

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

Martin Jacob

Roni Michaely

Annette Alstadsæter*

This draft: October 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 Ambrus Kecskes, Shimon Kogan, Alessandro Previtero, Michael Roberts, and seminar participants at York University, Ivey Business School at the Western University, Temple University, the 2014 Multinational Finance Society in Prague, the Summer Finance Conference 2014 in Herzliya, and the 2014 MaTax Conference in Mannheim for helpful comments.

1. Introduction

Policymakers 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 (Miller and Modigliani 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 a role at all in managers’ payout decisions (see Auerbach 2003, Chetty and Saez 2005, Julio and Ikenberry 2004; Poterba 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 use the 2006 dividend tax cut in Sweden as exogenous policy shock, and unique data on corporations and owners to identify how the interaction of ownership structure and taxation affects payout policy. 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. In other words, 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 previously interpreted. The diverse ownership structure of many corporations blurs the identification of the causal effect of taxation on dividend payout, consistent with Chetty and Saez’s (2005) suggestion that “*principal-agent issues appear to play an important role in corporate responses to taxation*”.

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

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 more than 60% of all corporations are closely held firms; and our sample firms account for more than half of the taxable business 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 unlisted 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 and demographic characteristics with firm tax information and characteristics. Moreover, 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, which is 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, rather than the higher income tax rate—more than doubled. The tax reform increased the incentive for highly taxed shareholders to increase dividends vis-à-vis wages since dividends are taxed at a much lower tax rate than wages (51% or higher) in the post-reform era. The reform of the dividend allowance also increased the ability of owner-managers to take advantage of the differential taxation of wages and dividends in shaping their compensation policies.

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.

² Under Sweden's tax laws, a non-listed corporation is considered 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.

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.

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.

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, representing an increase of 35% relative to the pre-reform average dividend compensation ratio of 11.7%. This tax sensitivity gradually decreases as the number of owners increases. For example, for a firm with three owners, owner-managers with the same tax preference for dividends increased their dividend compensation ratio only by 2.2 percentage points—45% less than 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 tax effect on 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 (−3.6 percentage points) is similar to increase in dividend payout (+4.1 percentage points). This suggests that owner-managers in very closely held firms substitute wages with dividends. Firms with more diverse ownership experience a smaller change in the wage compensation ratio; even when tax preferences suggest they should increase dividends and reduce wages. Holding owners' tax preferences constant, the propensity to substitute wages with dividends decreases by 45% 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 ability to substitute dividends and wages may explain, at least in part, why the dividend tax elasticity declines with an increase in the number of owners in closely held firms.

Further analysis suggests that conflicts between managers and owners also can affect the tax sensitivity of dividends. We find that even in firms with one owner dividend compensation 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, López de Silanes, Shleifer, and Vishny 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 in firms with very large heterogeneity, the response to the reform is insignificant even if, on average, owners prefer dividend payout. In firms

with less heterogeneity, firms increase dividend payout if owners have tax preferences for dividends.

However, heterogeneity in tax preferences is not the entire explanation. To demonstrate this empirically, we examine how firms that differ in the number of owners but where all owners have homogeneous tax preferences for dividends respond to the tax reform. Our results show that wholly owned firms respond more strongly to the reform than firms with more dispersed ownership even when tax preferences for dividends are the same across all owners of a firm. 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 homogeneous 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 with 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 is of second order importance. It is diverse ownership that reduces the dividend tax elasticity. These findings are also important to policymakers 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 countries⁴, its findings go beyond this important sector and are relevant to

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).

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, 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. Section 5 investigates 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. According to the tax law, a shareholder is active if he contributes to the profit generation of the firm. Closely held corporations (CHC) play an important role in the Swedish economy. As of 2009, 64% of corporations are closely held 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 2006 tax 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%.⁵ Since the dividend tax burden of 49.6% can be below the 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 CHCs, the tax law defines an upper cap of dividends—the imputed dividend allowance—that can be taxed as dividends. The dividend allowance is calculated per firm based on wages to employees and on equity.⁶ Each owner receives a percentage of this allowance according to the ownership share. Any

⁵ $49.6\% = 28\% + (1 - 28\%) \times 30\%$.

⁶ For example, in 2004, the dividend allowance per firm was equal to 11.7% of nominal equity and 10% of wages paid to employees. The imputed interest on nominal equity results from the interest rate on government bonds plus

dividends in excess of the dividend allowance are taxed at the progressive income tax rate on wages and not at the dividend tax rate of 30%. If dividend payout is below the dividend allowance, the unused allowance can be carried forward indefinitely with interest.

In 2006, there were two main changes to dividend taxation of CHCs. First, the dividend tax rate for CHCs was cut from 30% to 20%.⁷ 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 the progressive income tax rate on wages and are thus subject to a combined tax burden of up to 68.8%. 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.⁸ As the reform substantially increased the amount of dividends which can be paid out at the 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. Figure 2 presents the average accumulated dividend allowances per owner before and after the reform. We split the sample into CHCs with one to five owners.⁹ The dividend allowance per owner substantially increases for all groups, and, most importantly, the average increase in dividend allowance and the average dividend allowance per owner are similar across groups.

In addition to dividends, 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

a risk premium of 7 percentage points (5 percentage points before 2004). The wage base of the dividend allowance excludes wages to owners.

⁷ 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.

⁸ The 2006 reform increased both the wage-based allowance by more than 100% and capital-based allowance by two percentage points, or about 17% (using the 2004 value). In addition, the 2006 reform introduced an optional method of using a fixed dividend allowance that amounts to SEK 64,950 in 2006 and that increased to SEK 120,000 in 2009. As shown in Alstadsæter and Jacob (2012), an active owner could experience a tenfold (or higher) increase in the imputed dividend allowance.

⁹ CHCs can have five (or more) active owners in case family members are active owners. Specifically, if five family members hold more than 50% of the voting rights and if at least one of the family members is active in the profit generation, then this is a CHC according to the tax law.

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.

percentage points from about 31% to 51%.¹¹ The comparison of the tax rates on dividends and wages shows that if an owner's marginal income tax rate is right of the kink, i.e. 51% or higher, he prefers dividends over wages (up to the dividend allowance). If an owner's marginal income tax rate is to the left of the kink, i.e. 31% or lower, he prefers wages over dividends and should not respond to the 2006 tax reform.

3. Data and Sample Overview

3.1 Data

We base our study on the Firm Register and Individual Database (FRIDA) provided by Statistics Sweden. The data contain 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. 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 (see, 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 that are not classified as closely held, as we do not have data on dividend payout or 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 unlisted, CHCs with at least one active owner. Our data contain the number of active owners and their ownership share. Some firms could have additional passive owners. However, on average, approximately 90% of shares in CHC s are held by active owners indicating that passive owners play a less important role. 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, a total of 86% of the shares are held by the active owners. We, therefore, use owner

¹¹ The kink is at SEK 290,100 (about USD 39,416) in 2002 and increases to SEK 380,200 (about USD 51,658) in 2009. The kink increases every year (see, Alstadsæter and Jacob 2012, Table AI.2).

and active owners as synonyms throughout the paper as the vast majority (over 80%) of firms are fully owned by active owners.

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 payout. Each active shareholder of a CHC is required to file a tax form in which he declares dividend and wage income from (each of) his CHC(s). We winsorize shareholder-level and firm-level variables at the 1% and 99% levels to control for outliers and require firms to exist for at least three consecutive years.¹² Our final sample contains 1,365,882 observations for owner-managers of CHCs 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 by the owner from CHC(s); *Wages CHC* is the amount of wages received (in SEK) by the owner from CHC(s); and *%Div Compensation (%Wage Compensation)* is the percentage of total compensation from the CHC(s) (*Dividend CHC* plus *Wages CHC*) paid out as dividends (wages). If total compensation is 0, we set *%Div Compensation* and *%Wage Compensation* to 0.

Panel A of Table 2 summarizes our payout variables, which are measured on the shareholder level. On average, owners receive a wage of SEK 197,101 and a dividend of SEK 67,940 from their CHC(s).¹³ On average, 62% of total compensation from the CHC(s) is in the form of wages, while 16% is in the form of dividends. These statistics include owners who did not receive any form of compensation from CHCs. Thus, the share of wages and dividends do not add to one.

As firm variables, we use measures for ownership structure, growth opportunities, internal funds, profitability, capital structure, and size. 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. Since Tobin's *q* is not observable due to lack of market prices, we proxy growth opportunities

¹² This restriction allows firms to exit and enter the sample around the reform. While this addresses a potential survivorship bias, the reform may induce firms to change their status to CHC. We, therefore, test the robustness of our results and require firms to exist in at least two years before the reform and remain in the sample for at least two years after the reform. Our main results remain unchanged when we use this alternative sample restriction.

¹³ In 2006, SEK 7.36 equals USD 1.

through the percentage change in fixed assets from $t-1$ to t (*Investment*).¹⁴ As measures of internal funds, we include *Cash_Assets*, defined as cash and short-term investments over total assets, and *RE_Assets*, defined as ratio of internally generated equity (retained earnings) to prior year total assets (DeAngelo, DeAngelo, and Stulz 2006). We use taxable corporate income over total assets as the measure for profitability (*Profit_Assets*). We control for capital structure by including total book debt over total assets (*Leverage*). We use the natural logarithm of total assets ($\ln(\text{Total Assets})$) and the number of employees (*Num Employees*) as measures of size. On average, a CHC has 1.63 active owners. 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 CHC has about 6 employees. Investment varies considerably from 0% (25th percentile) to 64% (75th percentile).

Shareholder-level characteristics are summarized in Panel C of Table 2. Owner-managers derive on average 29.3% of their total income from sources outside the CHC(s) (*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 51% or higher and, hence, the owner prefers dividends over wages. Our summary statistics for *High Tax* in Table 2 indicate that 47.5% of owner-managers are subject to a marginal income tax rate of over 51%. *Number of Firms* is the number of CHCs in which an owner actively participates. The majority of owners participate in exactly one firm. On average, owner-managers hold shares in 1.18 CHCs.

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 combined 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 (*High Tax* = 1) and owners subject to a low income tax on wages and to track the difference in the dividend compensation ratio 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

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.

difference-in-difference (DD) estimate without control variables. We use the tax status from the prior year to avoid that the tax status is endogenous to dividend payout.

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 through 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 (each, an owner bin). 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 after 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 0.04). 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 0.02 (0.02), less than a third of the effect relative to 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

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

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 CHCs 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 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 0.02 (0.04) when we contrast wholly owned firms to firms with three (five) 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 corporations appear to respond more strongly to the 2006 tax reform than owners of CHCs with more dispersed ownership even if owners have a preference for dividends.

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 CHCs 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:

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

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 for which the reduced dividend tax rate is available, the reform provides

incentives to increase dividend payout if dividends are taxed at a lower rate as wages. This is the case when individuals are subject to a marginal income tax rate of 51% or higher (*High Tax* = 1).

To test our main hypothesis that ownership structure affects tax sensitivity, we estimate the tax response coefficient ($Post \times High\ Tax$) separately for each number of owners bin that ranges from one owner to five owners ($Owners_{i,t}$).¹⁶ 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 $Owners_{i,t}$. This way, our identification is based on the response to an exogenous policy shock across different ownership structures and across owners with different tax preferences. 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.

$\Pi_{j,t}$ is a vector of firm-level variables that 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. Creditors may have an influence on payout policies because, 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 a vector of shareholder-level variables, $\chi_{i,t}$. Specifically, we include the percentage of total income derived from income sources other than the CHC(s) (*Relevance Non-CHC*). If owners generate substantial income from sources other than the CHC(s), compensation from the CHC(s) becomes less important and owners may be less tax sensitive. Previous literature further shows that the elasticity of taxable income differs, for example, across age cohorts, married and unmarried individuals, or with respect to the level of education (e.g., Chetty et al. 2011, Bastani and Selin 2014). We thus include demographic characteristics *Age*, marital status (*Married*) and *High Education* as control variables. We include shareholder-fixed effects (α_i) and year-fixed effects

¹⁶ As indicated by the subscript t , the number of owners varies over time. One potential concern is that the reform could affect the number of active owners in a firm. We, therefore, run two additional robustness tests. First, we include only firms for which the number of owners does not change over the 2004–2007 period. Second, we fix the number of owners at the 2005 level. Table A.III presents regression results for α_1 to α_5 . Results are similar to our baseline results from estimating equation (1).

(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.¹⁷ 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 interactions of each control variable with the *Post* dummy (*Fully-Interacted Model*).

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 dividends increase the percentage of compensation paid as dividends by about 4.1 percentage points (one-owner-CHC and two-owner-CHC, respectively). These are economically large effects. For example, the 4.1 percentage point increase in the dividend compensation ratio for owner of wholly owned firms with a tax preference for dividends represents a 35% increase relative to the pre-reform sample average of a dividend compensation ratio of 11.7% (see Panel B, Table A.II 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 2.2 percentage points. That is, tax sensitivity decreases by about 45% (from a 4.1 percentage point increase to a 2.2 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 = 4.50), but also economically significant. Once a firm has four or five owners, the individual owners' tax preferences have no influence on the dividend compensation ratio. For firms with five owners, the reform response coefficient is insignificant. In other words, in firms with more dispersed ownership, the individual owner is not able to adjust the dividend compensation ratio around the 2006 tax reform according to his own tax preferences.

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. Indeed, 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

¹⁷ Clustering at the owner level addresses concerns that our dependent variable, dividend payout, is correlated over time and that the precision of the treatment effect in the DDD design is overstated.

($\ln(\text{Total Assets})$ and Num Employees) and cash holdings (Cash_Assets). As owners of firms with five owners are the smallest group in terms of observations, we individually match them to owners of firms 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 fully-interacted DDD model from equation (1). Table 4 presents tax response coefficients ($\text{Post} \times \text{High Tax}$) separately for each number of owner bin. Consistent with our main results, we obtain a 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.

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:

$$\begin{aligned}
 \text{Dividend} - \text{to} - \text{Assets}_{j,t} = & \alpha_0 + \alpha_j + \alpha_t + \alpha \text{Post}_t \times \text{Owners}_{i,t} + \beta \Pi_{j,t} \\
 & + \alpha_1 \text{Post}_t \times \text{Avg High Tax}_{j,t-1} \times (\text{Owners} = 1)_{j,t} \\
 & + \alpha_2 \text{Post}_t \times \text{Avg High Tax}_{j,t-1} \times (\text{Owners} = 2)_{j,t} \\
 & + \alpha_3 \text{Post}_t \times \text{Avg High Tax}_{j,t-1} \times (\text{Owners} = 3)_{j,t} \\
 & + \alpha_4 \text{Post}_t \times \text{Avg High Tax}_{j,t-1} \times (\text{Owners} = 4)_{j,t} \\
 & + \alpha_5 \text{Post}_t \times \text{Avg High Tax}_{j,t-1} \times (\text{Owners} = 5)_{j,t} \\
 & + \gamma \text{Avg High Tax}_{j,t-1} \times \text{Owners}_{j,t} + \varepsilon_{j,t}
 \end{aligned} \tag{2}$$

where $\text{Dividend} - \text{to} - \text{Assets}_{j,t}$ is the ratio of dividends to total assets of firm j in year t . We again use a dummy variable Avg High Tax to operationalize tax preferences at the firm level. We set Avg High Tax equal to one if the average tax rate on wages of all owners weighted by the ownership share 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

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.

change in dividend-to-asset ratio 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 the effect of the dividend tax cut is strongest in wholly owned firms and then gradually declines in the number of owners. For example, in firms with five owners, the tax response is about 49% lower than in wholly owned firms. The results in Table 3, Table 4, and Figure 5 show that the dividend tax elasticity is a declining function of ownership.

4.3 Robustness Tests

We next run three sets of robustness tests. First, we use alternative dividend measures to address concerns that our dependent variable *%Div Compensation* only relates to the choice of the payout channel (dividend versus wages). We use a dummy variable equal to one if the owner receives a dividend, and zero otherwise (*Dividend Payer*) to examine the extensive margin. This variable captures the fraction of owners receiving dividends. Table 5 presents regression results from estimating equation (1). We again obtain a significant response for owners of wholly owned firms as well as for owners of CHCs with two owners. The response becomes insignificant (at the 1% level) as ownership becomes more dispersed. In other words, the fraction of highly taxed owners receiving dividends only increases for very closely held firms. It does not change for highly taxed owners in firms with four or more owners. Table 5 also uses a different scaling variable for dividend payout to additionally address potential concerns that scaling by total cash to shareholders only relates to the choice of the payout channel. 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.

Second, another possible concern is that the size of the tax rate difference between dividend and wage payout may differ across number of owners bins. This could explain the observed differences in tax responsiveness to the reform as our main tax measure *High Tax* does not account for the magnitude of the tax wedge. To this end, we test whether our main result holds if we separate effects for the top tax bracket (income tax rate of about 67%) as well as for the middle tax bracket (income tax rate of 51%–67%). In our DDD model from equation (1), we additionally include the dummy variable *Top Tax Bracket*, its interactions with *Post* and each bin of *Owners_{i,t}*. This way, we separate the tax response of individuals in the top tax bracket (*Top Tax Bracket* = 1)

from highly taxed owners that are not in the top tax bracket (*High Tax* = 1). In both tax brackets (see Table 6), we find that the dividend tax elasticity is a declining function of ownership. The response is economically large and significant in wholly owned firms. The tax reform effect decreases by over 40% as the number of owners increases to three. For firms with four or more owners, the effect becomes insignificant in both tax brackets. Column (3) presents the t-statistics of the difference in *High Tax* and *Top Tax Bracket* coefficients. In wholly owned firms, the response is similar across tax brackets as dividends are the preferred payout choice in both tax brackets. In firms with two or more owners, however, the effect is stronger for owners in the *Top Tax Bracket*.

Finally, we demonstrate that payout responses of CHCs are not the result of the macroeconomic development in Sweden. As our data comprise only CHCs, we use data on Swedish publicly traded firms as counterfactual and examine whether their dividend policy changed around 2006. We compare aggregated statistics CHCs and public firms as dividend taxation did not change for public firms.¹⁹ Figure 6 presents total dividend payout (base year 2000 = 100) and the fraction of dividend paying firms for CHCs and public firms. The comparison of the treated group (CHCs) and the counterfactual (public firms) shows a parallel trend prior to 2006 and a sharp increase in dividend payout and the fraction of dividend paying CHCs after 2006.

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 gains (or repurchases), without affecting shareholders wealth (Miller and Modigliani 1961). Unless a manager of a public 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 tax cut if, as often the case, his compensation is a function of stock price performance.

In closely held corporations, owners and managers also may have conflicting views about the form of payout—wages versus dividends. Wages have two objectives. First, they serve as

¹⁹ Our data contract does not allow us to append public firm data to our CHC data. Therefore, we can only compare aggregated statistics.

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, 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 taxation. In particular, we examine how wages respond to the large kink in the income tax around which the preference for dividends changes. Below this 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 supply 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 CHC(s) and other employers) around the kink in year t . 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 7 presents the histogram of the actual distribution of labor income centered around the kink. We plot the distribution for owners of wholly owned firms and for owners of 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.

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 7 that excludes values in the $[-5,000; +5,000]$ range 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 7 presents corresponding excess mass estimates along with upper as well as lower confidence bounds for different number of owners bins. 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 7 presents α_1 to α_5 coefficients from the fully-interacted model from equation (1) where we interact each control variable with the *Post* dummy. 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.

Our results from the DDD analysis support our graphical analysis from Figure 7. The response to the 2006 tax reform is strongest for wholly owned firms. Owners of very closely held corporations (one or two active owners) decrease the percentage of wage compensation by about 3.6 percentage points (one-owner-CHC) if they were subject to a marginal income tax of 51% or higher in the past year. Owners in CHCs with three owners decrease the wage compensation ratio only by 2.5 percentage points. The difference in coefficient estimates is statistically significant (t-stat = 2.68). The decrease in tax responsiveness is also economically large. Tax responsiveness decreases by over 30% if a firm has three owners instead of one owner. Once a firm has five owners, the individual owner's tax preference has 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

²⁰ One potential econometric concern is that since dividends and wages are related, also their estimation errors are related. We therefore re-estimate equation (1) as a seemingly unrelated regression equation (SURE) model. Figure A.I presents the results from SURE. The tax elasticities of both dividends and wages are declining in the number of owners. The differences are significant, consistent with our baseline effect. For wages, we observe that wage payout is now also significant for owners in firms with five owners.

firms has many owners. To illustrate this substitutability, Figure 8 plots the *Post*×*High Tax* estimates for number of owners from Table 3 and Table 7.

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 concern of this result is that the substitutability of wages and dividends is limited to owners with a salary from the CHC. Possibly larger fraction of owners in dispersed firms does not receive wages than in very closely held firms. To this end, we rerun therefore our main DDD estimations and restrict the sample to owners that received a wage prior to the 2006 tax reform. This ensures that the reform does not affect our sample selection. Table 8 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.

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 CHCs change around the 2006 tax reform. We use a DDD design and test the following equation at the firm-level:

$$Dividend - to - Assets_{j,t} = \beta_0 + \beta_1 Post_t \times Avg High Tax_{j,t} + \quad (3)$$

$$\begin{aligned}
& +\beta_2 Post_t \times Avg\ High\ Tax_{j,t} \times Separated_{j,t} \\
& +\beta_3 Post_t \times Separated_{j,t} + \beta_4 Separated_t \times Avg\ High\ Tax_{j,t} \\
& +\gamma \Pi_{j,t} + \beta_j + \beta_t + \varepsilon_{i,j,t}
\end{aligned}$$

where $Dividend - to - Assets_{j,t}$ is the dividend-to-asset ratio measured at the firm level. $Avg\ High\ Tax$ is defined as above in equation (2). $Post$ is a dummy equal to one for post-reform years. β_1 is the difference-in-difference coefficient indicating how on average 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 relative to wages, 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 (3) 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 9 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 preferences for 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% from 0.0083 to 0.0035 if there is a manager in the firm without an ownership share.

[Insert Table 9 about here]

5.4 Differences in Tax Preferences across Shareholders

The third explanation is the tax clientele effect and the resulting heterogeneity in tax preferences (e.g., Elton and Gruber 1970, Allen, Bernardo, and Welch 2000). In firms with dispersed ownership, it may be harder to reach consensus about the level of dividends when there are heterogeneous tax preferences among shareholders. Therefore, changes in dividend taxation may have a smaller impact on dividend policy when interests are not aligned. To test this, we examine how firms that are similar in the owners' average tax rate but that differ in the variation of tax rates among shareholders respond to the 2006 dividend tax cut. Firms with homogeneous tax preferences for dividends are expected to increase dividend payout after the reform. In contrast, we would expect that tax heterogeneity, i.e. a high variation of the income taxes among shareholders, mutes the effect of taxation on dividend payout. As wholly owned firms cannot have variation in tax rates among shareholders, we restrict our sample to firms with at least two owners. Using firm-level data, we estimate the following DDD model:

$$\begin{aligned}
 Dividend - to - Assets_{j,t} = & \alpha_0 + \alpha_1 Post_t + \alpha_2 AvgHigh Tax_{j,t-1} & (4) \\
 & + \alpha_3 Post_t \times AvgHigh Tax_{j,t-1} + \alpha_4 HighTaxSD_{j,t-1} \\
 & + \alpha_5 HighTaxSD_{j,t-1} \times Post_t + \alpha_6 HighTaxSD_{j,t-1} \times AvgHigh Tax_{j,t-1} \\
 & + \alpha_7 Post_t \times AvgHigh Tax_{j,t-1} \times HighTaxSD_{j,t-1} \\
 & + \alpha_j + \alpha_t + \beta \Pi_{j,t} + \varepsilon_{j,t}
 \end{aligned}$$

where $Dividend - to - Assets_{j,t}$ is the dividend-to-asset ratio measured at the firm level. We use the dummy variables $Avg High Tax$ and $HighTaxSD$ as our tax measures. $Avg High Tax$ is defined as above in equation (2). $HighTaxSD$ is our proxy for tax heterogeneity. It is a dummy variable equal to one if the standard deviation of the marginal income tax rate on wages among shareholders is in the top quintile of the standard deviation distribution. In other words, if $HighTaxSD$ equals 1, the firm is characterized by a high variation in the tax rate among owners and there is substantial tax heterogeneity. We use dummy variables instead of the actual average tax rate and standard deviation. Using dummy variables allows us to estimate the DDD model and to interpret the coefficients accordingly. The coefficient α_3 is the DD coefficient and indicates how firms with a high average tax rate on wages change dividends in response to the 2006 tax reform. The effect of tax heterogeneity on the reform response of firms with tax incentives to pay dividends is captured by the DDD coefficient, α_7 . If tax preferences are heterogeneous among shareholders ($HighTaxSD = 1$), we would expect that firms respond less to the reform even if their owners have on average tax

preferences for dividends ($\alpha_7 < 0$). Our results are qualitatively similar if we use continuous tax measures (see Table A.V of the Online Appendix).

Table 10 presents α_3 and α_7 coefficients from estimating equation (4) including firm level controls, firm fixed effects, and year fixed effects. We use firms with at least two owners (Column (1)) and firms with at least four owners (Column (2)). Our results show that firms in which the owners' average income tax on wages is above the dividend tax rate increase dividend payout from before to after the reform. The increase is economically and statistically significant. If owners prefer dividends, firms increase the dividend to asset ratio by about 1.4 (1.5) percentage points using the sample of firms with at least two (four) owners. The response to the dividend tax cut is drastically reduced by tax heterogeneity. If the variation in tax rates among owners is high ($HighTaxSD = 1$), the response to the reform decreases by 1.4 (1.1) percentage points using the sample of firms with two (four) or more owners. The overall response ($\alpha_3 + \alpha_7$) for firm with heterogeneous tax preferences ($HighTaxSD = 1$) is insignificant in both samples. Tax heterogeneity can therefore partly explain why the estimated dividend tax elasticity in firms with four or five owners in Table 3 is smaller than in wholly owned firms. In our main DDD model, we estimate the average tax elasticity across all CHCs with, for example, four or five owners. Since not all CHCs with dispersed ownership have homogeneous tax preferences for dividends, changes in dividend taxation have on average a smaller effect on payout policy in these firms than in wholly owned firms.

5.5 *Substitutability versus Tax Heterogeneity*

The results in the last section raise the question whether tax heterogeneity can solely explain the decline in dividend tax elasticity as number of owners increase or whether both coordination across owners and tax heterogeneity explain our main result. We use two distinct experiments to address the relative roles of coordination costs and tax heterogeneity. We first examine how firms in which all owners have homogeneous tax preferences for dividends but that differ in the number of owners respond to the tax reform. If tax heterogeneity solely explains the decline in dividend tax elasticity as number of owners increase, the response to the dividend tax change would be similar across firms with homogeneous tax preferences for dividends. In contrast, if coordination across owners also explains the declining tax elasticity, we would observe a decline in the response to the tax reform as the number of owners increase even if all owners have tax preferences for dividends. Using all CHCs, we estimate the following equation

$$Dividend - to - Assets_{j,t} = \alpha_0 + \alpha_1 \cdot Post_t \times Aligned_{j,t-1} \times Owners = 1_{j,t} \quad (5)$$

$$\begin{aligned}
& +\alpha_2 \cdot Post_t \times Aligned_{j,t-1} \times Owners = 2_{j,t} \\
& +\alpha_3 \cdot Post_t \times Aligned_{j,t-1} \times Owners = 3_{j,t} \\
& +\alpha_4 \cdot Post_t \times Aligned_{j,t-1} \times Owners = 4_{j,t} \\
& +\alpha_5 \cdot Post_t \times Aligned_{j,t-1} \times Owners = 5_{j,t} \\
& +\alpha Post_t \times Owners_{j,t} + \beta Aligned_{j,t-1} \times Owners_{j,t} \\
& +\gamma \Pi_{j,t} + \alpha_j + \alpha_t + \varepsilon_{j,t}
\end{aligned}$$

where $Dividend - to - Assets_{j,t}$ is the dividend-to-asset ratio measured at the firm level. 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 the combined tax rate on dividends, measured in $t-1$. If all owners prefer dividends to wages, we would expect the firm to increase dividend payout. We allow the coefficient to vary across number of owners bins. If tax heterogeneity explains our findings of tax elasticity as a declining function of ownership, the coefficients α_1 to α_5 should be similar across 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 9 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.

Second, we relax the assumption that all owners in a firm need to have aligned tax preferences for dividends. Instead, we use the tax preference of the dominating shareholder. If the dominating shareholder holding more than 50% of equity has tax preferences for dividends, tax heterogeneity among shareholders becomes less important as the majority shareholder can shape the CHC's payout policy. Firms' payout policies may thus respond to dividend tax changes if the dominating shareholder has tax preferences for dividends. In other words, if tax heterogeneity and not

coordination across shareholders explains the decline in tax elasticity as the number of owners increase, we would expect that the effect of the dominating shareholder's tax preference is similar across number of owners bins. To test this, we run the following DDD model:

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

where $Dividend - to - Assets_{j,t}$ is the dividend-to-asset ratio measured at the firm level. $Dom_Tax_{j,t-1}$ is a dummy variable equal to 1 if a dominating shareholder (holds more than 50% of equity) has a tax preference for dividends. We again include firm-level control variables ($\Pi_{j,t}$), firm fixed effects (α_j), and year fixed effects (α_t). Figure 10 presents α_1 to α_5 coefficients along with the upper and lower 95% confidence intervals. Once again, the reform response is significant for all firms at the 1% level. However, the effect of the dominating shareholder's tax preference for dividends on firm's dividend payout gradually decreases with 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 but also coordination problems across shareholders explain why dividend tax elasticity declines in the number of owners.

5.6 External Validity of Results—OLS Estimates

In the final step, we validate our results in a simple cross-sectional analysis to demonstrate that similar conclusions can be drawn from an OLS model. In other words, we estimate correlations and do not exploit the policy experiment. While we cannot draw any causal inference from this analysis, this cross-sectional test validates our DDD approach as we should obtain associations that are in line with our main conclusion. To be more precise, higher taxes on wages than on dividends should be positively associated with dividend payout. This association is expected to weaken as the number of owners increase. To test this, we run the following model:

$$\%Div\ Compensation_{i,t} = \alpha_0 + \alpha_1 High\ Tax_{i,t-1} + \alpha_2 Owners_{i,t} \quad (7)$$

$$+\alpha_3 High Tax_{i,t-1} \times Owners_t + \beta \Pi_{j,t} + \gamma \chi_{i,t} + \alpha_i + \alpha_t + \varepsilon_{i,j,t}$$

where *%Div Compensation* is the dependent variable. We also use *%Wage Compensation* as alternative dependent variable. We include the dummy variable *High Tax* as well as its interaction with the number of owners (*Owners*) as our variables of interest. If our conclusions were also supported in the cross-sectional test, we would obtain a positive coefficient on *High Tax* ($\alpha_1 > 0$) and a negative coefficient on *High Tax* × *Owners* ($\alpha_3 < 0$). As in equation (1), we include firm-level and shareholder-level control variables, owner fixed effects, and year fixed effects.

Table 11 reports regression results from estimating equation (7). We find associations of firm-level variables with the dividend compensation ratio that are in line with prior literature. For example, cash, profits, and retained earnings are positively associated with dividend compensation while leverage is negatively associated with dividend compensation. An increase in the number of owners is positively associated with dividend compensation.

Most important for our argument, *High Tax* is positively associated with dividend compensation ratio. The economic magnitude of the coefficient implies that if an owner is subject to a marginal income tax rate of 51% or higher, the dividend compensation ratio increases by 2.1 percentage points, or 13% of the sample average. The negative coefficient on the interaction *High Tax* × *Owners* suggests that the positive association between *High Tax* and the dividend compensation ratio becomes smaller as the number of owners increases. For example, going from one owner to three owners decreases the effective coefficient on *High Tax* from 0.0208 to 0.0122, or by about 41%.²¹ Similar to our main results shown in Table 3, the overall effect of taxes becomes statistically and economically insignificant if a firm has five owners. Going from a wholly owned CHC to a firm with five owners decreases the effective coefficient on *High Tax* by 0.0172 (=0.0043 × (5–1)) from 0.0208 to 0.0036.

Table 11 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 (-0.0192) is statistically significant and indicates that being subject to the marginal income tax rate of 51% or higher reduces the wage compensation ratio by 1.92 percentage points, or 3.1% of the sample average. The positive coefficient on the interaction between *High Tax* and *Owners* suggests that the negative association between *High Tax* and the wage compensation ratio becomes weaker as the number of owners increases. For example, the overall effect of taxes

²¹ The effective coefficient for three owners is calculated as $0.0208 + (3-1) \times (-0.0043)$.

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 0.0168 ($=0.0056 \times (4-1)$) from -0.0192 to -0.0024. Overall, the cross-sectional analysis supports our findings from the DDD analysis that the dividend as well as the wage 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 “[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. Interestingly, the 2006 Swedish tax reform is consistent with this mechanism: the tax rates on dividends paid by public firms did not change while dividend taxes for privately held firms were cut and the tax decrease was twice as large for closely held firms as for widely held corporations.

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 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 if owners prefer dividend payout. In particular, the effect of dividend tax changes on dividend payout is larger if managers with high equity ownership have tax preferences for dividends. (e.g. Chetty and Saez 2005, Brown, Liang, and Weisbenner 2007, Blouin, Ready, and Shackelford 2012). Finally, dividend taxation should have a stronger impact on payout policy in settings where dividend payout 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.

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.

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.
- 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).
- Bastani, Spencer and Håkan Selin (2014): Bunching and Non-Bunching at Kink Points of the Swedish Tax Schedule. *Journal of Public Economics*, 109, 36–49.
- Becker, Bo, Marcus Jacob, and Martin Jacob (2013): Payout taxes and the allocation of investment. *Journal of Financial Economics*, 107, 1–24.
- Blouin, Jennifer L., Jana S. Ready and Douglas A. Shackelford (2011): Dividends, Share Repurchases, and Tax Clienteles: Evidence from the 2003 Reductions in Shareholder Taxes. *The Accounting Review*, 86, 887–914.
- 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 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.

- DeAngelo, Harry, Linda DeAngelo, and Rene M. Stulz (2006): Dividend Policy and the Earned/Contributed Capital Mix: A Test of the Life-Cycle Theory. *Journal of Financial Economics*, 81, 227–254.
- 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 behavior. *Review of Economic Studies*, 37, 57–72.
- Grinstein, Yaniv and Roni Michaely (2005): Institutional Holdings and Payout Policy. *Journal of Finance*, 60, 1389–1426.
- 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.
- Jensen, Michael C. (1986): Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review*, 76, 323–329.
- Julio, Brandon, and David L. Ikenberry (2004): Reappearing Dividends. *Journal of Applied Corporate Finance*, 16, 89–100.
- La Porta, Rafael, Florencio López-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. Between 2002 and 2008, the thresholds at which the higher rates apply have been changed annually. For a detailed overview, see Alstadsæter and Jacob (2012).

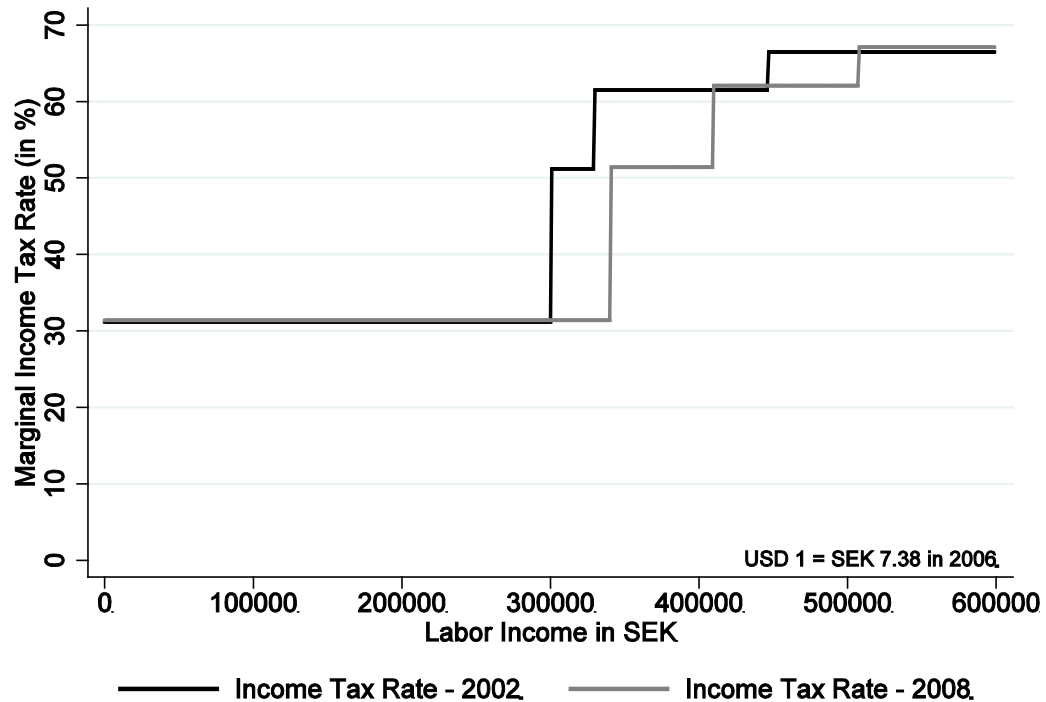


Figure 2: Average Dividend Allowance, Breakdown by Number of Owners

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

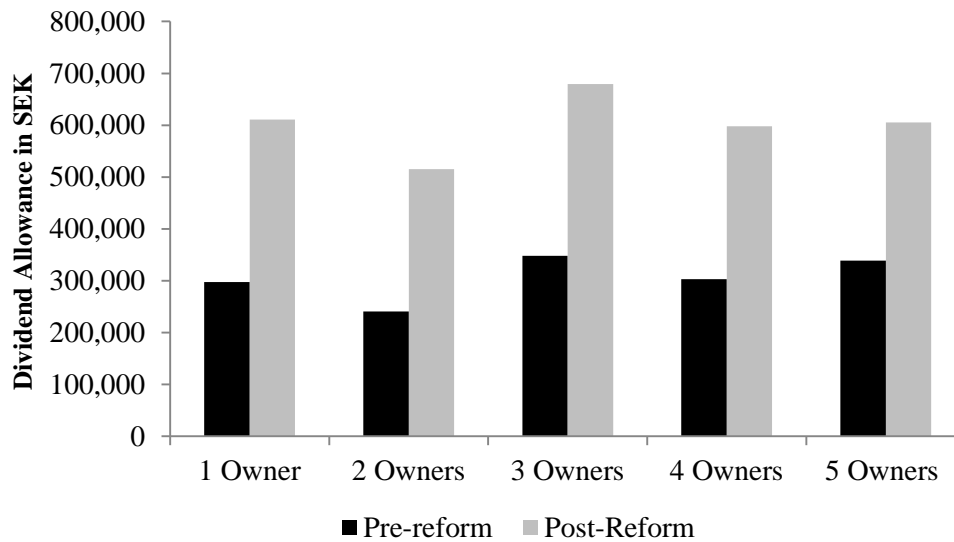


Figure 3: Dividend Compensation of High-Tax versus Low-Tax Owners

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 difference-in-difference (*DD Estimate*). We report robust standard errors clustered at the closely held corporation (CHC)-owner level in parentheses

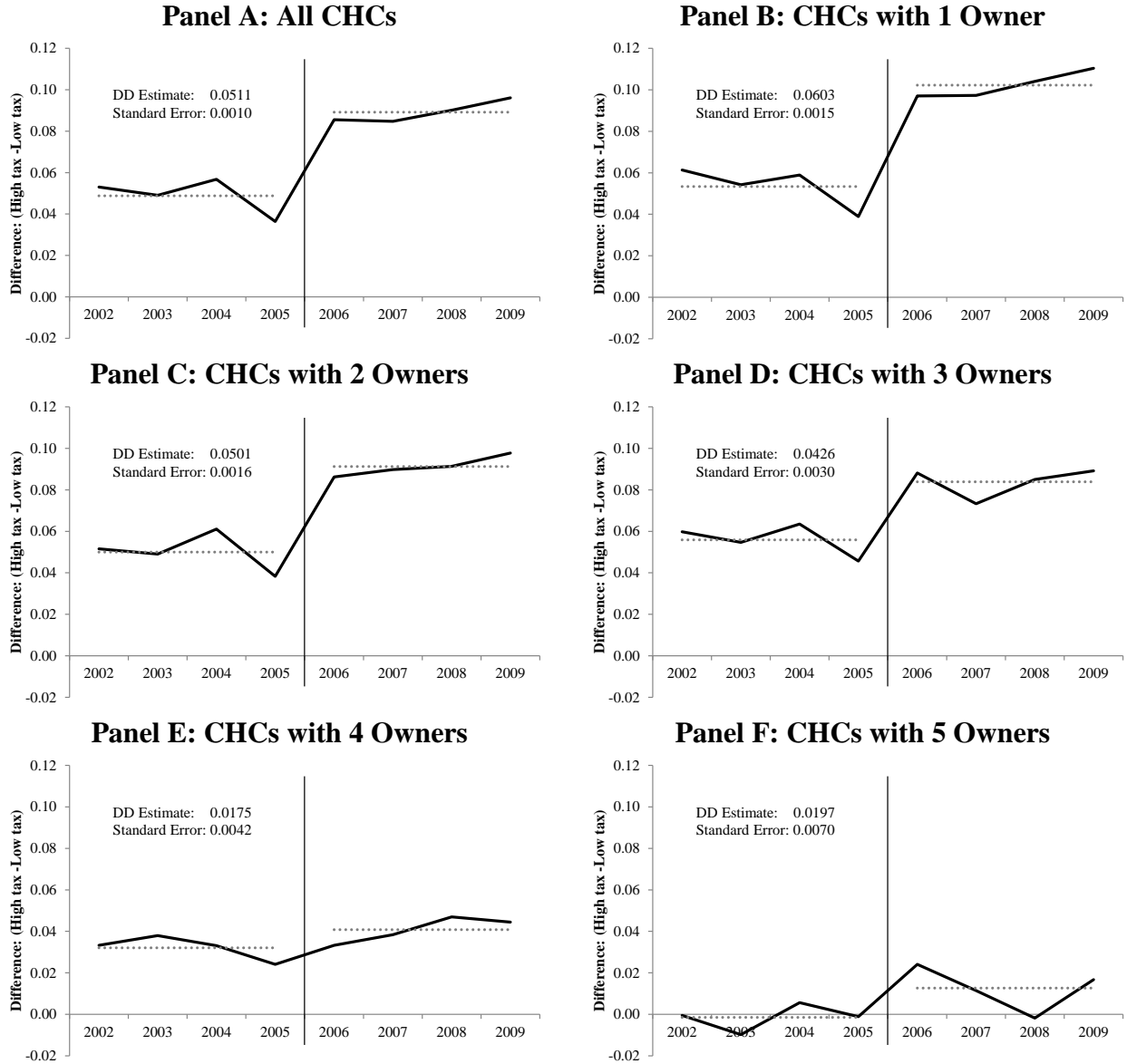
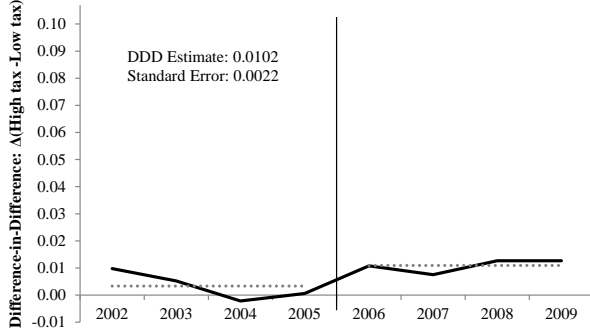


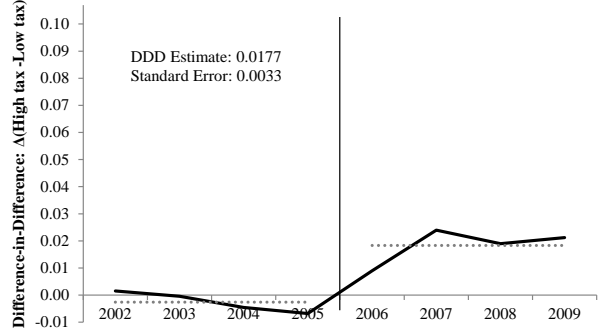
Figure 4: Graphical Illustration of Triple Difference

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 (*DDD Estimate*). We report robust standard errors clustered at the owner level in parentheses.

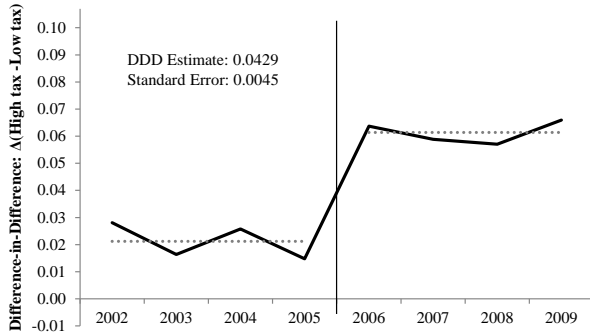
Panel A: 1 Owner versus 2 Owners



Panel B: 1 Owner versus 3 Owners



Panel C: 1 Owner versus 4 Owners



Panel D: 1 Owner versus 5 Owners

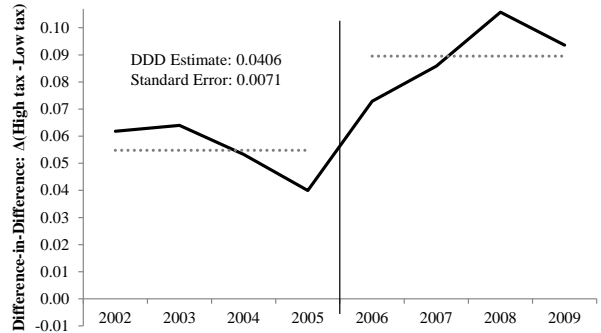


Figure 5: Effect of Ownership on Tax Sensitivity of Dividends: Firm-Level Analysis

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 pre- and post-reform dividend-to-asset ratio for firms where the owners' average marginal tax rate on wages is above the dividend tax rate ($Avg\ High\ Tax = 1$). The estimated model is defined 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.

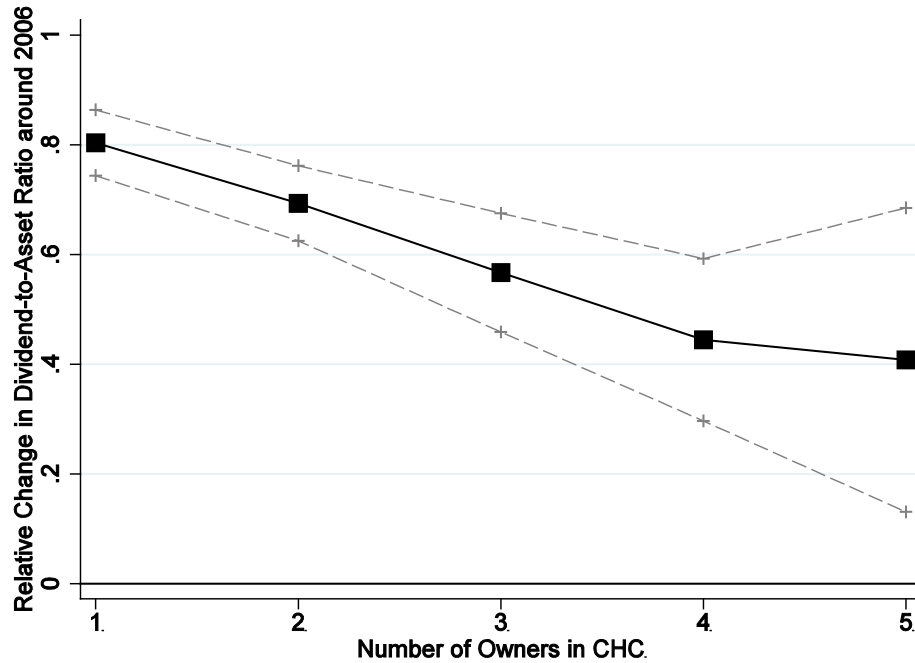


Figure 6: Comparison of Aggregated Payout: CHCs versus Public Firms

This figure presents aggregated statistics on total dividend payout (base year 2000 = 100, Panel A) and the fraction of dividend paying firms (Panel B) over the 2000–2009 period. We compare CHCs and public firms. Data on Swedish public firms are obtained from Worldscope.

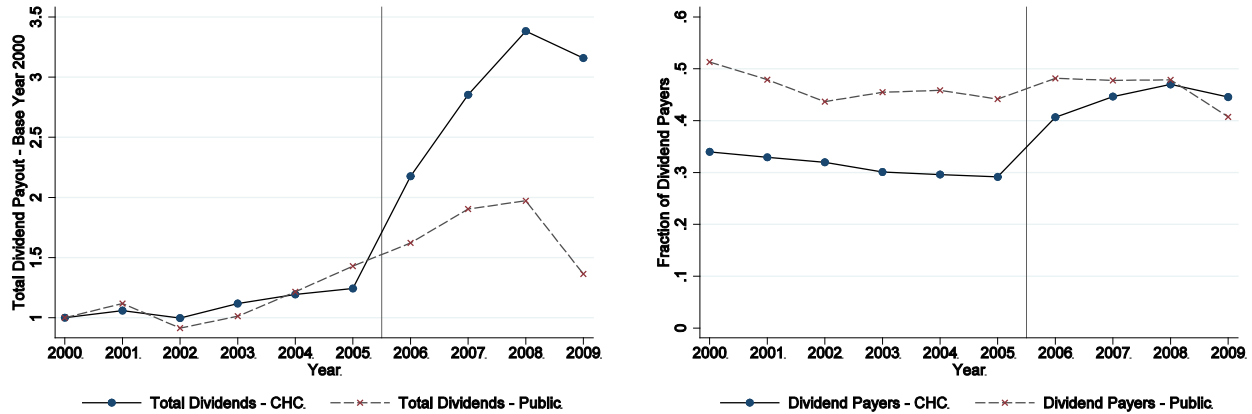
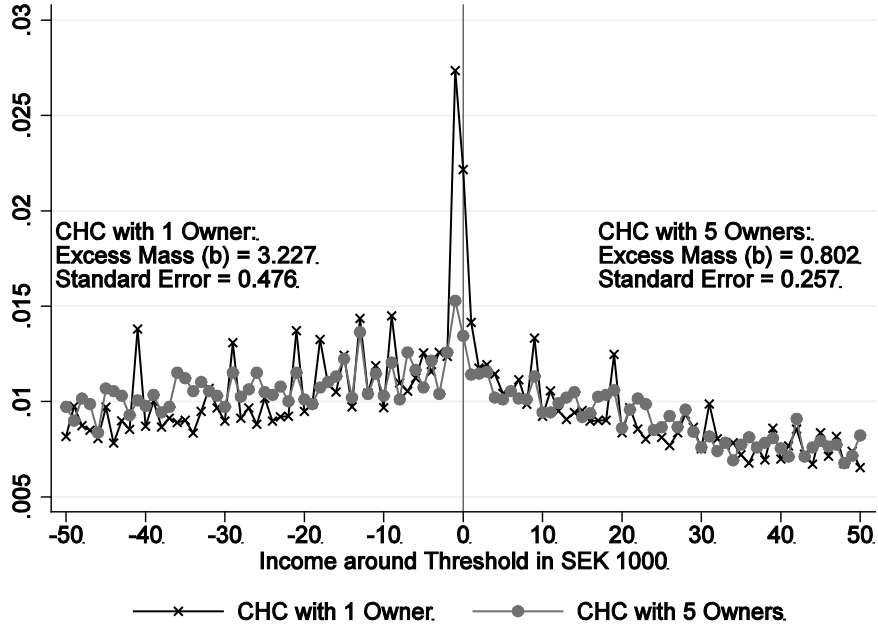


Figure 7: Tax Sensitivity of Wages and the Number of Owners, 2000-2009

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

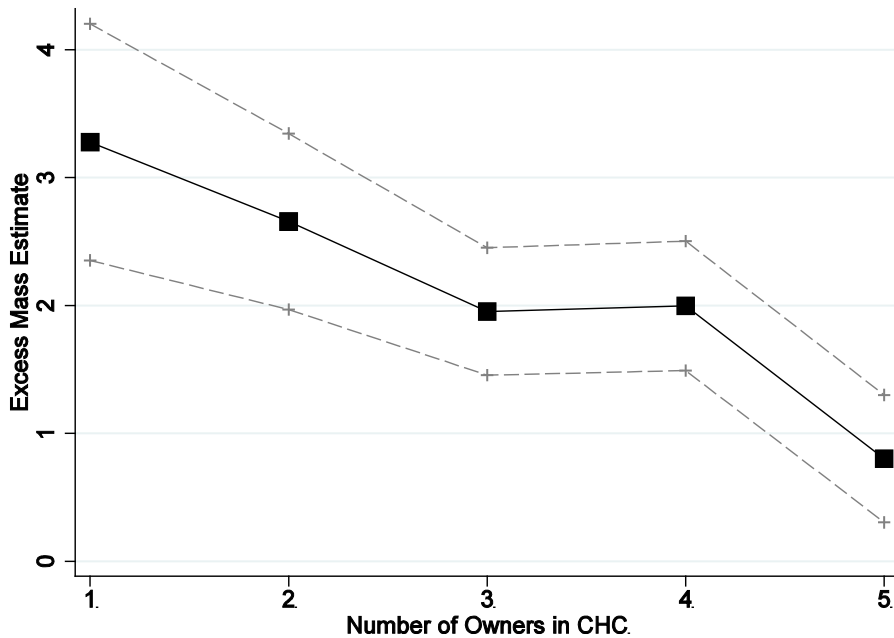


Figure 8: Change in Tax Sensitivity around 2006 Tax Reform, Breakdown by Ownership Structure

This figure plots $Post \times High\ Tax$ coefficient estimates from fully-interacted model from Table 3 and Table 7 with the corresponding 95% confidence intervals. The $Post \times High\ Tax$ coefficients are estimated for each number of owners bin ranging from one owner to five owners using equation (1).

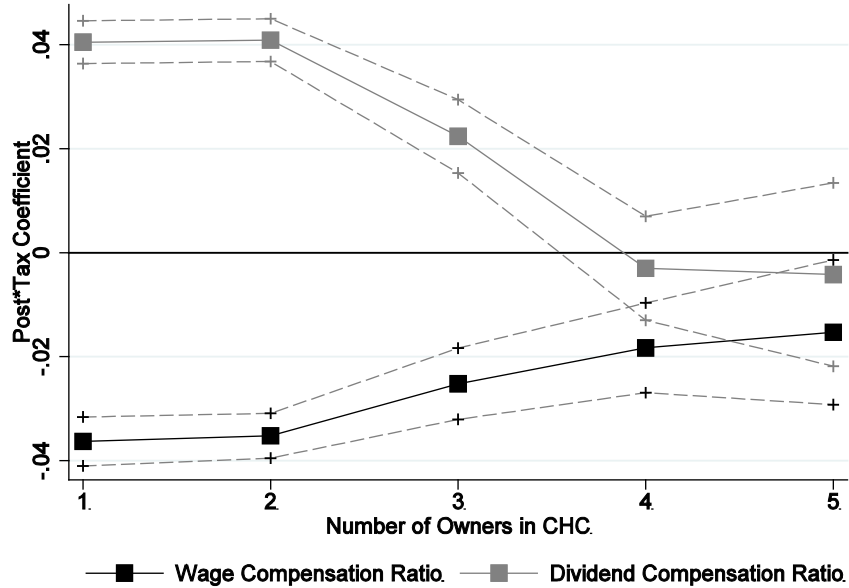


Figure 9: Effect of Ownership of Dividend Payout: Homogeneous Tax Preferences for Dividends

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 pre- and post-reform dividend-to-asset ratio for firms where marginal tax rate on wages is above the dividend tax rate for all owners ($Aligned = 1$). The estimated model is defined as in equation (5). 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.

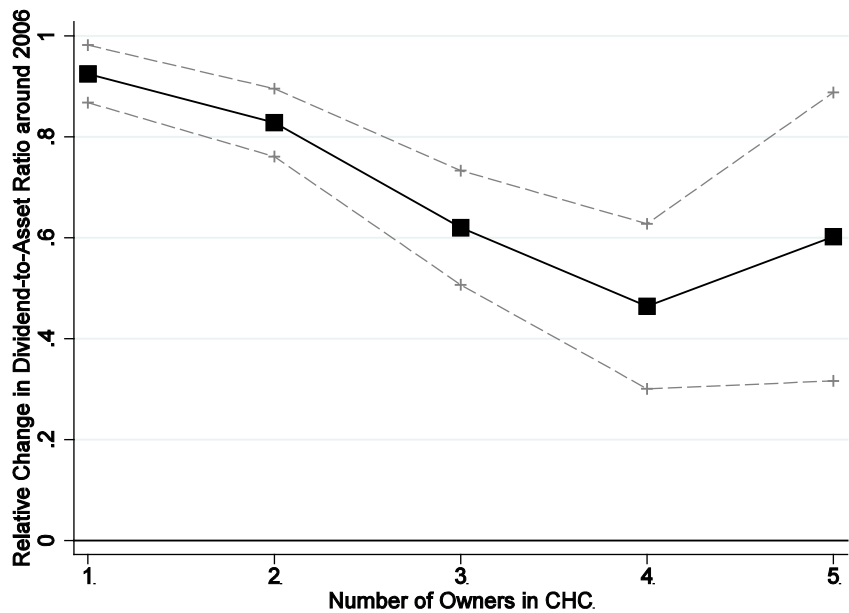


Figure 10: Effect of Ownership of Dividend Payout: Tax Preferences of Dominating Shareholder

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 dividend-to-asset ratio for firms where marginal tax rate on wages of the dominating shareholder (over 50% ownership) is above the dividend tax rate ($Dom_Tax = 1$). The estimated model is defined as in equation (6). 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.

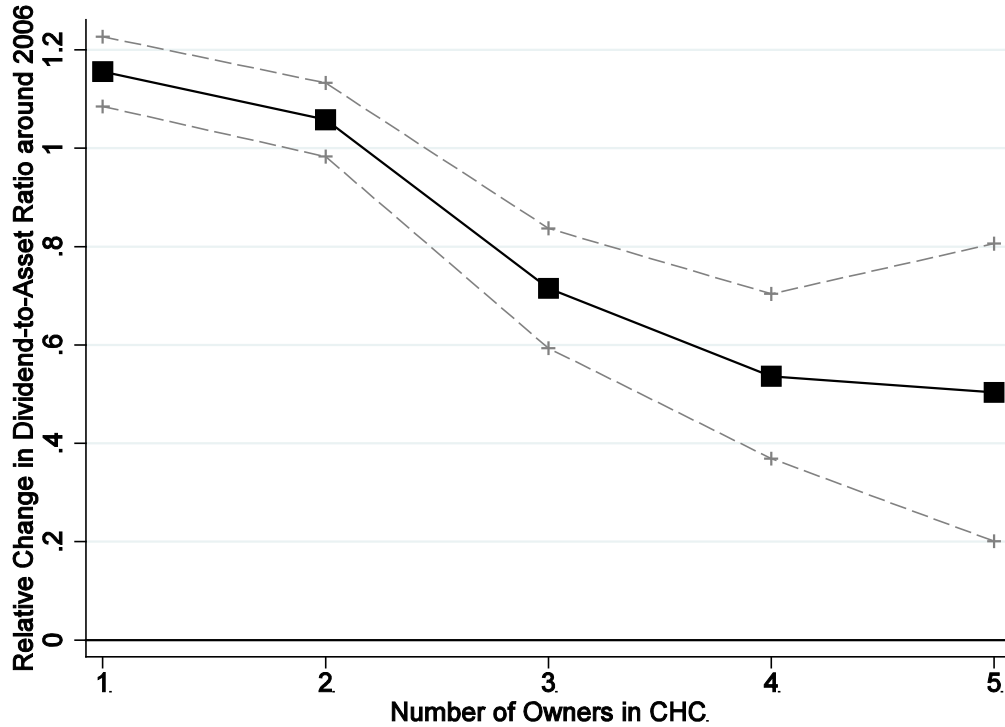


Table 1: Marginal Income Tax Rates, 2000–2009

	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 was 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 all 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 CHC* and *Dividend CHC*, paid as dividends (wages). If total compensation is 0, we set *%Div Compensation* (*%Wage Compensation*) to 0. *Owners* is the number of active owner-managers in a firm. *Investment* 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* is defined as SEK retained earnings amount in year t scaled by prior year total assets. *Profit_Assets* is defined as 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 firm size ($\ln(\text{Total Assets})$). *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 a marginal income tax of 51% or higher. If *High Tax* is one, the individual's marginal wage tax rate is higher than the combined dividend tax rate. *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 1,365,822 observations. Firm-level statistics are based on 669,705 observations.

Variable	Mean	Standard Deviation	25th percentile	Median	75th percentile
Panel A: Payout Variables (N=1,365,882)					
<i>Wages CHC</i>	197,101	199,596	0	195,000	313,000
<i>Dividend CHC</i>	67,940	692,752	0	0	30,000
<i>%Wage Compensation</i>	0.6229	0.4445	0.0000	0.8992	1.0000
<i>%Div Compensation</i>	0.1581	0.3095	0.0000	0.0000	0.1429
Panel B: Firm-Level Variables (N=669,705)					
<i>Owners</i>	1.6251	0.8592	1.0000	1.0000	2.0000
<i>Investment</i>	0.8763	2.5666	0.0000	0.1677	0.6360
<i>Cash_Assets</i>	0.2734	2.3686	0.0334	0.1640	0.3844
<i>RE_Assets</i>	0.2354	1.0542	0.0651	0.2107	0.4104
<i>Profit_Assets</i>	0.0279	0.9594	0.0013	0.0477	0.1370
<i>Leverage</i>	0.6730	3.3334	0.3324	0.5530	0.8020
<i>Ln(Total Assets)</i>	14.5449	1.2733	13.6457	14.4584	15.3423
<i>Num Employees</i>	5.9953	19.9523	1.0000	3.0000	6.0000
Panel C: Shareholder-Level Variables (N=1,365,822)					
<i>High Tax</i>	0.4754	0.4994	0.0000	0.0000	1.0000
<i>Relevance Non-CHC</i>	0.2934	0.4201	0.0034	0.1034	0.4836
<i>Number of Firms</i>	1.1752	0.5039	1.0000	1.0000	1.0000
<i>Age</i>	49.6902	11.6230	41.0000	50.0000	58.0000
<i>Married</i>	0.6358	0.4812	0.0000	1.0000	1.0000
<i>High Education</i>	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. *** denotes significance at the 1% level.

	<u><i>Baseline Model</i></u>		<u><i>Fully-Interacted Model</i></u>	
	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
<i>Post</i> × <i>High Tax</i> × <i>Owners=1</i>	0.0683*** (0.0020)		0.0405*** (0.0021)	
<i>Post</i> × <i>High Tax</i> × <i>Owners=2</i>	0.0621*** (0.0021)	[2.16]	0.0409*** (0.0021)	[0.10]
<i>Post</i> × <i>High Tax</i> × <i>Owners=3</i>	0.0413*** (0.0035)	[6.67]	0.0224*** (0.0036)	[4.50]
<i>Post</i> × <i>High Tax</i> × <i>Owners=4</i>	0.0153*** (0.0051)	[9.65]	-0.0030 (0.0051)	[7.94]
<i>Post</i> × <i>High Tax</i> × <i>Owners=5</i>	0.0135 (0.0090)	[5.96]	-0.0042 (0.0090)	[4.88]
Controls		Yes		Yes
Controls × Post Interactions		No		Yes
Year-Fixed Effects		Yes		Yes
Owner-Fixed Effects		Yes		Yes
Observations		1,365,882		1,365,882
R-squared		0.5755		0.5787

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 following the fully-interacted model from equation (1), 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. *** denotes significance at the 1% level.

	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner
<i>Post</i> × <i>High Tax</i> × <i>Owners=1</i>	0.0461*** (0.0096)	
<i>Post</i> × <i>High Tax</i> × <i>Owners=2</i>	0.0317*** (0.0095)	[1.12]
<i>Post</i> × <i>High Tax</i> × <i>Owners=3</i>	0.0113 (0.0114)	[2.41]
<i>Post</i> × <i>High Tax</i> × <i>Owners=4</i>	0.0098 (0.0127)	[2.33]
<i>Post</i> × <i>High Tax</i> × <i>Owners=5</i>	-0.0011 (0.0117)	[3.19]
Controls		Yes
Controls × Post Interactions		Yes
Year-Fixed Effects		Yes
Owner-Fixed Effects		Yes
Observations		91,538
R-squared		0.5705

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

This table presents regression results on payout policies of closely held corporations using the baseline model from equation (1). 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. *** denotes significance at the 1% level.

	<u><i>Dividend Payer</i></u>		<u><i>Div / Total Income</i></u>	
	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
<i>Post</i> × <i>High Tax</i> × <i>Owners=1</i>	0.0551*** (0.0035)		0.0187*** (0.0011)	
<i>Post</i> × <i>High Tax</i> × <i>Owners=2</i>	0.0502*** (0.0033)	[1.07]	0.0201*** (0.0010)	[1.02]
<i>Post</i> × <i>High Tax</i> × <i>Owners=3</i>	0.0103 (0.0055)	[7.09]	0.0137*** (0.0017)	[2.50]
<i>Post</i> × <i>High Tax</i> × <i>Owners=4</i>	-0.0077 (0.0073)	[7.86]	0.0066*** (0.0021)	[5.04]
<i>Post</i> × <i>High Tax</i> × <i>Owners=5</i>	-0.0226 (0.0116)	[6.40]	0.0073 (0.0037)	[2.98]
Controls		Yes		Yes
Controls × Post Interactions		Yes		Yes
Year-Fixed Effects		Yes		Yes
Owner-Fixed Effects		Yes		Yes
Observations		1,365,882		1,364,526
R-squared		0.5520		0.5891

Table 6: Effect of Ownership on Tax Sensitivity—Alternative Tax Measure

This table presents regression results on payout policies of closely held corporations over the period 2001–2009 where we split up the tax effect into two tax brackets. We use *%Div Compensation* as dependent variable. In Column (1), we present the interaction of *High Tax*, *Post*, and the respective *Owners* dummy using the *fully-interacted* model from equation (1). In Column (2), we present the interaction of *Top Tax Bracket*, *Post*, and the respective *Owners* dummy. 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. Column (3) presents the t-stat of the difference between *High Tax* and *Top Tax Bracket*. We report robust standard errors clustered at the CHC-owner level in parentheses. *** denotes significance at the 1% level.

	<u>High Tax</u>		<u>Top Tax Bracket</u>		
	(1)		(2)		(3)
	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	[t-stat] of difference in <i>High Tax</i> and <i>Top Tax Bracket</i>
<i>Post</i> × <i>Tax</i> × <i>Owners</i> =1	0.0392*** (0.0021)		0.0438*** (0.0034)		[1.30]
<i>Post</i> × <i>Tax</i> × <i>Owners</i> =2	0.0357*** (0.0022)	[1.16]	0.0487*** (0.0035)	[1.04]	[4.13]
<i>Post</i> × <i>Tax</i> × <i>Owners</i> =3	0.0174*** (0.0038)	[5.12]	0.0258*** (0.0055)	[2.87]	[2.15]
<i>Post</i> × <i>Tax</i> × <i>Owners</i> =4	-0.0119 (0.0055)	[8.69]	0.0088 (0.0075)	[4.30]	[2.91]
<i>Post</i> × <i>Tax</i> × <i>Owners</i> =5	-0.0093 (0.0095)	[4.99]	0.0014 (0.0130)	[3.17]	[0.98]
Controls			Yes		
Controls × Post Interactions			Yes		
Year-Fixed Effects			Yes		
Owner-Fixed Effects			Yes		
Observations			1,365,882		
R-squared			0.5788		

Table 7: 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. We additionally interact control variables with the *Post* dummy. We report robust standard errors clustered at the CHC-owner level in parentheses. *** denotes significance at the 1% level.

	Coefficient Estimate (s.e.)	[t-stat] of Difference to CHC with 1 Owner
<i>Post</i> × <i>High Tax</i> × <i>Owners=1</i>	-0.0363*** (0.0024)	
<i>Post</i> × <i>High Tax</i> × <i>Owners=2</i>	-0.0352*** (0.0022)	[0.36]
<i>Post</i> × <i>High Tax</i> × <i>Owners=3</i>	-0.0252*** (0.0035)	[2.68]
<i>Post</i> × <i>High Tax</i> × <i>Owners=4</i>	-0.0183*** (0.0044)	[3.64]
<i>Post</i> × <i>High Tax</i> × <i>Owners=5</i>	-0.0153 (0.0071)	[2.81]
Controls		Yes
Controls × Post Interactions		Yes
Year-Fixed Effects		Yes
Owner-Fixed Effects		Yes
Observations		1,365,882
R-squared		0.7821

Table 8: 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 follow the fully-interacted model from equation (1) and 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. *** denotes significance at the 1% level.

	<u><i>%Div Compensation</i></u>		<u><i>%Wage Compensation</i></u>	
	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
<i>Post</i> × <i>High Tax</i> × <i>Owners=1</i>	0.0395*** (0.0020)		-0.0305*** (0.0026)	
<i>Post</i> × <i>High Tax</i> × <i>Owners=2</i>	0.0404*** (0.0020)	[0.33]	-0.0338*** (0.0025)	[0.98]
<i>Post</i> × <i>High Tax</i> × <i>Owners=3</i>	0.0258*** (0.0034)	[3.56]	-0.0202*** (0.0041)	[2.18]
<i>Post</i> × <i>High Tax</i> × <i>Owners=4</i>	0.0066 (0.0048)	[6.35]	-0.0113 (0.0056)	[3.16]
<i>Post</i> × <i>High Tax</i> × <i>Owners=5</i>	0.0052 (0.0089)	[3.79]	-0.0025 (0.0097)	[2.79]
Controls		Yes		Yes
Controls × Post Interactions		Yes		Yes
Year-Fixed Effects		Yes		Yes
Owner-Fixed Effects		Yes		Yes
Observations		1,087,918		1,087,918
R-squared		0.5547		0.6401

Table 9: 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 *Avg 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. *** denotes significance at the 1% level.

	Full Sample (1)	Wholly Owned Firms (2)
<i>Avg High Tax</i> × <i>Post</i>	0.0090*** (0.0005)	0.0083*** (0.0007)
<i>Post</i> × <i>Avg High Tax</i> × <i>Separation</i>	-0.0062*** (0.0006)	-0.0048*** (0.0008)
<i>Post</i> × <i>Separation</i>	-0.0233*** (0.0004)	-0.0236*** (0.0006)
<i>Separation</i> × <i>Avg High Tax</i>	-0.0121*** (0.0004)	-0.0133*** (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 10: Tax Sensitivity and Tax Heterogeneity

This figure plots response coefficients to the 2006 tax reform for different tax preference groups. 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 *Avg 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. *HighTaxSD* is our proxy of tax heterogeneity and is a dummy variable equal to 1 if the firm is in the top quintile of the distribution of the standard deviation of income tax rates among shareholders. 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. *** denotes significance at the 1% level.

	<u>At least 2 Owners</u>	<u>At least 4 Owners</u>
	(1)	(2)
<i>Post</i> × <i>Avg High Tax</i>	0.0142*** (0.0006)	0.0149*** (0.0018)
<i>Post</i> × <i>Avg High Tax</i> × <i>HighTaxSD</i>	-0.0139*** (0.0014)	-0.0106*** (0.0038)
Controls	Yes	Yes
Year-Fixed Effects	Yes	Yes
Firm-Fixed Effects	Yes	Yes
Observations	278,962	26,695
R-squared	0.5777	0.6553

Table 11: Payout Policies of Closely Held Corporations

This table presents regression results on payout policies of closely held corporations over the period 2001-2009. *% Div Compensation* (*%Wage Compensation*) is the percentage of total compensation, defined as the sum of wages and dividends, paid as dividends (wages). If total payout is 0, we set *%Div* (*%Wage*) 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. *** denotes significance at the 1% level.

	<u><i>%Div Compensation</i></u>	<u><i>%Wage Compensation</i></u>
Firm-Level Variables		
<i>Cash</i>	0.0209*** (0.0015)	-0.0010 (0.0016)
<i>Profit</i>	0.0029*** (0.0006)	0.0086*** (0.0007)
<i>Ln(Total Assets)</i>	0.0196*** (0.0006)	0.0084*** (0.0006)
<i>Leverage</i>	-0.0278*** (0.0009)	0.0306*** (0.0012)
<i>Retained Earnings</i>	0.0645*** (0.0018)	0.0244*** (0.0025)
<i>Investment</i>	0.0001 (0.0001)	0.0009*** (0.0001)
<i>Num Employees</i>	-0.0029*** (0.0002)	0.0112*** (0.0002)
<i>Owners</i>	0.0203*** (0.0010)	-0.0109*** (0.0012)
Shareholder-Level Variables		
<i>High Tax_{t-1}</i>	0.0208*** (0.0018)	-0.0192*** (0.0021)
<i>High Tax_{t-1} × Owners</i>	-0.0043*** (0.0009)	0.0056*** (0.0009)
<i>Relevance Non-CHC</i>	0.0355*** (0.0013)	-0.1471*** (0.0017)
<i>Age</i>	-0.0048*** (0.0006)	-0.2038*** (0.0008)
<i>Married</i>	-0.0038 (0.0018)	0.0064*** (0.0021)
<i>High Education</i>	0.0069 (0.0071)	0.0251*** (0.0064)
<i>Number Firms</i>	0.0120*** (0.0015)	0.0611*** (0.0018)
Year-Fixed Effects	Yes	Yes
Owner-Fixed Effects	Yes	Yes
Observations	1,365,882	1,365,882
R-squared	0.5741	0.7804

Online Appendix

Figure A.I: Change in Tax Sensitivity around 2006 Tax Reform, Breakdown by Ownership Structure: Seemingly unrelated regression equation model

This figure plots $Post \times High\ Tax$ coefficient estimates from fully-interacted model from Table 3 and Table 7 with the corresponding 95% confidence intervals but uses a seemingly unrelated regression equation (SURE) model.. The $Post \times High\ Tax$ coefficients are estimated for each number of owners bin ranging from one owner to five owners.

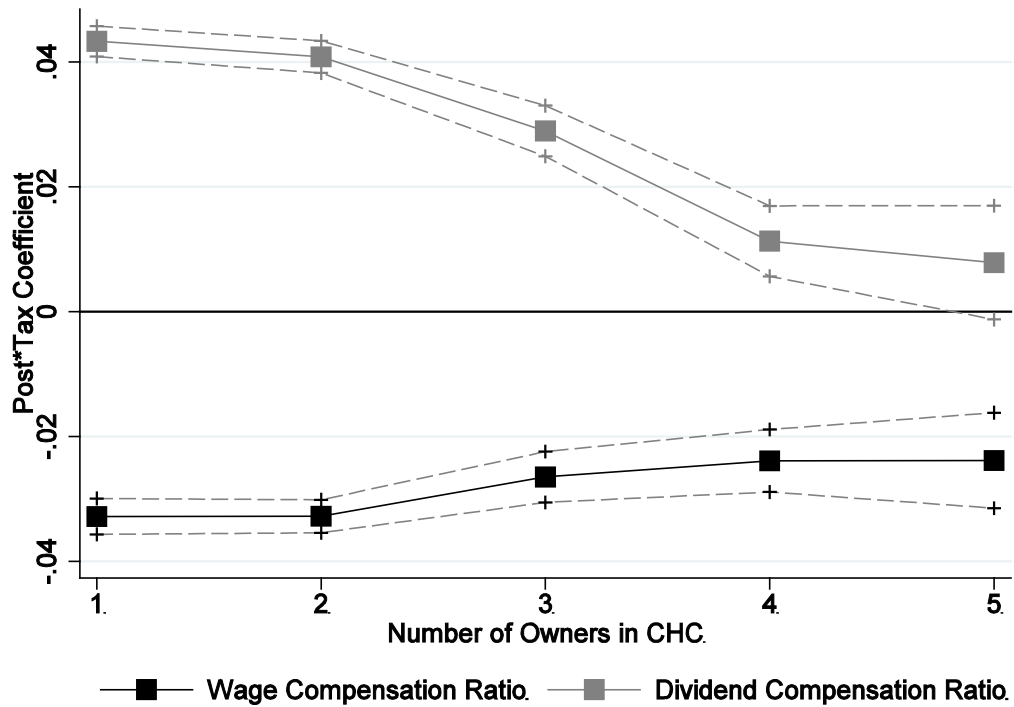


Table A.I: Effect of Ownership on Tax Sensitivity: Robustness to Alternative Sample Restriction

This table replicates Table 3 and Table 7 and presents regression results on payout policies of closely held corporations over the period 2001–2009 but requires that firms survive the period 2004–2007. We use *%Div Compensation* (*%Wage Compensation*) as dependent variable. *%Div Compensation* (*%Wage Compensation*) is the percentage of total compensation, defined as the sum of wages and dividends, paid as dividends (wages). If total payout is 0, we set *%Div Compensation* (*%Wage 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. *** denotes significance at the 1% level.

	<u><i>%Div Compensation</i></u>		<u><i>%Wage Compensation</i></u>	
	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
<i>Post</i> × <i>High Tax</i> × <i>Owners=1</i>	0.0405*** (0.0022)		-0.0368*** (0.0025)	
<i>Post</i> × <i>High Tax</i> × <i>Owners=2</i>	0.0409*** (0.0023)	[0.14]	-0.0341*** (0.0023)	[0.82]
<i>Post</i> × <i>High Tax</i> × <i>Owners=3</i>	0.0218*** (0.0038)	[4.34]	-0.0270*** (0.0037)	[2.22]
<i>Post</i> × <i>High Tax</i> × <i>Owners=4</i>	-0.0033 (0.0055)	[7.47]	-0.0174*** (0.0047)	[3.69]
<i>Post</i> × <i>High Tax</i> × <i>Owners=5</i>	-0.0044 (0.0099)	[4.43]	-0.0170 (0.0078)	[2.40]
Controls		Yes		Yes
Controls × Post Interactions		Yes		Yes
Year-Fixed Effects		Yes		Yes
Owner-Fixed Effects		Yes		Yes
Observations		980,170		980,170
R-squared		0.5484		0.7614

Table A.II: 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 a higher tax on wages than on dividends (*Wage Tax* > *Div Tax*) and into owners with a lower tax on wages than on dividends. Difference estimates are based on linear regressions without control variables. 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. *** denotes 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*** (0.0009)	0.0719*** (0.0010)	0.0670*** (0.0018)	0.0382*** (0.0025)	0.0090 (0.0041)	0.0707*** 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*** (0.0010)	0.0423*** (0.0011)	0.0422*** (0.0020)	0.0240*** (0.0028)	-0.0062 (0.0045)	0.0498*** 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*** (0.0013)	0.0924*** (0.0015)	0.0848*** (0.0027)	0.0415*** (0.0039)	0.0135 (0.0065)	0.0904*** 0.0066
Panel D: Difference Post-Reform – Pre-Reform						
Number of Owners						
DD Estimate	1	2	3	4	5	Difference 5-1
	0.0603*** (0.0015)	0.0501*** (0.0016)	0.0426*** (0.0030)	0.0175*** (0.0042)	0.0197*** (0.0070)	0.0406*** 0.0071

Table A.III: Effect of Ownership on Tax Sensitivity: Robustness to Ownership Restriction

This table replicates the fully interacted model from Table 3 and presents regression results on payout policies of closely held corporations over the period 2001–2009 but requires that (1) number of owners remains unchanged over the 2004–2007 period or (2) uses the 2005 Ownership status. 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 (wages). 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. *** denotes significance at the 1% level.

	<u>Constant Owners 2004–2007</u>		<u>Using 2005 Ownership</u>	
	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
<i>Post</i> × <i>High Tax</i> × <i>Owners=1</i>	0.0362*** (0.0022)		0.0361*** (0.0021)	
<i>Post</i> × <i>High Tax</i> × <i>Owners=2</i>	0.0387*** (0.0024)	[0.80]	0.0368*** (0.0024)	[0.26]
<i>Post</i> × <i>High Tax</i> × <i>Owners=3</i>	0.0251*** (0.0045)	[2.26]	0.0200*** (0.0036)	[3.93]
<i>Post</i> × <i>High Tax</i> × <i>Owners=4</i>	0.0018 (0.0065)	[5.06]	0.0014 (0.0048)	[6.74]
<i>Post</i> × <i>High Tax</i> × <i>Owners=5</i>	0.0008 (0.0113)	[3.08]	0.0044 (0.0080)	[3.84]
Controls		Yes		Yes
Controls × Post Interactions		Yes		Yes
Year-Fixed Effects		Yes		Yes
Owner-Fixed Effects		Yes		Yes
Observations		979,164		1,365,882
R-squared		0.5680		0.5786

Table A.IV: 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 following our baseline model from equation (1), 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. *** denotes significance at the 1% level.

	(1)	(2)	(3)	(4)
<i>Post</i> × <i>High Tax</i> × <i>Owners=1</i>	0.0393*** (0.0032)	0.0436*** (0.0047)	0.0518*** (0.0064)	0.0374*** (0.0103)
<i>Post</i> × <i>High Tax</i> × <i>Owners=2</i>	0.0354*** (0.0026)			
<i>Post</i> × <i>High Tax</i> × <i>Owners=3</i>		0.0264*** (0.0048)		
<i>Post</i> × <i>High Tax</i> × <i>Owners=4</i>			0.0160 (0.0069)	
<i>Post</i> × <i>High Tax</i> × <i>Owners=5</i>				0.0034 (0.0123)
t-stat of Difference to CHC with 1 Owner	1.02	2.70	3.98	2.21
Controls	Yes	Yes	Yes	Yes
Controls × Post Interactions	Yes	Yes	Yes	Yes
Year-Fixed Effects	Yes	Yes	Yes	Yes
Owner-Fixed Effects	Yes	Yes	Yes	Yes
Observations	511,352	198,765	118,106	44,934
R-squared	0.5145	0.5479	0.5589	0.5894

Table A.V: Tax Sensitivity and Tax Heterogeneity

This figure plots response coefficients to the 2006 tax reform for different tax preference groups. 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 *Avg Tax*, which is the weighted average income tax rate on wages of all owners. *Post* is a dummy variable equal to one for years 2006 and later. *TaxSD* is the standard deviation of income tax rates among shareholders. 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. ***(**) denotes significance at the 1% (5%) level.

	<u>At least 2 Owners</u>	<u>At least 4 Owners</u>
	(1)	(2)
<i>Post</i> × <i>Avg Tax</i>	0.00069*** (0.00003)	0.00076*** (0.00010)
<i>Post</i> × <i>Avg Tax</i> × <i>TaxSD</i>	-0.00044*** (0.00007)	-0.00033** (0.00016)
Controls	Yes	Yes
Year-Fixed Effects	Yes	Yes
Firm-Fixed Effects	Yes	Yes
Observations	250,903	27,423
R-squared	0.5978	0.6679