our main hypothesis that ownership structure affects tax sensitivity, we estimate the tax response coefficient (*Post*×*High Tax*) separately for each number of owner bin that ranges from one owner to five owners ($\boldsymbol{Owners}_{i,t}$). In other words, we allow the response to the tax reform (*Post*) for owners with tax preferences for dividends (*High Tax*) to vary across bins of $\boldsymbol{Owners}_{i,t}$. This way, our identification is based on the response to an exogenous

policy shock across different ownership structures and across owners with different tax preference. If ownership structure affects tax responsiveness, we would observe declining α_1 to α_5 coefficients. *High Tax* is measured in year *t-1* to avoid an endogeneity bias as current payout (wage and dividend) affects tax status and current total income. We additionally include the variable *Top Tax* and interactions with *Post* and each bin of $\boldsymbol{Owners}_{i,t}$ in the vector $\chi_{i,t}$ of shareholder-level variables.[16]

$\Pi_{j,t}$ is a vector of firm-level variables; it includes six control variables. First, we control for availability of internal resources for distribution to shareholders. We include cash holdings and short-term investments (*Cash_Assets*) and operating income relative to total assets (*Profit_Assets*) as controls. Second, we include *RE_Assets* to control for the life-cycle model of dividend payouts. Third, we control for growth opportunities through change in fixed assets (*Investment*). Fourth, we include leverage to control for the effect of creditors on payout policies of privately held firms. Creditors may have more direct influence on payout policies of private firms since, for example, debt covenants could restrict dividend payouts to protect creditor rights. Fifth, we control for firm size (*Ln(Total Assets)* and *Num Employees*) as larger firms tend to have higher dividend payouts.

We include vector $\chi_{i,t}$ of shareholder-level variables. Specifically, we include the percentage of total income derived from income sources other than the closely held corporation (*Relevance Non-CHC*) and demographic characteristics *Age*, marital status (*Married*) and *High Education*. We include shareholder-fixed effects (α_i) and year-fixed effects (α_t). We measure all variables at the shareholder level. That is, firm-level variables are linked to the respective shareholder. In case a shareholder owns more than one firm, we use the average of firm characteristics across firms weighted by ownership share. We base our statistical inference on robust standard errors clustered at the owner level. As the effect of observable firm and owner-level variables can potentially vary from before to after the reform, we also estimate equation (1) with interaction of each control variable with the *Reform* dummy (*Fully-Interacted Model*).

[Insert Table 3 about here]

Table 3 presents coefficient estimates for α_1 to α_5. Our results show that ownership structure has strong influence on the responsiveness to the 2006 dividend tax reform. Owners of very closely held corporations (one or two active owners) with tax preferences for

[16] We obtain very similar results when we use a combined measure of *High Tax* and *Top Tax*, i.e. when we use a dummy variable equal to one if the wage tax rate is 51% or higher. Results are similar when using this combined measure and are presented in Table A.II of the Appendix.

dividends increase the percentage of dividend compensation by about 3.9 percentage points (one-owner-CHC) and 3.6 percentage points (two-owner-CHC) respectively. These are economically large effects. For example, around the tax reform, owner-managers of wholly owned firms with tax preference for dividends increased the dividend compensation ratio by 3.9 percentage points. This is equivalent to an increase of 33% relative to the pre-reform sample average of a dividend compensation ratio of 11.7% (see Panel B, Table A.I of the Appendix). This tax sensitivity decreases gradually in the number of owners of a firm. Owners in firms with three owners increase the dividend compensation ratio only by 1.7 percentage points. That is, tax sensitivity decreases by over 50% (from a 3.9 percentage points increase to an 1.7 percentage point increase) if the number of owners increases from one to three. The difference in effects is thus not only statistically significant (t-stat = 5.12), it is also economically significant. Once a firm has four or five owners, the individual owner's tax preference has no influence on the dividend compensation ratio. For firms with five owners, the reform response coefficient is insignificant. That is, in firms with more dispersed ownership, the change in dividend compensation around the 2006 tax reform is not aligned with tax preferences of the individual owner.[17]

There are two potential concerns about our DDD approach. First, one could argue that firms with one versus five owners are not similar, for example, in size. In fact, as ownership becomes more dispersed, our sample firms tend to be larger. Even though our graphical analysis in Figure 4 supports the common trend assumption and our fully interacted model allows the coefficients on control variables to vary before and after the reform, there could still be some concerns that differences in size and cash holdings across firms may explain the observed differences in the dividend tax elasticity. We, therefore, run a matching DDD based on pre-reform characteristics size (*Ln(Total Assets)* and *Num Employees*) and cash holdings (*Cash_Assets*). As firms with five owners are the smallest group in terms of observations, we individually match them to owners of firm with one, two, three, and four owners, respectively.[18] After these four one-to-one matching procedures, we detect no differences in size and cash holdings across firms anymore. We then use this sample and rerun our DDD model from equation (1). Table 4 presents tax response coefficients (*Post×High Tax*) separately for each number of owner bin. Consistent with our main results, we obtain a

[17] In Table A.II of the Appendix, we present reform response coefficients for individuals subject to the top marginal income tax. Also here, we find a significant response for owners of wholly owned firms. This reform response decreases in the number of owners and becomes insignificant for firms with four or more owners.

[18] Alternatively, we use a pairwise matching and we compare owners of wholly owned firms to owners of firms with multiple owners. Table A.III of the Appendix presents coefficient estimates for four DDD regressions using the matched samples Results are similar when using this alternative matching approach.

significant response for owners of wholly owned firms. The response to the 2006 tax reform again declines in the number of owners and becomes insignificant with as little as three owners. This shows that our results are not driven by differences in size and cash holdings across firms.

[Insert Table 4 about here]

Second, to address concerns measuring payout responses at the owner-level explains our findings, we run the analysis at the firm level instead of using owner-level data. Similar to the approach based on the owner level, we estimate

$$\begin{aligned} Dividend - to - Assets_{j,t} = \alpha_0 + \alpha_j + \alpha_t + \boldsymbol{\alpha} Post_t \times \boldsymbol{Owners}_{i,t} + \beta \Pi_{j,t} \\ + \alpha_1 Post_t \times High\ Tax_{j,t-1} \times (Owners = 1)_{j,t} \\ + \alpha_2 Post_t \times High\ Tax_{j,t-1} \times (Owners = 2)_{j,t} \\ + \alpha_3 Post_t \times High\ Tax_{j,t-1} \times (Owners = 3)_{j,t} \\ + \alpha_4 Post_t \times High\ Tax_{j,t-1} \times (Owners = 4)_{j,t} \\ + \alpha_5 Post_t \times High\ Tax_{j,t-1} \times (Owners = 5)_{j,t} + \varepsilon_{j,t} \end{aligned} \quad (2)$$

where $Dividend - to\ Assets_{j,t}$ is the ratio of dividends to total assets of firm *j* in year t. We again use a dummy variable *High Tax* to operationalize tax preferences at the firm level. We set *High Tax* equal to one if the weighted average tax rate on wages of all owners is above 50%. In other words, on average owners prefer dividends to wages. Again, we allow the coefficient to vary across the number of owners bins. We further include firm-level control variables ($\Pi_{j,t}$), firm fixed effects (α_j), and year fixed effects (α_t). Standard errors are clustered at the firm-level. Figure 5 illustrates the resulting α_1 to α_5 coefficients with the 95% upper and lower confidence intervals. We normalize the estimated coefficients by the unconditional pre-reform average to obtain the relative change in the dividend-to-asset ratio. That is, we obtain the percentage change in dividend payout from before to after the reform. The firm-level analysis confirms our result from the owner-level analysis. The results in Figure 5 show that in firms with five owners, the tax response is about 49% lower than in wholly owned firms. The effect of the dividend tax cut is strongest in wholly owned firms and then gradually declines in the number of owners. The results in Table 3, Table 4, and Figure 5 show that the dividend tax elasticity is a declining function of ownership.

[Insert about Figure 5 here]

4.3 Robustness Tests

We next run two sets of robustness tests. First, we use two alternative measures of dividend payout. Table 5 presents regression results from estimating equation (1) with a dummy variable equal to one if the owner receives a dividend, and zero otherwise (*Dividend Payer*). We again obtain a significant response for wholly owned firms as well as for owners of CHC with two owners. The response becomes insignificant (at the 1% level)[19] as ownership becomes more dispersed. Table 5 also uses a different scaling variable for dividend payout. Instead of using total cash to the shareholder, we use the owner's total income to normalize dividends. Our results are again in line with our previous findings. Following the dividend tax cut, highly taxed owners increase dividends relative to lower taxed individuals. As for our baseline results, this response is a declining function of ownership and becomes insignificant for firms with five owners.

[Insert about Table 5 here]

As the second robustness test, we analyze the short-term response from 2004/2005 to 2006/2007. Table A.IV of the Appendix summarizes α_1 to α_5 coefficient estimates using the shorter time horizon around the reform. The results confirm our findings. The effect of the tax reform is strongest for wholly owned firms and gradually decreases in the number of owners. For example, the *Post×High Tax* coefficient decreases by about 66% when the number of owners increases from one to three owners. Again, in firms with four and five owners, the individual owner's tax preference has no influence on the dividend compensation ratio. We also test the persistence of the dividend tax reform effect on payout policy. In line with our graphical evidence, regression results using an annual breakdown suggest that the effect is persistent over time and that there is an immediate response (see Table A.V of the Appendix).

5. Explaining Heterogeneity in Dividend Tax Responsiveness

5.1 Tax Sensitivity of Owner Wages and Ownership Structure—Graphical Evidence

Why does ownership dispersion cause a reduction in dividend tax sensitivity? One reason why diverse-ownership firms do not fully respond to changes in dividend taxation could be that they have lower propensity to optimize the trade-off between payout channels. In large private and public firms, managers can substitute between dividends and capital

[19] Since our tests are based on over 1.3 million observations, we report results only as statistically significant at the 1% level.

gains (or repurchases), without affecting shareholders wealth (Modigliani and Miller 1961). Clearly, for private firms, costs of selling shares are higher than for public firms. Unless a manager of a public held corporation or a private firm with dispersed ownership holds a substantial amount of shares, he may not be that sensitive to dividend payments. In fact, he will be reluctant to increase dividends as response to a dividend taxation cut if, as often the case, his compensation is a function of stock price performance.

In closely held corporations, owners and managers may have conflicting views about the form of payout—wages versus dividends. Wages have two objectives. First, they serve as compensation for labor supply. Second, they are a tax efficient channel to distribute cash to shareholders. About 62% of wholly owned firm owners receive wages in our sample. In firms with four (five) owners, still 50% (45%) of owners receive wages. Owner-managers in very closely held corporations can easily substitute dividends and wages to maximize the after-tax cash flows they receive from the firm. The more owners there are in a firm, the more complex is the maximization process that optimizes payout for all owners, in particular in firms with different levels of owners' involvement in the daily operation. Even if all owners receive wages, the optimization process is more complex and requires more coordination among owners in a firm with many owners than in a wholly owned firm. As a result, coordination costs are an increasing function in the number of owners. This can then decrease substitutability of payout channels and, consequently, we would expect a lower tax elasticity of dividends and wages. The effect coordination costs play in our setting is similar to the effect of adjustment costs on labor supply elasticity (Chetty, Friedman, Olsen, and Pistaferri 2011).

To analyze how the interaction of ownership and taxation affects substitutability, we first test whether owner wages respond to the large kink in the income tax around which the preference for dividends changes. Below this first state tax threshold, wages are taxed at 31.5%. Any marginal wage payment above this threshold is subject at an additional 20% income tax and dividends are then taxed at a lower rate. In theory, such a large kink in the marginal tax rate affects the distribution of wages and leads to bunching of income at the kink point (Saez 2010). The concept of bunching is simple. Let us consider two individuals in a tax system without a kink. Depending on individual preferences, both individuals set their labor supply in a labor/leisure decision. We assume that individual 1 provides more labor and, thus, earns a higher before-tax income y^H than individual 2, who earns less before-tax income (y^L). Under a proportional tax, the labor supply decision is unaffected by taxes and individual 1 provides more labor than individual 2. We now introduce a higher tax rate on

before-tax income above y^L. That is, we introduce a progressive tax similar to the U.S. tax code (with more kinks) or the Swedish tax code. The labor supply decision of individual 2 is unaffected, as this individual's marginal tax rate remains constant. However, the labor supply decision of individual 1 is potentially affected by the progressive tax rate. Since additional earnings ($dy = y^H - y^L$) are taxed at a higher tax rate, Saez (2010) shows that individuals with income above the kink reduce labor supply. In our case, individuals may reduce labor supply or shift to the dividend payout channel. In either case, individuals locate around the kink since the (after-tax) utility of individual 1 is higher *at* the kink point than (slightly) *above* the kink point.

A large jump in marginal tax rate should lead to bunching at the kink point if owner wages respond to income taxation (e.g., Chetty et al. 2011). Since owner–managers, at least in wholly owned firms, can set their wages according to their individual tax status and preferences, we expect that wages are responsive to the large jump in the marginal income tax. To test the tax sensitivity of owner wages empirically, we build on the methodology developed by Chetty, Friedman, Olsen, and Pistaferri (2011). We center labor income in year *t* (from closely held corporation(s) and other employers) around the kink in year *t* (see Table 1). Then, we sort individuals into SEK 1,000 (about USD 136) bins of labor income and count the number of owner–managers in each bin. Panel A, Figure 6 presents the histogram of the actual distribution of labor income centered around the kink. We plot the distribution for firms with one owner and for firms with five owners. Instead of plotting the absolute numbers, we use the fraction of owners in each bin to account for different sample sizes. For example, there are more firms and owners of wholly owned firms compared to firms with five owners. This has the additional advantage that firm size cannot explain our result as the excess mass around the kink is relative to the number of owners in the [-50,000;+50,000] range around the kink.

[Insert Figure 6 about here]

We observe a sharp spike in the actual distribution at the kink point and in the SEK 1,000 bin below the kink for both types of firms. This indicates that wages are tax sensitive and that owners set their wage around the marginal tax rate increase. As the spike is more pronounced for wholly owned firms than for firms with five owners, wage tax sensitivity appears to be a declining function of ownership. To quantify the tax effect on wages of owner–managers, we follow the Chetty, Friedman, Olsen, and Pistaferri (2011) approach and compare the actual distribution to a counterfactual distribution. We fit a polynomial to the fractions plotted in Figure 6 that excludes values around the kink. This produces a

counterfactual distribution that is not affected by the kink in the tax rate schedule. We estimate the difference between the empirical distribution and the counterfactual distribution around the kink. This area is denoted "excess mass." We use an SEK 10,000 range around the kink point and obtain an excess mass estimate of 3.277 and a t-statistic of 6.94 for wholly owned firms. This result can be interpreted as follows: for wholly owned firms, we observe 328% more owner–managers with wages around the kink point than we would observe in absence of the kink. However, there are substantial differences in the degree of bunching with respect to ownership. For firms with five owners, we obtain an excess mass estimate of 0.802 and a t-statistic of 3.16. That is, we observe only 80% more individuals at the kink—about 25% of the effect for wholly owned firms.

Panel B, Figure 6 presents corresponding excess mass estimates along with upper as well as lower confidence bounds for different ownership structures. The excess mass estimates are based on the [-50,000;+50,000] range around the threshold. The gradual decrease in excess mass estimates from 3.277 (one owner), to 1.953 (three owners), to 0.802 (five owners) is significant and indicates that ownership structure influences the tax sensitivity of owner-wages. Similar to dividends, wage payout tax elasticity appears to be a declining function of ownership.

5.2 Substitutability of Wages and Dividends—Tax Reform Analysis

One potential problem could again be an omitted variable bias. To provide additional evidence of how ownership structure affects tax responsiveness of wages, we rerun our DDD approach from equation (1) where we use the *%Wage Compensation* as dependent variable. Table 6 presents α_1 to α_5 coefficients and follows the structure of Table 3. In addition to the baseline model, we estimate equation (1) additionally with interaction of each control variable with the *Post* dummy (*Fully-Interacted Model*). Note that we use the tax status of the prior year to proxy for tax preference for dividends. This ensures that *High Tax* is exogenous to current wage payments.

[Insert Table 6 about here]

Our results from the reform analysis support our graphical analysis from Figure 6. The response to the 2006 tax reform is strongest for firms with no separation of ownership and control. Owners of very closely held corporations (one or two active owners) decrease the percentage of wage compensation by about 3.7 percentage points (one-owner-CHC) if they were subject to the state tax in the past year. Owners in CHCs with three owners decrease the wage compensation ratio only by 2.0 percentage points. The difference in coefficient

estimates is statistically significant (t-stat = 3.74). The decrease in tax responsiveness is also economically large. Tax responsiveness decreases by 45% if a firm has three owners instead of one owner. Once a firm has five owners, the individual owner's tax preference has again no influence on wage compensation.[20]

The documented differences in tax reform responses across firms with different ownership structures show that taxes have a first order impact on payout policy in wholly owned firms. Owners can substitute wages with dividends according to their own tax preferences. In other words, payout levels and channels are tax responsive if there are no agency issues. If firms have many owners, this substitutability and the tax responsiveness to a large tax reform break down once a firms has many owners. To illustrate this substitutability, Figure 7 plots the *Post*×*High Tax* estimates for number of owners from Table 3 and Table 6.

[Insert Figure 7 about here]

Owners of very closely held corporations are able to substitute wages with dividends. Both effects are statistically and economically significant and suggest a one-to-one substitution. The tax responsiveness of both dividend and wages decreases in the number of owners. In firms with three owners, the individual owner with tax preferences for dividends still experiences an increase in dividends and a decrease in wages. As the number of owners increase further, tax responses to a large tax reform become insignificant. Both wages and dividends are not responsive to the tax preferences of the individual owner.

One possible explanation of this result is that the substitutability of wages and dividends is limited to owners with a salary from the CHC. We rerun therefore our main DDD estimations and restrict the sample to owner that received a wage prior to the 2006 tax reform. This ensures that the reform does not affect our sample selection. Table 7 presents regression results for our DDD approach from equation (1) with *%Div Compensation* and %*Wage Compensation* as dependent variables. Results support our main findings from above and show that the effects are significant for owners in wholly owned firms and firms with two owners. In firms with four or more owners, the individual owner's tax preference does not affect dividend as well as wage compensation. In other words, dividend as well as wage tax elasticity is a declining function of ownership.

[Insert Table 7 about here]

[20] As robustness test, we analyze the short-term response from 2004/2005 to 2006/2007. The results (presented in Table A.I of the Appendix) support our findings. The effect of the tax reform is strongest for wholly owned firms. In firms with five owners, the individual owner's tax preference has no influence on the wage compensation ratio.

5.3 Separation of Ownership and Control

Another explanation of the decrease in tax sensitivity is the separation of ownership and control and different objectives of managers and owners. When firms have more than one owner, ownership and control become more separated. Consider a firm with five owners. In this case, either the firm hires an external manager to run the firm or one of the owners acts as the manager. In both cases, ownership and control is separated. To proxy for separation of ownership and control that goes beyond differences in the ownership structure, we test how firms with a manager without an equity stake respond to the 2006 tax reform. For this purpose, we test how the dividend-to-asset ratio of closely held corporations change around the 2006 tax reform. We use a DDD design and test the following equation at the firm-level:

$$Payout_{j,t} = \beta_0 + \beta_1 Post_t \times High\ Tax_{j,t} + \beta_2 Post_t \times High\ Tax_{j,t} \times Separated_{j,t} \quad (3)$$
$$+\beta_3 Post_t \times Separated_{j,t} + \beta_4 Separated_t \times High\ Tax_{j,t}$$
$$+\gamma \Pi_{j,t} + \beta_j + \beta_t + \varepsilon_{i,j,t}$$

where *Payout* is the dividend-to-asset ratio measured at the firm level. *High Tax* is defined as above in equation (2). *Post* is a dummy equal to one for postreform years. β_1 is the difference-in-difference coefficient indicating how payout responds to owners' tax preferences. We expect that β_1 is positive, indicating that if owners have tax preferences for dividends, firms should pay higher dividends after the reform. *Separated* is our proxy for firms with separation of ownership and control. We set *Separated* to one if the highest wage in the firm to an employee exceeds the highest payout (dividend and wages) to one of the owners. If separation of ownership and controls is one channel of how ownership structure and taxation interacts, we should observe that the tax response is mitigated when the firm is run by a manager without an ownership share. In our model, this effect is captured by the DDD coefficient β_2 that indicates how the response to the tax reform changes if the firm has a manager without an ownership share. We expect β_2 to be negative. This would imply that in firms with separation of ownership and control and with tax preferences for dividends, the increase in dividends is lower than in firms without an external manager but with tax preferences for dividends. We also include the interaction between *Post* and *Separated* as well as the interaction between *Separated* and *High Tax*. Equation (2) is estimated on the firm-level including firm-level controls as well as main effects (denoted as vector $\Pi_{j,t}$), firm fixed effects (β_j), and year fixed effects (β_t).

Table 8 presents coefficient estimates using the full sample (Column (1)) and for firms with one owner (Column (2)). We find positive β_1 coefficients in both cases. That is, on average firms increase the dividend-to-asset ratio from before to after the reform when

owners have tax dividends. The DDD coefficient β_2 is negative. This implies that when ownership and control are separated, the response to the tax reform is reduced. The economic magnitudes are large: The tax reform response in firms with tax preferences for dividends decreases by about two thirds from 0.009 to 0.003 when a manager runs the firm. This result even holds in wholly owned firms (Column (2)). Relative to firms without separation of ownership and control, the tax reform response in wholly owned firms where the owner has tax preferences for dividend payout decreases by about 58% if there is a manager in the firm without an ownership share.

[Insert Table 8 about here]

5.4 Differences in Tax Preferences across Shareholders

Another explanation is the tax clientele effect (e.g., Elton and Gruber 1970, Allen, Bernardo, and Welch 2000) and the resulting heterogeneity in tax preferences. In firms with dispersed ownership, it is harder to reach consensus about the level of dividends when there are heterogeneous tax preferences among shareholders. Therefore, changes in dividend taxation may only have small impact on dividend policy when interests are not aligned. To test this, we restrict our sample to firms with four or five owners. We then allow the reform coefficient to vary over across different owner tax clienteles. We use four groups that differ in the percentage of owners who face a higher tax rate on wages than on dividends in *t-1*. We estimate

$$Payout_{j,t} = \beta_0 + \beta_1 Post_t \times Aligned_{j,t-1} + \beta_2 Post_t \times 60\% - 80\%_{j,t-1} + \beta_3 Post_t \times 40\% - 60\%_{j,t-1} + \beta_4 Post_t \times Below\ 40\%_{j,t-1} + \gamma \Pi_{j,t} + \beta_j + \beta_t + \varepsilon_{i,j,t} \quad (4)$$

where $Aligned_{j,t-1}$ is a dummy variable equal to one if all owners have homogeneous tax preferences for dividends, $60\% - 80\%_{j,t-1}$ ($40\% - 60\%_{j,t-1}$) is a dummy variable where between 60% and 80% (40% and 60%) of owners have tax preferences for dividends, and $Below\ 40\%_{j,t-1}$ is a dummy variable equal to one if less than 40% of the owners have tax preferences for dividends. In our sample of firms with four and five owners, about 29% of firms have homogeneous tax preferences for dividends and about 40% of firms are in the $Below\ 40\%$ group. The $60\% - 80\%_{j,t-1}$ and $40\% - 60\%_{j,t-1}$ groups represent about 15% and 16% respectively of the sample firms in this test. The identification of the tax responsiveness around the reform is therefore based on the difference in the percentage of owners with preferences for dividends. We again include firm level controls, firm fixed

effects, and year fixed effects. We use the dividend-to-asset as well as the wage-to-asset ratio as dependent variables.

Table 9 presents β_1 to β_4 coefficients from equation (4). We obtain a significant response to the reform when there are homogeneous tax preferences for dividends among owners (*Aligned*). When tax preferences are more or less homogeneous for wages (*Below 40%*), the reform response is insignificant. That is, when all owners prefer dividends to wages, firms increase dividends and decrease wages. When all owners prefer wages to dividends, there is no response to the 2006 dividend tax reform. The more interesting case considers the two groups where tax preferences are heterogeneous. One would expect that the reform response increases in the number of owner who are subject to the state tax. However, these two groups respond almost similarly to the tax reform. If three of five owners prefer dividends, the dividend-to-asset ratio of these firms increases by 1.1 percentage points and the wage to dividend ratio decreases by 1.6 percentage points. This is very close to the response in firms where only two of five owners prefer dividends (0.7 percentage points in dividends and -1.3% in wages). The difference in reform responses between the two groups is statistically insignificant in both tests (t-stat 1.20 and 0.47).

[Insert Table 9 about here]

5.5 Substitutability versus Tax Heterogeneity

We next test in two different ways if heterogeneity in tax preferences is the entire explanation or if both, coordination problems and tax clienteles can explain our findings. We first test how firms that differ in the number of owners but where all owners have homogeneous tax preferences for dividends respond to the tax reform. Using all closely held corporations, we estimate the following equation

$$\begin{aligned} Diviend - to - Assets_{j,t} = \alpha_0 &+ \alpha_1 \cdot Post_t \times Aligned_{j,t-1} \times Owners = 1_{j,t} \\ &+ \alpha_2 \cdot Post_t \times Aligned_{j,t-1} \times Owners = 2_{j,t} \\ &+ \alpha_3 \cdot Post_t \times Aligned_{j,t-1} \times Owners = 3_{j,t} \\ &+ \alpha_4 \cdot Post_t \times Aligned_{j,t-1} \times Owners = 4_{j,t} \\ &+ \alpha_5 \cdot Post_t \times Aligned_{j,t-1} \times Owners = 5_{j,t} \\ &+ \boldsymbol{\alpha} Post_t \times \boldsymbol{Owners}_{j,t} + \beta \Pi_{j,t} + \alpha_j + \alpha_t + \varepsilon_{j,t} \end{aligned} \quad (5)$$

where $Dividend - to\ Assets_{j,t}$ is the dependent variable. We use a dummy variable *Aligned* as our measure of homogeneous tax preferences for dividends. We set *Aligned* equal to one if all owners have a higher tax rate on wages than on dividends, measured in *t–1*. In other words, all owners prefer dividends to wages and we would expect that the firm increases

dividend payout. We allow the coefficient to vary across number of owners. If tax heterogeneity explains our findings of a declining tax elasticity, we would observe similar responses to the tax reforms across firms with homogeneous tax preferences for dividends. We further include firm-level control variables ($\Pi_{j,t}$), firm fixed effects (α_j), and year fixed effects (α_t). Standard errors are clustered at the firm-level.

Figure 8 presents estimated changes in the dividend-to-asset ratio around the 2006 tax reform for firms with aligned tax preferences for dividends across owners relative to the unconditional pre-reform average. When tax preferences for dividends are homogeneous across owners, even firms with many owners increase dividend payout in response to the tax reform. The estimated response for firms with five owners is significant and positive. Importantly, our results show that wholly owned firms respond more strongly to the reform than firms with more dispersed ownership, even when the tax preferences are the same among all owners. Going from a wholly owned firm to a firm with four owners, we find that the reform response decreases by 50%. The estimated responses are significantly different from each other as the confidence intervals of the estimated reform response of wholly owned firms relative to firms with four or five owners do not overlap.

[Insert Figure 8 about here]

The second approach accounts for the tax preferences of the dominating shareholder. Firms' payout policies may in fact be shaped by the dominating shareholder holding more than 50% in equity. To test whether our findings can be explained by the dominating owner's tax prefernces, we run the following equation

$$\begin{aligned} Diviend - to - Assets_{j,t} = \alpha_0 &+ \alpha_1 \cdot Post_t \times Dom_Tax_{j,t-1} \times Owners = 1_{j,t} \\ &+ \alpha_2 \cdot Post_t \times Dom_Tax_{j,t-1} \times Owners = 2_{j,t} \\ &+ \alpha_3 \cdot Post_t \times Dom_Tax_{j,t-1} \times Owners = 3_{j,t} \\ &+ \alpha_4 \cdot Post_t \times Dom_Tax_{j,t-1} \times Owners = 4_{j,t} \\ &+ \alpha_5 \cdot Post_t \times Dom_Tax_{j,t-1} \times Owners = 5_{j,t} \\ &+ \boldsymbol{\alpha} Post_t \times \boldsymbol{Owners}_{j,t} + \beta \Pi_{j,t} + \alpha_j + \alpha_t + \varepsilon_{j,t} \end{aligned} \quad (6)$$

where $Dom_Tax_{j,t-1}$ is a dummy variable equal to 1 if a dominating shareholder (≥51% in equity) has tax preferences for dividends. We again include firm-level control variables ($\Pi_{j,t}$), firm fixed effects (α_j), and year fixed effects (α_t). Figure 9 presents α_1 to α_5 coefficients along with the upper and lower 95% confidence intervals. Also here, the reform response is significant for all firms at the 1% level. However, the effect of the dominating shareholder's tax preference for dividends gradually decreases in the number of owners. For

example, the response to the tax reform decreases by over 50% when the number of owners increases from one to five owners even if the dominating shareholder has tax preferences for dividends in both firms. Taken together, our results suggest that not only tax heterogeneity across owners but also coordination problems explain why dividend tax elasticity declines in the number of owners.

[Insert Figure 9 about here]

5.6 External Validity of Results—OLS Estimates

In the final step, we demonstrate that our findings are not the result of our identification strategy. Instead of using DDD estimates, we want to show that our results also hold in a simple cross-sectional analysis. We thus estimate a simplified version of equation (1) where we do not examine the effect of taxation on dividends and wages using the policy experiment. We simply include the dummy variable *High Tax* as well as its interaction with the number of owners (*Owners*) as tax variable. If our identifying assumptions were also supported in the cross-sectional test, we would obtain a positive coefficient on *High Tax* and a negative coefficient on *High Tax*×*Owners*. As in equation (1), we include firm-level and shareholder-level control variables, owner fixed effects, and year fixed effects.

Table 10 reports regression results from the baseline regression without difference-in-differences terms. We find associations of firm-level variables with dividend compensation that are in line with our prior literature. For example, cash, profits, and retained earnings are positively associated with dividend payout while leverage is negatively associated with dividend compensation. An increase in the number of owners is positively associated with dividend payout.

Most importantly for our argument, *High Tax* is positively associated with the dividend compensation rate. The economic magnitude of the coefficient implies that if an owner is subject to an income tax of 51%, the dividend compensation decreases by 1.9 percentage points, or 12% of the sample average. The negative coefficient on the interaction *High Tax*×*Owners* suggests that the association between *High Tax* and dividend compensation becomes smaller as the number of owners increases. For example, going from one owner to a firm with three owners decreases the effective coefficient on *High Tax* from 0.0193 to 0.095, or by about 50%.[21] Similar to our main results in Table 3, the overall effect of taxes becomes statistically and economically insignificant if a firm has five owners. Going from a wholly

[21] The effective coefficient for three owners is calculated as 0.0193 + (3-1)*(-0.0049).

owned closely held corporation to a firm with five owners decreases the effective coefficient on *High Tax* by 0.0193 (=0.049 × (5–1) owners) from 0.0193 to -0.0003.

[Insert Table 10 about here]

Table 10 also presents regression results for the wage compensation ratio to demonstrate that the implications of our DDD results on substitutability also hold in the cross-section. In line with our main results, *High Tax* is negatively associated with the wage compensation ratio. The main coefficient (-0.0121) is statistically significant and indicates that being subject to the income tax of 51% reduced the wage compensation ratio by 1.55 percentage points, or 2.5% of the sample average. The positive coefficient on the interaction between *High Tax* and *Owners* suggests that the negative association between *High Tax* and wage compensation becomes weaker as the number of owners increases. For example, the overall effect of taxes becomes insignificant if a firm has four owners. Going from a firm with one owner to a firm with four owners increases the effective coefficient on *High Tax* by 0.0165 (=0.055 × (4–1) owners) from -0.0155 to 0.0010. Overall, the cross-sectional analysis supports our findings from the DDD analysis that the dividend tax elasticity is a declining function of ownership.

6. Conclusion

In contrast to theory, prior empirical research finds rather economically small effects of dividend taxation on payout policy. This paper shows that the muted effect of dividend taxation is directly related to ownership structure. When there is no separation of ownership and control, dividend taxation has a large and significant impact on payout decisions. As ownership becomes more dispersed, dividend taxation becomes less important for payout policy. In fact, in firms with as little as five owners the tax effect breaks down. The dividend tax elasticity declines in the number of owners regardless of owners' tax preferences.

Two mechanisms contribute to this effect. First, coordination problems across owners make the substitution between dividends and other forms of payments more difficult. We find strong empirical evidence that with limited number of owners, there is a strong substitutability between dividends and wages (the other form of payout to owners in closely held firms) as a function of relative taxation on dividends and wages. With one owner-manager, there is a high rate of substitution so that every additional increase in dividends is associated with a corresponding decrease in wages. This substitutability rapidly declines even with two or three owners and almost completely disappears with four or five owners. Likely,

coordination among owners who receive differential wages and have differential ownership is at least partially responsible for the decline in the marginal rate of substitution. However, we find that even with one owner who is not the manager, dividend tax sensitivity declines, suggesting it is not only coordination but also conflicting interest between managers and owners. Managers may have incentives to retain earnings instead of paying cash to shareholders even though owners would prefer dividend payout.

The second mechanism is different tax preferences among owners. We find that owners' tax heterogeneity reduces dividend tax elasticity. For any given number of owners, greater disagreement about the optimal dividend policy result in more muted response to tax changes. We find that both the coordination problems and tax heterogeneity are at work and create a wedge that makes ownership have a significant impact on the interaction between dividends and taxation.

Our results have important policy implications as dividend tax reforms are frequently aimed to affect payout policy and, ultimately, corporate investment.[22] Theory suggests that high dividend taxation incentivizes managers to invest unprofitable project by retaining earnings (Chetty and Saez 2010). When introducing the 2003 tax cut in the U.S., President George W. Bush said that "*[a]bolishing double taxation of dividends will leave nearly 35 million Americans with more of their own money to spend and invest.*"[23] His economic advisor at that time, R. Glenn Hubbard, argued that a dividend tax reduction would boost stock prices and increase spending (see Brav et al. 2008). Theory implies, and policymakers expect that cash will be paid out to shareholders when dividend taxes are cut. However, we may have to recognize that dividend taxation may not be an effective tool to affect payout of firms with dispersed ownership. While the effect of changes in capital taxation is large for wholly owned firms or firms with few owners, dividend tax responses are much smaller for firms with more dispersed ownership, let alone listed firms. It is thus challenging for policymakers to effectively change payout policy of firms in the presence of diverse ownership. It is also a challenge for future research to uncover the exact mechanism behind the ownership effect on the dividend taxation elasticity.

While our sample and analysis centers on closely held firms, which are important on their own right, several empirical predictions can be derived for public firms. For example, as the substitutability of wages and dividends appears to be one explanation why ownership has such a large impact on the tax responsiveness of dividend payout, we would expect listed

[22] For example, over the 1990–2008 period, Becker, Jacob, and Jacob (2013) identify over 65 substantial changes in payout taxation in OECD countries.

[23] This quote is from President Bush's speech on Economic Policy in Chicago, IL on January 7, 2003.

firms to have larger dividend tax elasticities if there is high substitutability between share repurchases and dividends. We would expect a similar effect if tax preferences of the ownership base is homogeneous and/or concentrated and owners (as well as the manager) prefer dividend payout. Finally, dividend taxation should have a stronger impact on payout policy in settings where dividends can be more flexible. The implications for public firms can, for example, be tested around large tax policy events such as the U.S. 2003 tax cut.

References

Allen, Franklin, Antonio E. Bernardo, and Ivo Welch (2000): A theory of dividends based on tax clienteles. *Journal of Finance*, 55, 2499–2536.

Alstadsæter, Annette and Martin Jacob (2012): Income Shifting in Sweden—An Empirical Evaluation of the 3:12 Rules. Report to the Expert Group for Public Economics, Ministry of Finance, Stockholm.

Alstadsæter, Annette and Martin Jacob (2013): The Effect of Awareness and Incentives on Tax Evasion. FAccT Center Working Paper No. 10/2013.

Auerbach, Alan J. (2003): Taxation and Corporate Financial Policy. In: Alan Auerbach and Martin Feldstein (eds.) *Handbook of Public Economics*, Volume 3 (Amsterdam: North-Holland, 2003).

Becker, Bo, Marcus Jacob, and Martin Jacob (2013): Payout taxes and the allocation of investment. *Journal of Financial Economics*, 107, 1–24.

Brav, Alon, John R. Graham, Campbell R. Harvey, and Roni Michaely (2005): Payout Policy in the 21st Century. *Journal of Financial Economics*, 77, 483–527.

Brav, Alon, John R. Graham, Campbell R. Harvey, and Roni Michaely (2008): The Effect of the May 2003 Dividend Tax Cut on Corporate Dividend Policy: Empirical and Survey Evidence. *National Tax Journal*, 61, 381–396.

Brown, Jeffrey, Nellie Liang, and Scott Weisbenner (2007): Executive Financial Incentives and Payout Policy: Firm Responses to the 2003 Dividend Tax Cut. *Journal of Finance*, 62, 1935–1965.

Chetty, Raj, John N. Friedman, Tore Olsen, and Luigi Pistaferri (2011): Adjustment Costs, Firm Responses, and Labor Supply Elasticities: Evidence from Danish Tax Records. *Quarterly Journal of Economics*, 126,749–804.

Chetty, Raj, Looney, Adam, and Kroft, Kory (2009): Salience and Taxation: Theory and Evidence. *American Economic Review*, 99, 1145–1177.

Chetty, Raj and Emmanuel Saez (2005): Dividend Taxes and Corporate Behavior: Evidence from the 2003 Dividend Tax Cut. *Quarterly Journal of Economics*, 120, 791–833.

Chetty, Raj and Emmanuel Saez (2010): Dividend and Corporate Taxation in an Agency Model of the Firm. *American Economic Journal: Economic Policy*, 2, 1–31.

Easterbrook, Frank H. (1984): Two Agency-Cost Explanations of Dividends, *American Economic Review*, 74, 650–659.

Elton, Edwin J., and Martin J. Gruber (1970): Marginal stockholder tax rates and the clientele effect. Review of Economics and Statistics, 52, 68–74.

Edgerton, Jesse (2013): Four Facts about Dividend Payouts and the 2003 Tax Cut. *International Tax and Public Finance*, 20, 769–784.

Feldstein, Martin S. (1970): Corporate taxation and dividend behaviour. *Review of Economic Studies*, 37, 57–72.

Finkelstein, Amy (2009): E-ZTAX: Tax Salience and Tax Rates. *Quarterly Journal of Economics*, 124, 969–1010.

Grinstein, Yaniv and Roni Michaely (2005): Institutional Holdings and Payout Policy. *Journal of Finance*, 60, 1389–1426.

Grullon, Gustavo and Roni Michaely (2002): Dividends, Share Repurchases, and the Substitution Hypothesis, *Journal of Finance*, 57, 1649–1684

Harberger, Arnold C. (1962): The incidence of the corporation income tax. *Journal of Political Economy*, 70, 215–240.

Harberger, Arnold C. (1966): Efficiency effects of taxes on income from capital. In: Krzyzaniak, M. (Ed.), Effects of corporation income tax. Wayne State University Press, Detroit.

Jacob, Marcus and Martin Jacob (2013): Taxation, Dividends, and Share Repurchases: Taking Evidence Global. *Journal of Financial and Quantitative Analysis*, 48, 1241–1269.

Jensen, Michael C. (1986): Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review*, 76, 323–329.

Jones, Damon (2012): Inertia and Overwithholding: Explaining the Prevalence of Income Tax Refunds. *American Economic Journal: Economic Policy*, 4, 158–185.

Julio, Brandon, and David L. Ikenberry (2004): Reappearing Dividends. *Journal of Applied Corporate Finance*, 16, 89–100.

Kleven, Henrik J. and Mazhar Waseem (2013): Using Notches to Uncover Optimization Frictions and Structural Elasticities: Theory and Evidence from Pakistan. *Quarterly Journal of Economics*, 128, 669–723.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny (2000): Agency Problems and Dividend Policies around the World, *Journal of Finance*, 55, 1–33.

Michaely, Roni and Michael R. Roberts (2012): Corporate Dividend Policies: Lessons from Private Firms. *Review of Financial Studies*, 25, 711–746.

Miller, Merton H. and Franco Modigliani (1961): Dividend Policy, Growth, and the Valuation of Shares. *Journal of Business*, 34, 411–433.

Poterba, James M. (2004): Taxation and Corporate Payout Policy. *American Economic Review*, 94, 171–175.

Poterba, James M., and Lawrence H. Summers (1985): The economic effects of dividend taxation. In Altman, E., and M. Subrahmanyam (Eds.), Recent Advances in Corporate Finance. Dow Jones-Irwin Publishing: Homewood, IL, pp. 227–284.

Saez, Emmanuel (2010): Do Taxpayers Bunch at Kink Points? *American Economic Journal: Economic Policy*, 2, 180–212.

Yagan, Danny (2013): Capital Tax Reform and the Real Economy: The Effects of the 2003 Dividend Tax Cut. Working Paper.

Figure 1: Marginal Income Tax Rate on Labor Income

This figure presents the marginal income tax rate on labor income for years 2002 and 2008.

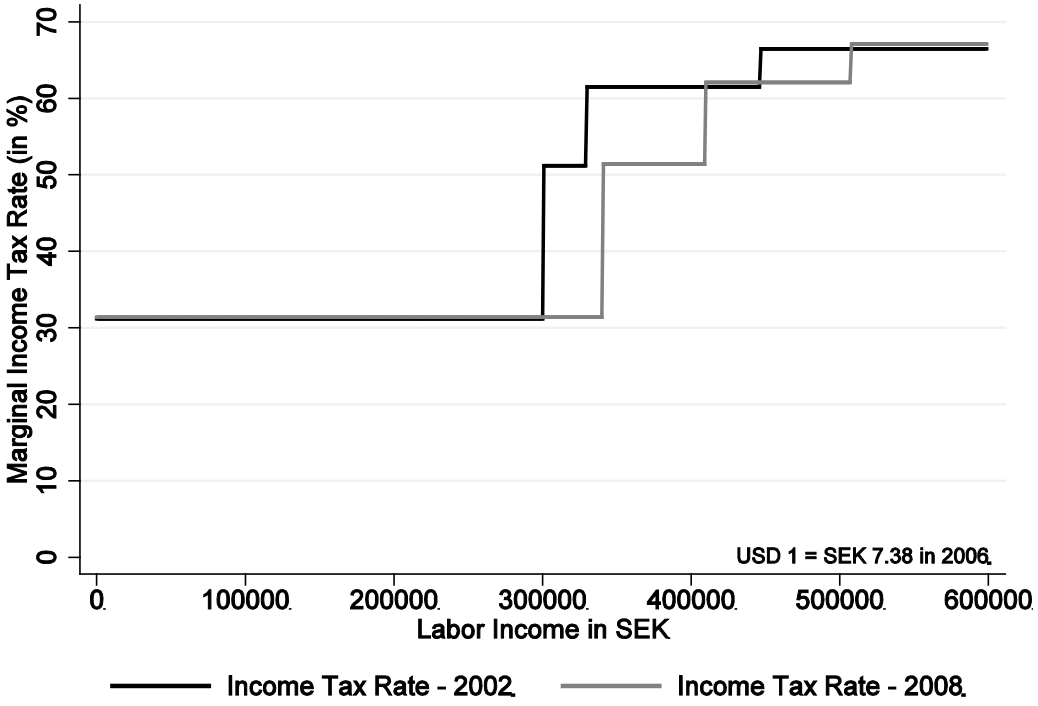


Figure 2: Average Dividend Allowance, Breakdown by Number of Owners

This figure presents average accumulated dividend allowance per owner in SEK for each number of owner bin for the pre-reform and post-reform period. USD 1 = SEK 7.38 in 2006

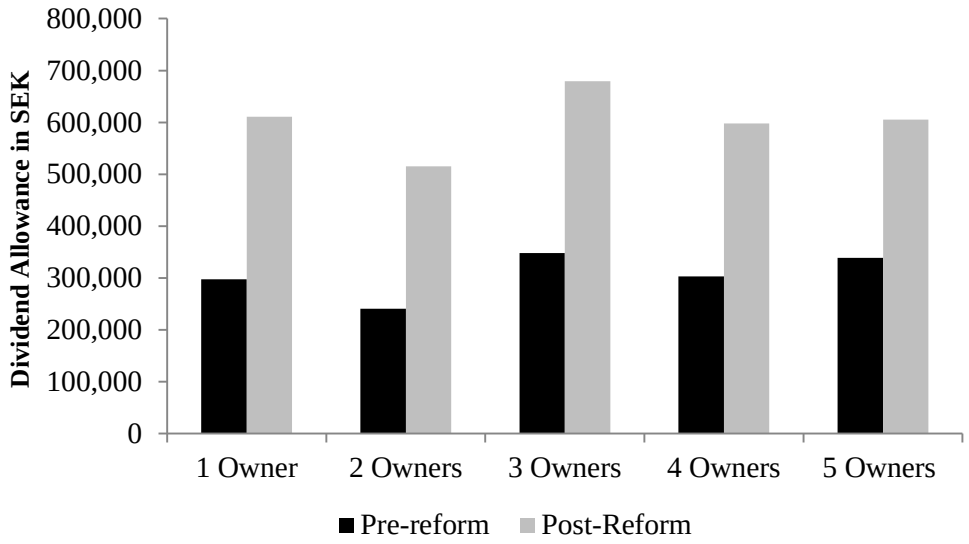
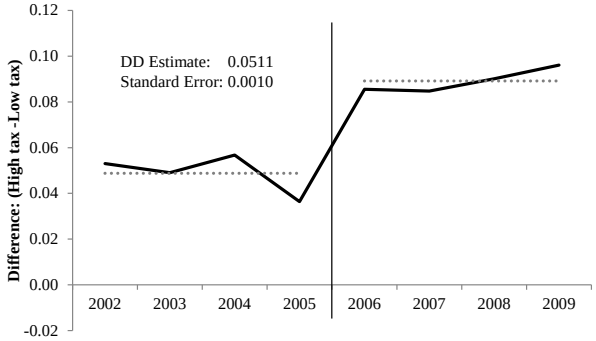


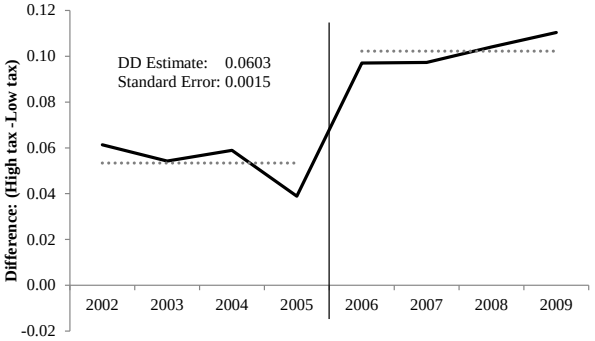
Figure 3: Dividend Compensation of High-Tax versus Low-Tax Owners

This figure presents the difference in dividend compensation between owners subject to a marginal income tax above 51% and owners subject to an income on wages that is below the dividend tax rate. The vertical line indicates the 2006 tax reform. The difference in dotted lines is the triple difference. We report robust standard errors clustered at the closely held corporation (CHC)-owner level in parentheses

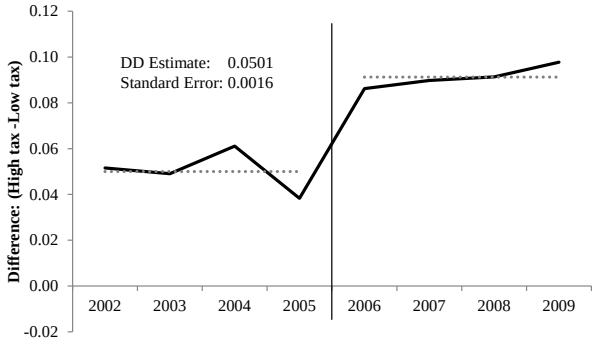
Panel A: All CHCs



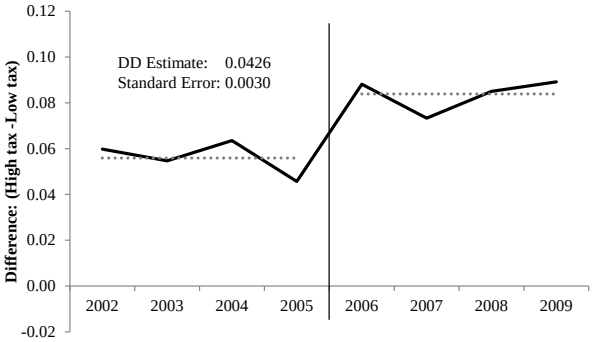
Panel B: CHCs with 1 Owner



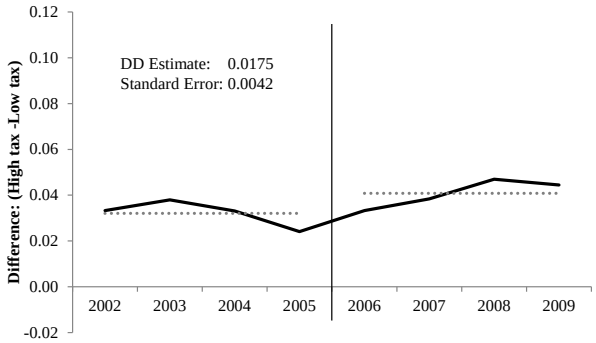
Panel C: CHCs with 2 Owners



Panel D: CHCs with 3 Owners



Panel E: CHCs with 4 Owners



Panel F: CHCs with 5 Owners

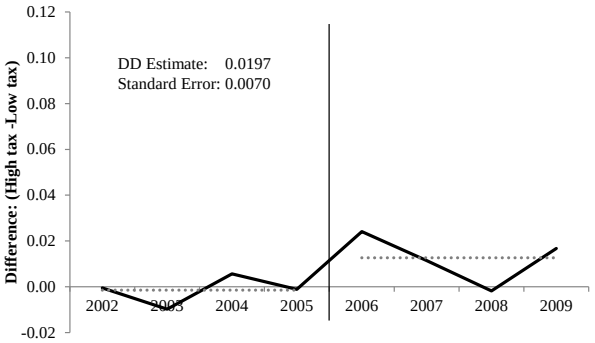


Figure 4: Graphical Illustration of Triple Difference

This figure illustrates the difference in dividend compensation between highly-taxed and low taxed owners for firms with many owners relative to wholly owned firms. The vertical line indicates the 2006 tax reform. The difference in dotted lines is the triple difference. We report robust standard errors clustered at the owner level in parentheses.

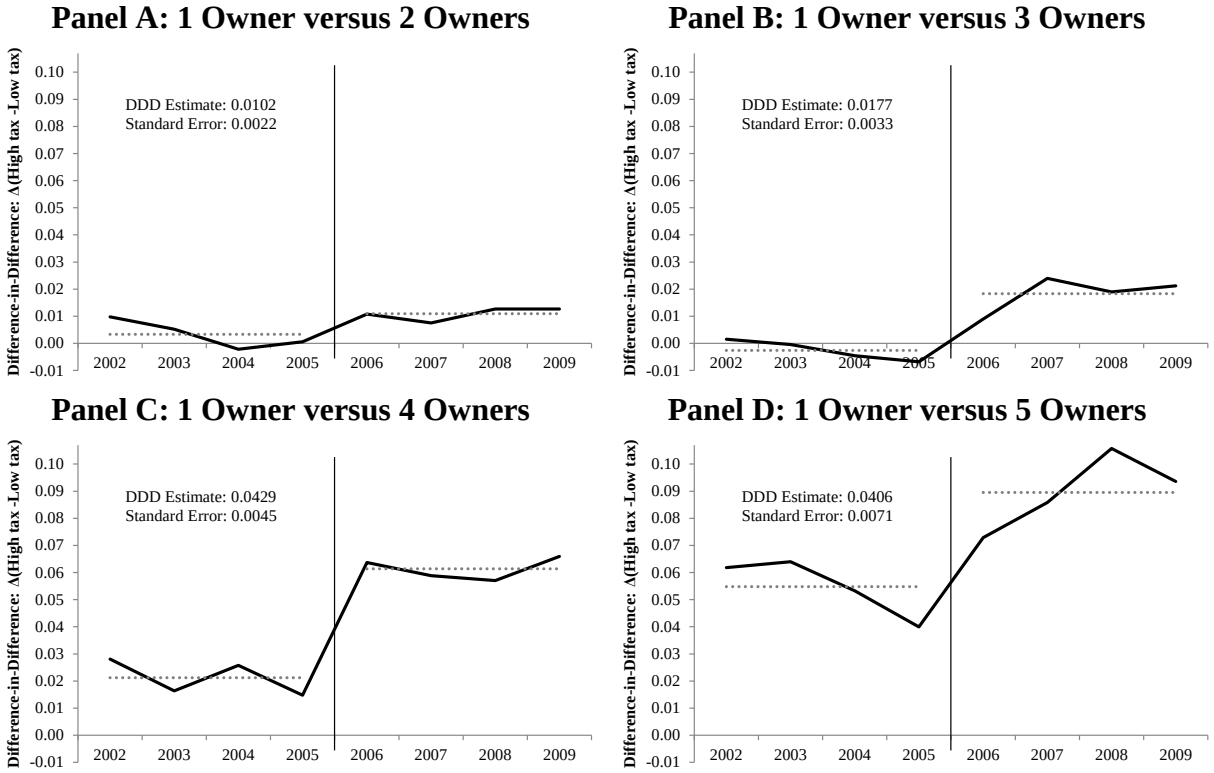


Figure 5: Effect of Ownership on Tax Sensitivity of Dividends: Firm-Level Analysis

This figure presents changes in the dividend-to-asset ratio around the 2006 tax reform estimated on the firm-level. For each bin of ownership, we estimate the difference between post-reform and pre-reform for firms where the average marginal tax rate on wages is above the dividend tax rate. The estimated model is defined as in equation (2). The figure plots the increase in the dividend-to-asset ratio relative to the unconditional pre-reform average. The gray lines indicate upper and lower 95% confidence intervals of the point estimates.

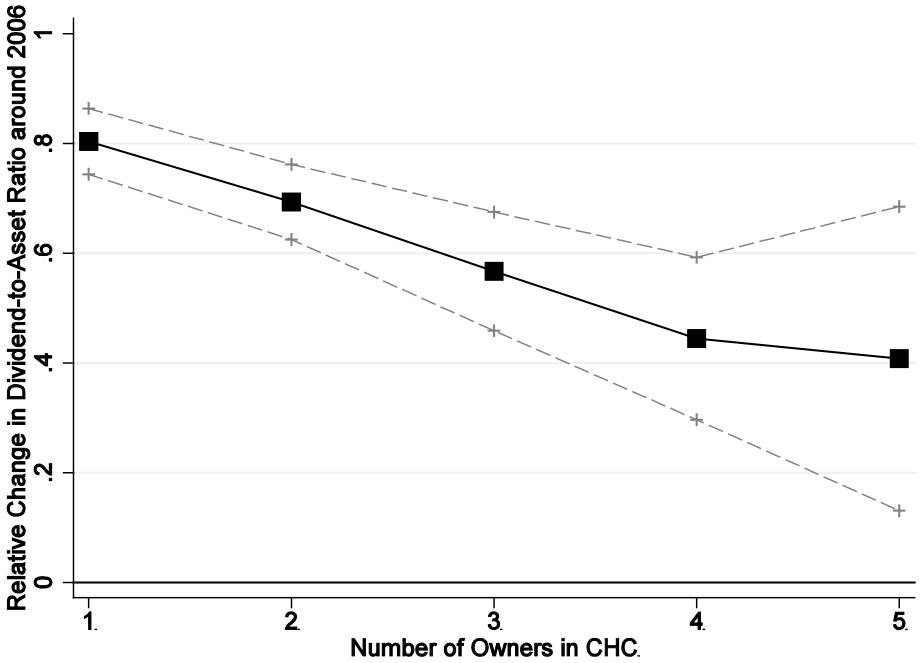
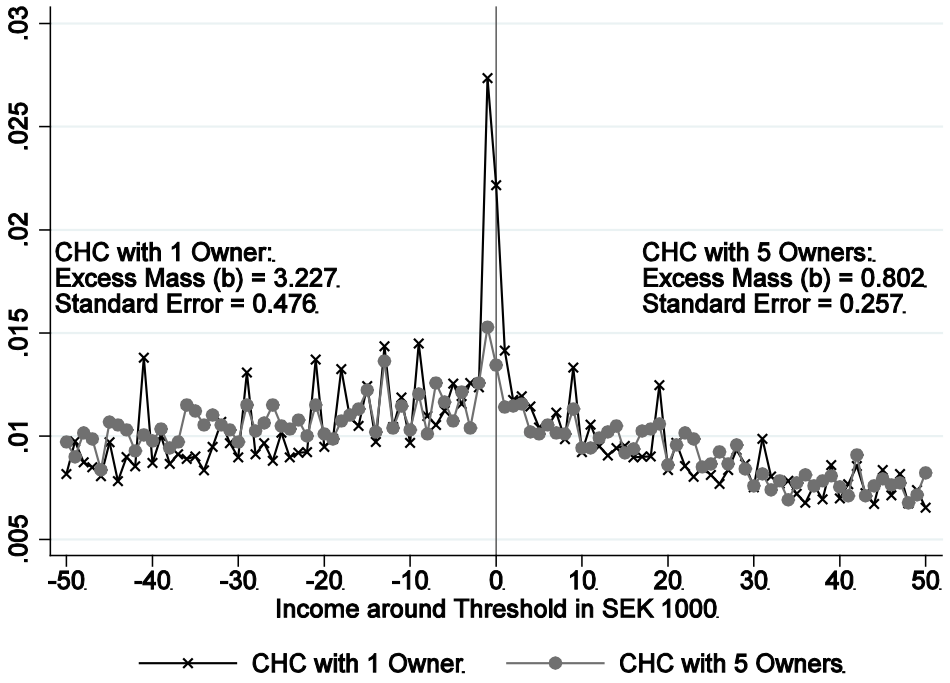


Figure 6: Tax Sensitivity of Wages and the Number of Owners, 2000-2009

Panel A plots the empirical distribution of labor income around the first state tax threshold. Each point represents number of observations in an SEK 1,000 bin. Black crosses indicate the distribution for CHCs with one owner. The gray dots represent firms with five owners. Excess mass estimates compare the actual distribution at the kink to a 7th-degree polynomial fitted to the empirical distribution excluding bins within the range of [-5,000;+5,000] around the threshold. Panel B of this figure presents excess mass estimates and the upper and lower 95% confidence bounds for firms with 1, 2, 3, 4, and 5 owners, respectively.

Panel A: Wholly Owned Firms versus Firms with Five Owners



Panel B: Excess Mass Estimates, Breakdown by Number of Owners

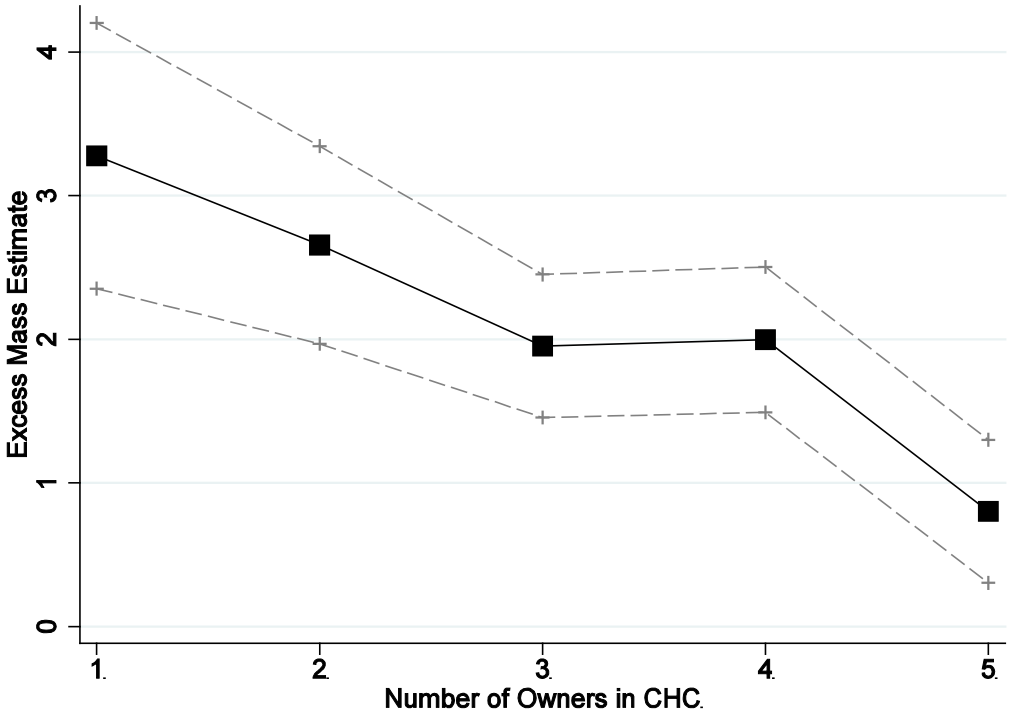


Figure 7: Change in Tax Sensitivity around 2006 Tax Reform, Breakdown by Ownership Structure

This figure plots *Post×High Tax* coefficient estimates from fully-interacted model from Table 4 and Table 6 with the corresponding 95% confidence intervals. The *Post×High Tax* coefficients are estimated for each number of owners bin ranging from one owner to five owners using equation (1).

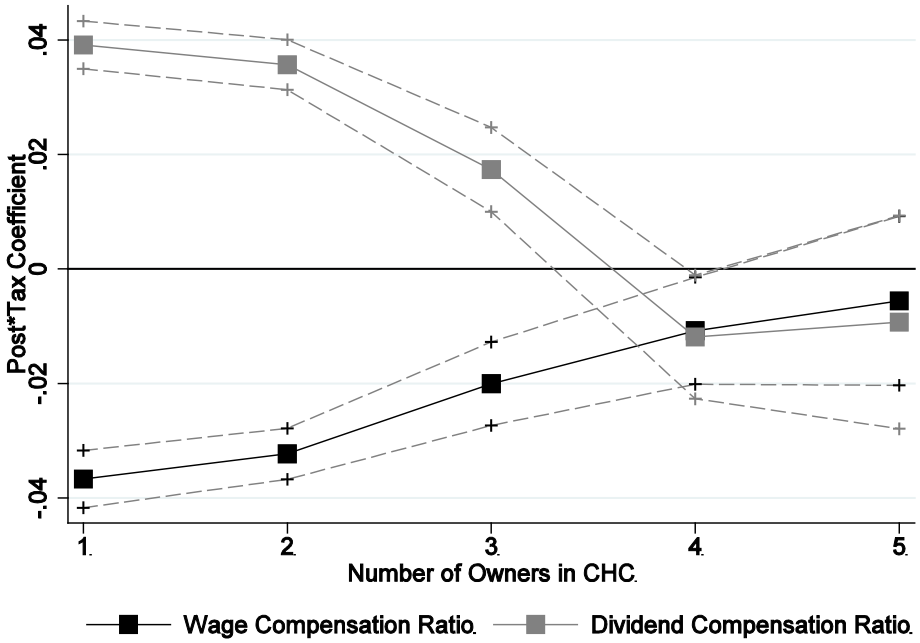


Figure 8: Effect of Ownership of Dividend Payout: Homogeneous Tax Preferences for Dividends

This figure presents changes in the dividend-to-asset ratio around the 2006 tax reform estimated on the firm-level. For each bin of ownership, we estimate the difference between post-reform and pre-reform for firms where marginal tax rate on wages is above the dividend tax rate for all owners. The estimated model is defined as in equation (4). The figure plots the increase in the dividend-to-asset ratio relative to the unconditional pre-reform average. The gray lines indicate upper and lower 95% confidence intervals of the point estimates.

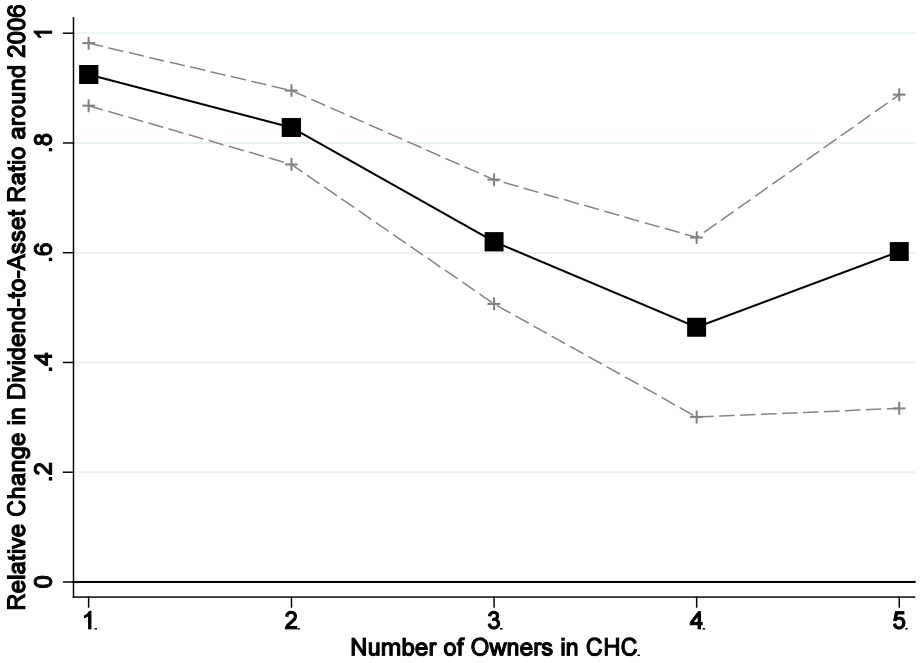


Figure 9: Effect of Ownership of Dividend Payout: Tax Preferences of Dominating Shareholder

This figure presents changes in the dividend-to-asset ratio around the 2006 tax reform estimated on the firm-level. For each bin of ownership, we estimate the difference between post-reform and pre-reform for firms where marginal tax rate on wages of the dominating shareholder (over 50% ownership) is above the dividend tax rate. The estimated model is defined as in equation (4). The figure plots the increase in the dividend-to-asset ratio relative to the unconditional pre-reform average. The gray lines indicate upper and lower 95% confidence intervals of the point estimates.

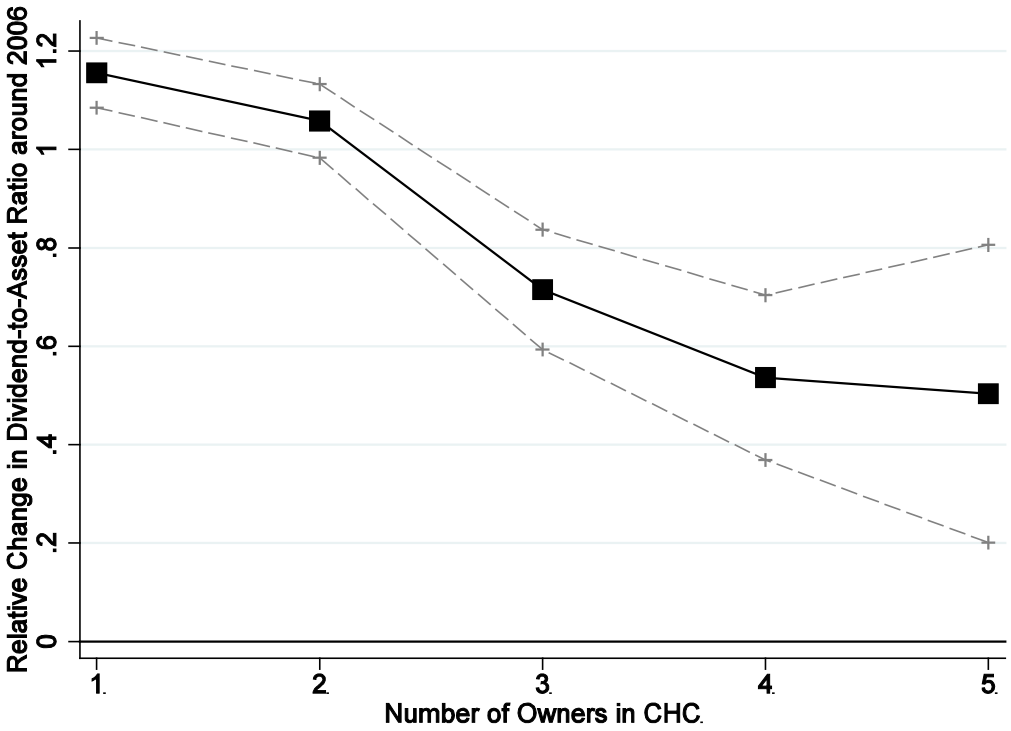


Table 1: Marginal Income Tax Rates, 2000-2009

	Years	Corporate Tax Rate	Dividends within Allowance		Dividends above Allowance	
			Dividend Tax Rate	Combined Tax Rate	Dividend Tax Rate	Combined Tax Rate
Pre-reform	2000–2005	28.0	30.0	49.6	30.4–56.6	49.9–68.8
Post-reform	2006–2009	28.0*	20.0	42.4+	31.5–56.6	49.5–68.8

* In 2009, the corporate tax rate has been reduced to 26.3%

+ Due to the corporate tax rate reduction, the combined tax rate amounts to 41.0% in 2009.

Table 2: Summary Statistics

This table presents descriptive statistics of our main variables over the 2000-2009 period. Panel A presents summary statistics for our payout variables. Panel B (Panel C) presents statistics on firm-level (shareholder-level) variables. *Dividend CHC* (*Wages CHC*) is the dividend (wage) paid by the closely held corporation(s) (CHC) to the owner–manager in Swedish krona (SEK) (USD 1 = SEK 7.38 in 2006). *%Div Compensation (%Wage Compensation)* is the percentage of total compensation, defined as the sum of wages and dividends, paid as dividends dividends (dividends). If total payout is 0, we set *%Div Compensation (%Wage Compensation)* to 0. *Number Owners* is the number of active owner–managers in a firm. *Investments* is the percentage change in fixed assets from *t*-1 to *t*. *Cash_Assets* is defined as cash and short-term investments over total assets. *RE_Assets* are SEK retained earnings amount in year *t* scaled by prior year total assets. *Profit_Assets* is taxable operating income over total assets. *Leverage* is defined as total book debt over total assets. We use the natural logarithm of total assets as the measure of size (*Ln(Total Assets)*). *Num Employees* is the number of employees in the firm. *High Tax* is a dummy variable equal to 1 if the shareholder is subject to the first level of the state tax. If High Tax is one, the wage tax is higher than the dividend tax. *Top Tax* is a dummy variable if the individual is subject to the top marginal income tax on wage income. *Relevance Non-CHC* is the percentage of total income unrelated to CHC(s) in year *t*-1. *Number of Firms* is the number of firms in which the owner–manager actively participates. *Age* is shareholder age in years. *Married* is a variable indicating whether the individual is married. *High Education* is a dummy variable equal to 1 if the shareholder has a university degree. Owner-level statistics are based on 1,635,822 observations. Firm-level statistics are based on 669,705 observations.

Variable	Mean	Standard Deviation	25th percentile	Median	75th percentile
Panel A: Payout Variables (N=1,635,822)					
Labor CHC	197,101	199,596	0	195,000	313,000
Dividend CHC	67,940	692,752	0	0	30,000
% Wage Compensation	0.6229	0.4445	0.0000	0.8992	1.0000
% Div Compensation	0.1581	0.3095	0.0000	0.0000	0.1429
Panel B: Firm-Level Variables (N=669,705)					
Number Owners	1.6251	0.8592	1.0000	1.0000	2.0000
Investment	0.8763	2.5666	0.0000	0.1677	0.6360
Cash_Assets	0.2734	2.3686	0.0334	0.1640	0.3844
RE_Assets	0.2354	1.0542	0.0651	0.2107	0.4104
Profit_Assets	0.0279	0.9594	0.0013	0.0477	0.1370
Leverage	0.6730	3.3334	0.3324	0.5530	0.8020
Ln(Total Assets)	14.5449	1.2733	13.6457	14.4584	15.3423
Num Employees	5.9953	19.9523	1.0000	3.0000	6.0000
Panel C: Shareholder-Level Variables (N=1,635,822)					
High Tax	0.2949	0.4560	0.0000	0.0000	1.0000
Top Tax	0.1805	0.3846	0.0000	0.0000	1.0000
Relevance Non-CHC	0.2934	0.4201	0.0034	0.1034	0.4836
Number of Firms	1.1752	0.5039	1.0000	1.0000	1.0000
Age	49.6902	11.6230	41.0000	50.0000	58.0000
Married	0.6358	0.4812	0.0000	1.0000	1.0000
High Education	0.1767	0.3814	0.0000	0.0000	0.0000

Table 3: Effect of Ownership on Tax Sensitivity of Dividends

This table presents regression results on payout policies of closely held corporations over the period 2001-2009. We use *%Div Compensation* as dependent variable. *%Div Compensation* is the percentage of total compensation, defined as the sum of wages and dividends, paid as dividends. If total payout is 0, we set *%Div Compensation* to 0. This table reports the interaction of *Post×High Tax*, which we split up by the number of owners. We include control variables, additional interaction terms, owner–manager-fixed effects, and year-fixed effects in all models. The *Fully-Interacted Model* additionally interacts control variables with the *Post* dummy. We report robust standard errors clustered at the CHC-owner level in parentheses. * denote significance at the 1% level.

	Baseline Model		***Fully-Interacted Model***	
	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner
Post × *High Tax* × *Owners=1*	0.0600*		0.0392*	
	(0.0021)		(0.0021)	
Post × *High Tax* × *Owners=2*	0.0508*	[3.05]	0.0357*	[1.16]
	(0.0022)		(0.0022)	
Post × *High Tax* × *Owners=3*	0.0287*	[7.29]	0.0174*	[5.12]
	(0.0038)		(0.0038)	
Post × *High Tax* × *Owners=4*	-0.0040	[10.24]	-0.0119	[8.69]
	(0.0055)		(0.0055)	
Post × *High Tax* × *Owners=5*	-0.0010	[6.06]	-0.0093	[4.99]
	(0.0095)		(0.0095)	
Controls	Yes		Yes	
Controls × Reform Interactions	No		Yes	
Year-Fixed Effects	Yes		Yes	
Owner-Fixed Effects	Yes		Yes	
Observations	1,365,882		1,365,882	
R-squared	0.5741		0.5756	

Table 4: Effect of Ownership on Tax Sensitivity of Dividends—Matching Results

This table presents regression results on payout policies of closely held corporations over the period 2001-2009. We first separately match individuals in firms with one, two, three, or four owners to owners in firms with five owners based on total assets, number of employees, and cash holdings (over the 2003–2005 period). We use a one-to-one matching with replacement. In our main regression, we use *%Div Compensation* as dependent variable. *%Div Compensation* is the percentage of total compensation, defined as the sum of wages and dividends, paid as dividends. If total payout is 0, we set *%Div Compensation* to 0. This table reports the interaction of *Post×High Tax*, which we split up by the number of owners. We include control variables, additional interaction terms, owner–manager-fixed effects, and year-fixed effects in all models. We report robust standard errors clustered at the CHC-owner level in parentheses. * denote significance at the 1% level.

	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner
Post × *High Tax* × *Owners=1*	0.0549*	
	(0.0098)	
Post × *High Tax* × *Owners=2*	0.0378*	[1.23]
	(0.0100)	
Post × *High Tax* × *Owners=3*	0.0204	[2.22]
	(0.0122)	
Post × *High Tax* × *Owners=4*	0.0175	[2.21]
	(0.0138)	
Post × *High Tax* × *Owners=5*	-0.0006	[3.53]
	(0.0124)	
Controls	Yes	
Year-Fixed Effects	Yes	
Owner-Fixed Effects	Yes	
Observations	91,546	
R-squared	0.5673	

Table 5: Effect of Ownership on Tax Sensitivity—Alternative Dependent Variable

This table presents regression results on payout policies of closely held corporations. We use a dummy variable *Dividend Payer* which is equal to 1 if the owner receives a dividend from his CHC as dependent variable. We also use the percentage of dividends relative to total income. This table reports the interaction of *Post×High Tax*, which we split up by the number of owners. We include control variables, additional interaction terms, owner–manager-fixed effects, and year-fixed effects in all models. We report robust standard errors clustered at the CHC-owner level in parentheses. * denote significance at the 1% level.

	Dividend Payer		***Div / Total Income***	
	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner
Post × High Tax × Owners=1	0.0677*		0.0317*	
	(0.0038)		(0.0011)	
Post × High Tax × Owners=2	0.0590*	[1.69]	0.0285*	[2.15]
	(0.0036)		(0.0010)	
Post × High Tax × Owners=3	0.0119	[7.81]	0.0186*	[6.24]
	(0.0061)		(0.0018)	
Post × High Tax × Owners=4	-0.0145	[9.02]	0.0101*	[8.47]
	(0.0083)		(0.0023)	
Post × High Tax × Owners=5	-0.0287	[7.06]	0.0065	[6.44]
	(0.0131)		(0.0037)	
Controls	Yes		Yes	
Year-Fixed Effects	Yes		Yes	
Owner-Fixed Effects	Yes		Yes	
Observations	1,365,882		1,364,526	
R-squared	0.5497		0.5835	

Table 6: Effect of Ownership on Tax Sensitivity of Wages

This table presents regression results on payout policies of closely held corporations over the period 2001-2009. We use *%Wage Compensation* as dependent variable. *%Wage Compensation* is the percentage of total compensation, defined as the sum of wages and dividends, paid as wages. If total payout is 0, we set *%Wage* to 0. This table reports the interaction of *Post×High Tax*, which we split up by the number of owners. We include control variables, additional interaction terms, owner–manager-fixed effects, and year-fixed effects in all models. The *Fully-Interacted Model* additionally interacts control variables with the *Post* dummy. We report robust standard errors clustered at the CHC-owner level in parentheses. * denote significance at the 1% level.

	Baseline Model		***Fully-Interacted Model***	
	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner
Post × *High Tax* × *Owners=1*	-0.0447*		-0.0367*	
	(0.0025)		(0.0026)	
Post × *High Tax* × *Owners=2*	-0.0391*	[1.68]	-0.0323*	[1.34]
	(0.0023)		(0.0023)	
Post × *High Tax* × *Owners=3*	-0.0291*	[3.47]	-0.0201*	[3.74]
	(0.0035)		(0.0037)	
Post × *High Tax* × *Owners=4*	-0.0221*	[4.16]	-0.0108	[4.83]
	(0.0048)		(0.0048)	
Post × *High Tax* × *Owners=5*	-0.0204*	[3.02]	-0.0056	[3.93]
	(0.0076)		(0.0075)	
Controls	Yes		Yes	
Controls × Reform Interactions	No		Yes	
Year-Fixed Effects	Yes		Yes	
Owner-Fixed Effects	Yes		Yes	
Observations	1,365,882		1,365,882	
R-squared	0.7810		0.7820	

Table 7: Effect of Ownership on Tax Sensitivity—Restriction to Wage Earners

This table presents regression results on payout policies of closely held corporations but restricts the sample to owners with a salary from the CHC. We use *%Div Compensation* (*%Wage Compensation*) as dependent variable. This table reports the interaction of *Post×High Tax*, which we split up by the number of owners. We include control variables, additional interaction terms, owner–manager-fixed effects, and year-fixed effects in all models. We report robust standard errors clustered at the CHC-owner level in parentheses. * denote significance at the 1% level.

	% Div Compensation		***% Wage Compensation***	
	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner
Post × High Tax × Owners=1	0.0600*		-0.0425*	
	(0.0021)		(0.0027)	
Post × High Tax × Owners=2	0.525*	[2.62]	-0.0384*	[1.14]
	(0.0020)		(0.0025)	
Post × High Tax × Owners=3	0.335*	[6.49]	-0.0230*	[3.90]
	(0.0035)		(0.0042)	
Post × High Tax × Owners=4	0.0072	[9.55]	-0.0093	[5.11]
	(0.0051)		(0.0059)	
Post × High Tax × Owners=5	0.0031	[6.08]	0.0031	[4.31]
	(0.0091)		(0.0103)	
Controls	Yes		Yes	
Year-Fixed Effects	Yes		Yes	
Owner-Fixed Effects	Yes		Yes	
Observations	1,087,918		1,087,918	
R-squared	0.5497		0.6382	

Table 8: Dividend Tax Sensitivity and Separation of Ownership and Control

This Table presents regression on payout policies of closely held corporations over the period 2001-2009 estimated at the firm level. We use the ratio of dividend payout to prior year total assets (*Dividend-to-Asset Ratio*) scaled by prior year total assets as dependent variable. Independent variables comprise *High Tax*, which is a dummy variable equal to 1 if the weighted average income tax rate on wages of all owners exceeds 50%. *Post* is a dummy variable equal to one for years 2006 and later. *Separation* is a dummy variable equal to one if ownership and management is separated. We set the dummy to one if an employee in the firm, who is not an owner, has a higher wage than any owner receives in dividends and wages. Other firm controls include the log of total assets, the ratio of sales to prior year assets, cash holdings relative to prior year assets, retained earnings relative to prior year assets, and the debt to assets ratio. We include control variables, firm and year fixed effects. We report robust standard errors clustered at the firm level in parentheses. * denote significance at the 1% level.

	Full Sample	**Wholly Owned Firms**
	(1)	(2)
High Tax × *Reform*	0.0090*	0.0083*
	(0.0005)	(0.0007)
Post* × *High Tax* × *Separation	**-0.0062***	**-0.0048***
	(0.0006)	**(0.0008)**
Reform × *Separation*	-0.0233*	-0.0236*
	(0.0004)	(0.0006)
Separation × *High Tax*	-0.0121*	-0.0133*
	(0.0004)	(0.0006)
Controls	Yes	Yes
Year-Fixed Effects	Yes	Yes
Firm-Fixed Effects	Yes	Yes
Observations	669,705	372,808
R-squared	0.5877	0.6090

Table 9: Tax Sensitivity and Tax Clienteles

This figure plots response coefficients to the 2006 tax reform for different tax preference groups. We sort firms in to four groups according to the percentage of owners with tax preference for dividends over wages. Other firm controls include the log of total assets, the ratio of sales to prior year assets, cash holdings relative to prior year assets, retained earnings relative to prior year assets, and the debt to assets ratio. We include control variables, firm and year fixed effects. We report robust standard errors clustered at the firm level in parentheses. * denote significance at the 1% level. We present the t-stat for the difference between coefficient estimates in brackets.

	Dividend-to-Asset Ratio		***Wage-to-Asset Ratio***	
Tax Reform Response Coefficient for:	Coefficient Estimate (s.e.)	[t-stat] of Difference to Group *n* to *n-1*	Coefficient Estimate (s.e.)	[t-stat] of Difference to Group *n* to *n-1*
Group 1: Less than 40% of owners with tax preference for dividends	0.0008 (0.0026)		-0.0072 (0.0076)	
Group 2: 40%–60% of owners with ta preference for dividends	0.0072 (0.0029)	[2.25]	-0.0127 (0.0078)	[0.85]
Group 3: 60%–80% of owners with ta preference for dividends	0.0110* (0.0031)	[1.20]	-0.0158* (0.0079)	[0.47]
Group 4: More than 80% of owners with tax preference for dividends	0.0237* (0.0036)	[3.35]	-0.0379* (0.0080)	[3.27]
Controls	Yes		Yes	
Year-Fixed Effects	Yes		Yes	
Firm-Fixed Effects	Yes		Yes	
Observations	30,146		30,146	
R-squared	0.6400		0.8973	

Table 10: Payout Policies of Closely Held Corporations

This table presents regression results on payout policies of closely held corporations over the period 2001-2009. *%Wage Compensation (%Div Compensation*) is the percentage of total compensation, defined as the sum of wages and dividends, paid as wages (dividends). If total payout is 0, we set *%Wage (%Div*) to 0. Independent variables are described in Table 2. We include owner–manager-fixed effects and year-fixed effects in all models. We report robust standard errors clustered at the CHC-owner level in parentheses. * denote significance at the 1% level.

	%Div Compensation	***%Wage Compensation***
Firm-Level Variables		
Cash	0.0208*	-0.0008
	(0.0015)	(0.0016)
Profit	0.0029*	0.0085*
	(0.0006)	(0.0007)
Ln(Total Assets)	0.0194*	0.0087*
	(0.0006)	(0.0006)
Leverage	-0.0277*	0.0304*
	(0.0009)	(0.0012)
Retained Earnings	0.0645*	0.0244*
	(0.0018)	(0.0025)
Investment	0.0001	0.0009*
	(0.0001)	(0.0001)
Num Employees	-0.0030*	0.0113*
	(0.0002)	(0.0002)
Owners	0.0198*	-0.0108*
	(0.0010)	(0.0012)
Shareholder-Level Variables		
High Tax$_{t-1}$	**0.0193***	**-0.0155***
	(0.0019)	**(0.0021)**
High Tax$_{t-1}$× Owners	**-0.0049***	**0.0055***
	(0.0009)	**(0.0009)**
Top Tax$_{t-1}$	0.0313*	-0.0391*
	(0.0030)	(0.0033)
Top Tax$_{t-1}$× Owners	-0.0017	0.0050*
	(0.0014)	(0.0014)
Relevance Non-CHC	0.0343*	-0.1455*
	(0.0013)	(0.0017)
Age	-0.0034*	-0.2060*
	(0.0006)	(0.0008)
Married	-0.0038	0.0063*
	(0.0018)	(0.0021)
High Education	0.0068	0.0253*
	(0.0071)	(0.0064)
Number Firms	0.0118*	0.0614*
	(0.0015)	(0.0018)
Year-Fixed Effects	Yes	Yes
Owner-Fixed Effects	Yes	Yes
Observations	1,365,882	1,365,882
R-squared	0.5743	0.7805

Online Appendix

Table A.I: Effect of Ownership on Tax Sensitivity—Univariate Results

This table presents univariate statistics of *% Div Compensation* for different ownership structures. We sort firm according to the number of active shareholders ranging from one to five owners. We additionally split the sample into owners subject to the state tax (*State Tax: Yes*) and to owners subject to municipality tax only (*State Tax: No*). Difference estimates are based on linear regressions. Robust standard errors are reported in parentheses. In the last column, we report the difference in the difference between high and low taxed owners of firms with one owner and firms with five owners. Panel A uses the full sample. Panel B (Panel C) presents results for years 2001–2005 (2006–2009). In Panel D, we present the difference from after to before the reform. * denote significance at the 1% level.

Panel A: Full Sample						
	Number of Owners					
Wage Tax > Div Tax	1	2	3	4	5	Difference 5-1
No	0.1000	0.1166	0.1495	0.1888	0.2266	
Yes	0.1797	0.1885	0.2165	0.227	0.2356	
Difference	**0.0797***	**0.0719***	**0.0670***	**0.0382***	**0.0090**	**0.0707***
	(0.0009)	**(0.0010)**	**(0.0018)**	**(0.0025)**	**(0.0041)**	**0.0042**
Panel B: Before the Reform						
	Number of Owners					
Wage Tax > Div Tax	1	2	3	4	5	Difference 5-1
No	0.0736	0.0935	0.1308	0.1672	0.2064	
Yes	0.1172	0.1358	0.173	0.1912	0.2002	
Difference	**0.0436***	**0.0423***	**0.0422***	**0.0240***	**-0.0062**	**0.0498***
	(0.0010)	**(0.0011)**	**(0.0020)**	**(0.0028)**	**(0.0045)**	**0.0046**
Panel C: After the Reform						
	Number of Owners					
Wage Tax > Div Tax	1	2	3	4	5	Difference 5-1
No	0.1369	0.1551	0.1839	0.2330	0.2697	
Yes	0.2408	0.2475	0.2687	0.2745	0.2832	
Difference	**0.1039***	**0.0924***	**0.0848***	**0.0415***	**0.0135**	**0.0904***
	(0.0013)	**(0.0015)**	**(0.0027)**	**(0.0039)**	**(0.0065)**	**0.0066**
Panel D: Difference Post-Reform – Pre-Reform						
	Number of Owners					
	1	2	3	4	5	Difference 5-1
DD Estimate	**0.0603***	**0.0501***	**0.0426***	**0.0175***	**0.0197***	**0.0406***
	(0.0015)	**(0.0016)**	**(0.0030)**	**(0.0042)**	**(0.0070)**	**0.0071**

Table A.II: Effect of Ownership on Tax Sensitivity—Alternative Tax Measures

This table presents regression results on payout policies of closely held corporations over the period 2001-2009. We use *%Div Compensation* as dependent variable. In Column (1), we present the interaction of Top Tax, Post, and the respective Number of Owners dummy from the fully interacted model of Table 4. In Column (2), we rerun our main model and combine the dummy variables High Tax and Top Tax. This table reports the interaction of *Post×Tax*, which we split up by the number of owners. We include control variables, additional interaction terms, owner–manager-fixed effects, and year-fixed effects in all models. The *Fully-Interacted Model* additionally interacts control variables with the *Post* dummy. We report robust standard errors clustered at the CHC-owner level in parentheses. * denote significance at the 1% level.

	Top Tax		**(High Tax + Top Tax)**	
	(1)		(2)	
	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner
Post × Tax × Owners=1	0.0438*		0.0405*	
	(0.0034)		(0.0021)	
Post ×Tax × Owners=2	0.0487*	[1.04]	0.0409*	[0.01]
	(0.0035)		(0.0021)	
Post × Tax × Owners=3	0.0258*	[2.87]	0.0224*	[4.50]
	(0.0055)		(0.0036)	
Post × Tax × Owners=4	0.0088	[4.30]	-0.0030	[7.94]
	(0.0075)		(0.0051)	
Post × Tax × Owners=5	0.0014	[3.17]	-0.0042	[4.87]
	(0.0130)		(0.0090)	
Controls	Yes		Yes	
Year-Fixed Effects	Yes		Yes	
Owner-Fixed Effects	Yes		Yes	
Observations	1,365,882		1,365,882	
R-squared	0.5788		0.5787	

Table A.V: Effect of Ownership on Tax Sensitivity of Dividends—Pairwise Matching

This table presents regression results on payout policies of closely held corporations over the period 2001-2009. We first separately match individuals in firms with one owner to owners in firms with two (Column (1)), three (Column (2)), four (Column (3)), and five owners (Column (4)) based on total assets, number of employees, and cash holdings over the 2003–2005 period. We use a one-to-one matching with replacement. In our main regression, we use *%Div Compensation* as dependent variable. *%Div Compensation* is the percentage of total compensation, defined as the sum of wages and dividends, paid as dividends. If total payout is 0, we set *%Div Compensation* to 0. This table reports the interaction of *Post×High Tax*, which we split up by the number of owners. We include control variables, additional interaction terms, owner–manager-fixed effects, and year-fixed effects in all models. We report robust standard errors clustered at the CHC-owner level in parentheses. * denote significance at the 1% level.

	(1)	(2)	(3)	(4)
Post × High Tax × Owners=1	0.0604*	0.0587*	0.0604*	0.0488*
	(0.0033)	(0.0048)	(0.0067)	(0.0103)
Post × High Tax × Owners=2	0.0500*			
	(0.0026)			
Post × High Tax × Owners=3		0.0308*		
		(0.0049)		
Post × High Tax × Owners=4			0.0137	
			(0.0073)	
Post × High Tax × Owners=5				0.0001
				(0.0128)
t-stat of Difference to CHC with 1 Owner	6.36	16.72	22.54	8.88
Controls	Yes	Yes	Yes	Yes
Year-Fixed Effects	Yes	Yes	Yes	Yes
Owner-Fixed Effects	Yes	Yes	Yes	Yes
Observations	511,351	198,762	118,096	44,934
R-squared	0.5087	0.5444	0.5567	0.5870

Table A.III: Effect of Ownership on Tax Sensitivity—Short-Term Responses

This table presents regression results on payout policies of closely held corporations over the period 2004-2007. We use *%Wage Compensation* and *%Div Compensation* as dependent variables. This table reports the interaction of *Post×High Tax*, which we split up by the number of owners. We include control variables, additional interaction terms, owner–manager-fixed effects, and year-fixed effects in all models. The *Fully-Interacted Model* additionally interacts control variables with the *Post* dummy. We report robust standard errors clustered at the CHC-owner level in parentheses. * denote significance at the 1% level.

	% Div Compensation		***% Wage Compensation***	
	Coefficient Estimate (s.e.)	Coefficient Estimate (s.e.)	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner
Post × High Tax × Owners=1	0.0599*	-0.0437*	-0.0437*	
	(0.0032)	(0.0035)	(0.0035)	
Post × High Tax × Owners=2	0.0451*	-0.0308*	-0.0308*	[3.30]
	(0.0032)	(0.0030)	(0.0030)	
Post × High Tax × Owners=3	0.0200*	-0.0270*	-0.0270*	[6.35]
	(0.0055)	(0.0049)	(0.0049)	
Post × High Tax × Owners=4	-0.0001	-0.0250*	-0.0250*	[6.76]
	(0.0083)	(0.0063)	(0.0063)	
Post × High Tax × Owners=5	-0.0113	-0.0117	-0.0117	[4.93]
	(0.0141)	(0.0102)	(0.0102)	
Controls	Yes		Yes	
Year-Fixed Effects	Yes		Yes	
Owner-Fixed Effects	Yes		Yes	
Observations	616,460		616,460	
R-squared	0.6778		0.8631	

Table A.IV: Effect of Ownership on Tax Sensitivity—Annual Breakdown

This table replicates the main result from Table 4 but reports the response coefficients by year. We include control variables, additional interaction terms, owner–manager-fixed effects, and year-fixed effects in all models. We report robust standard errors clustered at the CHC-owner level in parentheses. * denote significance at the 1% level.

High Tax ×	*Owners=1*	*Owners=2*	*Owners=3*	*Owners=4*	*Owners=5*
Year 2006	0.0413*	0.0342*	0.0147*	-0.0148	0.0006
	(0.0028)	(0.0029)	(0.0051)	(0.0075)	(0.0137)
Year 2007	0.0605*	0.0550*	0.0209*	0.0052	0.0008
	(0.0030)	(0.0031)	(0.0053)	(0.0081)	(0.0139)
Year 2008	0.0687*	0.0586*	0.0378*	0.0125	0.0024
	(0.0030)	(0.0032)	(0.0056)	(0.0081)	(0.014)
Year 2009	0.0730*	0.0595*	0.0463*	0.0042	0.0043
	(0.0032)	(0.0033)	(0.0059)	(0.0084)	(0.0144)
Controls	Yes				
Year-Fixed Effects	Yes				
Owner-Fixed Effects	Yes				
Observations	1,365,882				
R-squared	0.5759				