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Dividends and Taxes: The Moderating Role of Agency Conflicts

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Keywords: dividends, taxes, agency costs, shareholder conflicts, indirect ownership

JEL Classifications: G32, G35

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We find that potential conflicts between majority and minority shareholders strongly influence how dividends respond to taxes. Examining the population of firms with proprietary microdata on all family relationships and a million individual tax returns, we utilize a large and clean regulatory shock in Norway that increases the dividend tax rate for all individuals from 0% to 28%. We find that the dividend payout ratio drops less the higher the potential shareholder conflict. The average payout ratio falls by 30 percentage points when the conflict potential is low, but only by 18 percentage points when the conflict potential is high. We also observe a strong increase in the use of indirect ownership of high-conflict firms through tax-exempt holding companies and suggest a policy implication for intercorporate dividend taxation.

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1. Introduction

The effect of taxes on dividends continues to be an open question. While some claim that taxes have a first-order negative effect on dividends (Poterba 2004, Chetty and Saez 2005, 2006, 2010), others argue the effect is only minor (Hubbard and Michaely 1997, Brav et al. 2008, Yagan 2015). We hypothesize that these conflicting results arise because dividends are also determined by corporate governance, which moderates the effect of taxes. Specifically, lower dividends do not just reduce taxes, but may also increase agency costs by making the free cash flow problem more acute (Bhattacharya 1979, Rozeff 1982, Jensen 1986, Chetty and Saez 2005). Therefore, when dividend taxes are increased, firms with serious agency problems may be reluctant to cut dividends despite the potential tax savings.

We study the causal effect of taxes on dividends by exploiting a large and clean regulatory shock in Norway in 2006 that increased the dividend tax rate for individuals from 0% to 28%. Because the tax shock is large, any change in dividend policy around the time of the tax reform is likely to be driven by taxes. Because the tax shock is unusually clean, with a flat tax rate both before and after the tax reform, we avoid complications due to multiple tax brackets. Finally, because dividends and capital gains are taxed identically and share repurchases are negligible, we can focus on just cash dividends.[1]

Our main contribution is to show that the impact of taxes on dividends depends strongly on the severity of agency costs and to propose a way to measure this interaction. One common source of agency costs is the conflict of interest between managers and shareholders (e.g., Jensen and Meckling 1976, Chetty and Saez 2010). We focus instead on the less analyzed conflict between majority and minority shareholders, which may be particularly important for dividend policy because the controlling stake gives sufficient power to single-handedly make the dividend decision

[1] Share repurchases have been allowed since 1999. We find repurchase activity only in 1.5% of the firm years in our sample. Excluding these observations has no effect on any of our results.

and extract private benefits at the expense of minority shareholders. The controlling stake also gives the owner strong incentives to monitor management and mitigate the manager-shareholder conflict, which can thus be considered minimal.

We exploit the cross-sectional variation in the controlling shareholder's incentive to expropriate, which depends on the size of her equity stake. The smaller the controlling stake (i.e., the closer to 50%), the greater her incentives to extract private benefits, and thus the greater the importance of dividends to mitigate agency conflicts. The tax shock increases the cost of paying dividends and should therefore cause all firms to reduce dividends. However, the controlling shareholder must trade off the tax cost of dividends against the agency benefit of lower shareholder conflicts. Thus, firms with a smaller controlling stake should reduce dividends less, because dividends are used to address agency costs.

Consistent with this prediction, we find that the tax shock has a large effect on dividends, reducing the average dividend payout ratio (dividends to earnings) from 43% to 18%. Moreover, the dividend drop is smaller the higher the potential shareholder conflict. For instance, the average payout ratio falls by 30 percentage points when the majority shareholder's stake is high (90–99%; low conflict), but falls only by 18 percentage points when the stake is low (50–60%; high conflict). Similarly, multiple-owner firms are more reluctant to cut dividends than are single-owner firms, which have no shareholder conflicts. These results suggest that because controlling shareholders trade off the tax effect against the conflict effect, the relationship between taxes and dividends depends strongly on the severity of agency costs.

Our hypothesis implies that firms with severe shareholder conflicts, which are reluctant to reduce dividends after the tax shock, will look for ways to mitigate the increased tax burden. While the tax reform raises the tax on dividends paid to individuals from 0% to 28%, dividends paid to firms remain tax-free. This difference creates incentives to own shares indirectly through holding companies rather than directly. Indirect ownership ensures that free cash flow is taken away from

the majority shareholder's control without triggering immediate tax payments.[2] We hypothesize that higher dividend taxation for individuals increases the use of indirect ownership, particularly in firms where potential shareholder conflicts are high. We find strong support for this prediction. The number of holding companies quadruples after the tax shock, and the ratio of holding companies to all companies grows from 2% to 12%. Difference-in-difference tests across four Nordic countries confirm that this sharp growth in indirect ownership is unique to Norway. Using a switching model to account for possible self-selection, we find that firms with higher potential shareholder conflicts are particularly likely to be indirectly owned.[3] Moreover, controlling for self-selection into indirect ownership does not alter our main result that firms with higher potential shareholder conflicts cut dividends less when dividend taxation increases.

The properties of our data set increase the ability to identify the relationship between dividends, taxes, and agency costs. The data set covers the population of economically active firms over thirteen years. We use proprietary microdata from publicly audited accounting statements, personal tax returns and salary receipts of more than one million individuals, the ownership and leadership structure of every firm in the economy, and all family relationships between owners, directors, and CEOs. The detailed ownership and family data allow us to identify majority shareholders and to analyze a clearly identified agency conflict.[4]

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[2] Norwegian holding companies have no special tax status. Just as for any corporate owner, the dividends they receive are tax-free. A holding company cannot permanently shield its personal owners from taxes on cash needed for consumption, because the holding company must pay this cash to the person as taxable dividends. However, the holding company can be used to store the cash paid out from the operating company. Also, because 71% of the holding companies in our sample own shares in just one operating company, most holding companies cannot be used to reallocate capital across operating companies. Moreover, as holding companies have no operating activity, and because 79% of them have just one owner, agency problems in the holding company are negligible. Finally, establishing a holding company triggers registration costs, reporting costs, and equity requirements.

[3] Our instruments for indirect ownership are the largest number of investments by any of the firm's shareholders, and whether the largest shareholder's investment exceeds the regulatory minimum for holding companies. Given the fixed cost of setting up a holding company, indirect ownership is more attractive for non-tax reasons if used to manage multiple or large investments. The number of investments or whether the investment in question is above a given threshold are unlikely to directly influence the fraction of earnings paid as dividends.

[4] Because majority owners in our sample have the incentive and power to monitor managers, agency conflicts between shareholders and managers are minimal. Also, our results are robust to whether the CEO belongs to the controlling family, suggesting that variations in the closeness between the controlling shareholder and management is irrelevant.

Our findings extend the dividend literature on taxes, agency costs, and private firms in several ways. Regarding taxes, we find strong evidence that taxes have a large first order effect on dividends, but that the effect varies strongly with potential agency conflicts. We suggest how to measure this impact. This result implies that ignoring the role of agency costs, as in most of the literature on dividends and taxes, produces a too simply story of what taxes do to dividend policy.

Neither tax clienteles nor tax arbitrage have produced our results. The identification of tax effects is often complicated by dividend tax clienteles, as investors in different tax brackets pay different taxes on their dividend income (Elton and Gruber 1970, Desai and Jin 2011). In contrast, the tax rate in our setting is flat and identical for dividends and capital gains. This means the tax shock changed the tax cost of dividends identically across all taxable investors, while the potential agency cost remained unaltered. Tax arbitrage between dividends and capital gains cannot explain our results either. Most tax reforms examined in the literature changed not just the dividend tax, but also the relative taxation of dividends and capital gains, such as the 1986 and the 2003 reforms in the United States (Hubbard and Michaely 1997, Chetty and Saez 2005). These tax reforms may influence both the overall payout and the choice of payout type. In contrast, the tax reform we study was designed to affect dividends and capital gains equally (Sørensen 2005). Because the tax change is neutral across payout types, the dividend response cannot be driven by tax-induced shifts between dividends and repurchases. This neutrality also rules out the possibility that dividends are used as a credible signal of intrinsic value (Bernheim 1991, Bernheim and Wantz 1995). Moreover, we find no indication that shareholders pay themselves larger salaries to offset the smaller dividends after the dividend tax increased (Jacob and Michaely 2017).

Our second contribution is to identify how dividend policy is used to decrease agency costs. We use the tax shock and the very stable ownership structure of firms with controlling shareholders as our identification strategy. Unlike Chetty and Saez (2005), we choose an empirical setting where the important conflict is between majority and minority shareholders rather than between

shareholders and managers. Unlike Jacob and Michaely (2017), we analyze dividends as a mechanism for reducing the free cash flow problem in the population of majority-controlled firms rather than a tax-driven instrument for splitting a given payout into dividends and salary in small, entrepreneurial firms that may or may not be majority-controlled.[5]

Our results contradict the results of La Porta et al. (2000), who find that firms pay higher dividends in countries with stronger legal regimes. They interpret their results as supporting the "outcome" theory that strong legal regimes force firms to pay high dividends. Our results instead support the "substitute" theory that majority shareholders voluntarily choose high dividends to mitigate conflicts with minority shareholders.

One possible reason for this difference is that while La Porta et al. (2000) study the relationship between dividends and agency conflicts at the country level (comparing firms across many countries), we do so at the firm level (comparing many firms in one country). Equity can flow more easily between firms within one country than between firms in different countries, and minority investors can more easily choose firms with a favorable payout policy within one country. Thus, controlling shareholders in firms with higher conflict potential may find it beneficial to pay higher dividends now in order to build trust and thereby ensure cheaper minority investment later (Gomes 2000, Berzins et al. 2018). As a result, while La Porta et al. argue that dividends are an outcome of corporate governance regulation at the country level, we show that dividends substitute for other governance mechanisms at the individual firm level.

[5] Jacob and Michaely (2017) analyze firms exposed to a change in the relative taxation of dividends and salary. This tax change may produce heterogeneous preferences for receiving payout as dividends vs. salary. They show that shareholder coordination issues and potential conflicts between shareholders and managers may reduce the switching between the two payout forms. In contrast, we focus on conflicts between majority and minority shareholders and the free cash flow problem. We control for the number of owners, which is their proxy for coordination issues, and show that our results are influenced neither by the switching between labor income and dividends nor by the closeness between managers and controlling shareholders.

Separately, our results suggest that the potential for agency conflicts has important effects on dividends even when minority investors are well protected by the law. While good regulatory protection may be sufficient, it may not be necessary, as dividend policy can build reputation and thereby reduce agency conflicts. Thus, reducing agency costs by market mechanisms and voluntary action rather than by institutions and mandatory law is an important perspective on how dividend decisions are made. This perspective seems particularly relevant when investors are well protected by the law, as in common-law countries like the United Kingdom and the United States.

Our third contribution to the literature comes from the fact that almost all firms in our sample of majority-controlled firms are private. Thus, we expand the very limited literature on dividends in private firms, which is the dominating firm type in any country (Kobe 2012). Our findings support the existing intuition that agency concerns matter for dividends in such firms (Michaely and Roberts 2012, Jacob and Michaely 2017). Going beyond this intuition, we identify and measure a strong empirical link between dividends and the dominating agency conflict in private firms, which is the one between majority and minority shareholders (Nagar et al. 2011).

Finally, our findings suggest that indirect ownership may have more positive effects than what the literature has claimed (Faccio et al. 2001, Morck and Yeung 2005). A system of taxing intercorporate dividends as used in the United States may limit pyramiding, but may increase the cost of taking cash outside the reach of firm insiders. In contrast, the system of tax-free intercorporate dividends used in Norway and many other countries enables shareholders to organize their ownership in ways that reduce the cost of trading off tax effects and agency effects.

The next section describes the regulatory setting, and Section 3 presents the data and the sampling procedure. Section 4 explores the dynamics of dividend payout around the tax reform, while Section 5 examines how indirect ownership influences the tradeoff between tax effects and agency effects. We summarize and conclude in Section 6.

2. Regulation

The Norwegian tax reform we examine increased the tax cost of paying dividends to individuals and aligned the tax rates on dividends, capital gains, interest, and labor.[6] The reformed tax system resembles the system used in most countries, where only individuals pay dividend tax.[7]

The tax reform announced on March 26, 2004 and implemented on January 1, 2006 introduced a 28% personal tax on dividend income and capital gains in excess of a threshold amount based on riskless returns.[8] Under the previous tax regime, dividends were tax-exempt for any shareholder, while the tax for capital gains was almost always applied to a zero base and was hence tax-free as well. Firms paid no taxes on dividends and capital gains neither before nor after the reform. During the transition in 2005, personally held shares could be transferred to a holding company without triggering capital gains tax. There are no confounding events around these tax reform dates.[9]

The dividends are proposed by the board, and the shareholder meeting sets the dividends by majority vote. Dividends are paid to all shareholders in proportion to their percentage equity stake, and the dividends can be paid out of the previous year's earnings and any retained earnings from earlier years. The dividend decision is typically made two months after the fiscal year's end, and the payment happens two weeks afterwards.

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[6] The main purpose of the tax reform was to decrease the difference in tax rates between labor income and investment income. The reform decreased the top marginal tax on labor income from 64.7% to 54.3%, while the sum of taxes paid by the firm and the investor on dividends and capital gains increased from 28% to 48.2%. The system of tax-free intercorporate dividends and capital gains was maintained to ensure that the tax on investment income would not exceed the tax on labor income. Source: www.regjeringen.no/nb/dep/fin/.

[7] The major exception is the United States, where intercorporate dividends are taxed, albeit at a discounted rate. Because institutions pay no dividend tax in that regime, institutions might have a role similar to that of holding companies in our sample. However, Grinstein and Michaely (2005) do not find that higher institutional ownership is associated with higher payout. One possible reason is that institutions rarely own controlling stakes.

[8] The risk-free deduction is applied uniformly for all individual investors at a rate set by the Ministry of Finance.

[9] As detailed below, we exclude the transition years 2004 and 2005 when the reform was announced, but not yet implemented. Including these years does not change our results.

3. Data

The data set covers the period 2000–2012.[10] We include several years on both sides of the tax reform in order to capture permanent shifts in dividend policy rather than just one-off temporary effects. Our dating system uses the accounting year rather than the payout year, which is the year after. Thus, the dividends we report for year *t* are paid out in year *t*+1, the last year before the tax reform is 2004, and the first year after is 2005.

We apply several filters to build the sample of economically active firms from the population of all limited-liability firms:

1. We exclude financial firms in order to avoid the impact of peculiar capital requirements and accounting rules.
2. We require positive sales, assets, and employment to avoid inactive firms.
3. We exclude business groups and subsidiaries unless controlled by a holding company.[11] Dividends in business groups can be distorted by special tax rules for cash transfers between group members.
4. We ignore the smallest 5% of firms by assets, sales, and employment.
5. We exclude holding companies except as owners of operating companies.

These filters produce a sample that contains all active non-financial public and private firms. We add an ownership filter to construct the sample of firms with potential conflicts of interest between majority and minority shareholders. Firms in this sample must have a controlling shareholder, which means more than half the equity is owned by a family or by a firm whose ultimate owners

[10] Accounting, ownership, and board data are delivered by Experian (www.experian.com). Data on family relationships are from Skattedirektoratet (www.skatteetaten.no), which is a state agency. All data items were received electronically and stored by the Centre for Corporate Governance Research (www.bi.edu/ccgr).

[11] Pyramiding is rare in Norway, as 79% of the holding companies have just one owner after the tax reform, while 8% have two owners. The pre-reform proportions were 43% and 17%, respectively. Building control through more than one level of pyramiding occurs in 0.52% of the operating companies after the tax reform and 0.18% before.

cannot be identified.[12] The ownership filter, which uses ultimate ownership rather than just direct, produces a sample of majority-controlled firms that represent around 70% of aggregate sales, assets, and earnings in the economy. The number of firms in this sample that are larger than the median public firm is 15 times the total number of public firms.

We keep majority control constant across the firms in the main sample while exploiting the variation in ownership concentration, which reflects how cash-flow rights are split between majority and minority shareholders. The majority shareholder can determine total payout single-handedly, but the proportion of it she receives depends on the size of the majority stake. The potential conflict between shareholders and management is minimal, as the controlling shareholder owns 71% of the equity on average, which provides the power to hire and fire managers as well as strong incentives to monitor them. Moreover, the controlling shareholder is a family in 95% of the cases, is on the board in 68% and holds the CEO position in 52%. Only about four percent of the equity is owned by foreigners.

We reduce complexity and increase power by excluding firms without a controlling shareholder. In such firms both shareholder conflicts and shareholder-manager conflicts can be important for payout. A larger stake may increase the former conflict (Demsetz and Lehn 1985), but increase the latter (Shleifer and Vishny 1986), making the net agency effect on dividends ambiguous. Moreover, complex owner coalitions may be needed to establish control (Laeven and Levine 2008), and the equity stake of managers vs. that of outside owners may become important (Eckbo and Verma 1994). Therefore, not surprisingly, we find that, unlike in our main sample, dividends and the largest equity stake are unrelated in firms without a controlling shareholder.

[12] We define a family as a group related by blood or marriage up to the fourth degree of kinship (https://sdsos.gov/elections-voting/assets/Kinship%20Chart.pdf). We cannot identify the ultimate owners of financial institutions, foreign personal investors, and foreign corporate investors.

The time period we study overlaps with the global financial crisis. However, the effect of the crisis on the Norwegian economy was limited due to high oil prices. There was just a dip of -1.0% in GDP in the last quarter of 2008 and a dip of -0.8% in the first quarter of 2009. Payout ratios remained quite stable throughout the financial crisis. Moreover, our results are robust to excluding the crisis years and to controlling for fixed year effects when the crisis years are included.

Finally, we measure indirect ownership as holding company ownership. A holding company must have the relevant industry code or a ratio of sales to assets below 5%, reflecting minor economic activity beyond owning financial assets. This filter ensures that holding companies mainly manage their owners' investments in operating companies. Holding companies enter our samples only as owning entities and never as owned.

4. The agency-related shift in dividend policy after the tax increase

A key question in agency-related dividend policy is whether shareholders use dividends to reduce or increase agency conflicts. There are two mutually exclusive theories (LaPorta et al. 2000, Cheffins 2006). Dividends are used to reduce agency conflicts in the substitute theory, which reflects minority-friendly behavior. A larger conflict potential as reflected in the ownership structure is associated with higher payout. The opposite behavior is assumed in the outcome theory, where majority shareholders opportunistically exploit minority shareholders by paying lower dividends the larger the potential conflict. We specify the agency-related hypotheses only under the substitute theory, as the outcome theory always predicts the opposite.

4.1 The baseline model

We test two hypotheses in this section. The first hypothesis predicts that dividends will decrease in all firms after the tax increase (H1**)**. We test H1 by comparing the average firm's payout ratio and payout propensity before and after. We define the pre-reform period as 2000–2003, which is

before the tax reform was announced. Our post-reform period is 2006–2012. We exclude the immediate pre- and post-reform years 2004 and 2005 in order to avoid the temporary effect created by firms paying high dividends after the reform is announced, but before it is implemented.[13]

Our second hypothesis predicts that the fall in dividends after the tax reform will be smaller the more dividends can reduce shareholder conflicts (H2). Hence, payout will fall, but firms with higher conflict potential will be more willing to continue paying. As in Chetty and Saez (2005), we classify firms into groups with different intensity of the agency problem based on the ownership structure just before the tax reform was announced. H2 implies that among the firms with a controlling owner, the dividend decrease will be smaller in multiple-owner firms than in single-owner firms, since the latter have no shareholder conflicts. Also, the decrease will be smaller in multiple-owner firms where the controlling stake is low (closer to 50%) rather than high (closer to 100%). This is because controlling shareholders of low-concentration firms are more tempted to choose private benefits over dividends, as almost half the private benefits are financed by minority shareholders. In contrast, controlling shareholders of high-concentration firms receive most of the dividends and therefore internalize most of the costs of private benefits. We first test H2 with univariate models for the paired difference in payout behavior before vs. after the tax reform.

The ownership structure of our sample firms is extremely stable. Because almost all sample firms are private, their shares rarely trade. Indeed, ownership concentration is identical from one year to the next in 93% of the firm years. Therefore, we classify a firm's conflict potential based on its ownership concentration in 2000–2003, which is before the tax increase was announced. This ownership concentration can be considered exogenous to the tax shock, and Table 1 confirms that ownership concentration remains largely constant during the sample period.[14] In contrast, we use

[13] Including 2004 and 2005 in the sample has no effect on our main results.
[14] Tests using the ownership structure for 2000, the earliest year in our sample, produce very similar results.

contemporaneous values for free cash flow, our additional measure of potential agency conflicts, because it is much less stable than ownership.

Table 1 reports initial tests of H1 and H2, comparing the mean payout ratio (Panel A) and the proportion of dividend payers (Panel B) before and after the tax reform in all firms (H1) and in majority-held firms with different potential agency problems (H2).[15]

Table 1

Considering first any firm regardless of its ownership structure (All firms), the mean payout ratio in Panel A declines from 43% before the tax reform to 18% after. The proportion of dividend payers in Panel B declines from 41% to 23%. Consistent with H1, this shift in payout policy is strongly significant both statistically and economically. These results support earlier arguments in the literature that taxes have a first-order effect on dividends (Poterba 2004, Chetty and Saez 2005, 2006, 2010). Also, the large tax effect on dividends in our sample of mostly private firms supports the idea that dividend smoothing is no major concern in such firms (Michaely and Roberts 2012).

A similar shift happens in the subsample of firms with a controlling owner, which is the relevant sample for H2. Both the payout ratio and the payout propensity decrease significantly less in multiple-owner firms (potential shareholder conflict) than in single-owner firms (no shareholder conflict). For instance, Panel A shows that average payout decreases by 30 percentage points in single-owner firms and by 27 in multiple-owner firms. This difference has a *p*-value below 0.1 %.

We further decompose the sample of multiple-owner firms with a controlling owner into low-concentration (large conflict potential) and high-concentration firms (small conflict potential). Both payout measures fall much less in low-concentration firms. For instance, Panel A shows that

[15] The year refers to the accounting year the dividends are based on. For instance, the 2006 dividends are based on accounting data from year-end 2006 and are paid in the spring of 2007.We exclude the year 2004, which is the last dividend payment year before the tax reform. It was already known that dividend taxes would increase, and the payout was unusually large. We also exclude 2005 because it was a transition year. However, no relationship changes significantly if we include 2004 and/or 2005.

the average payout ratio decreases by 30 percentage points in high-concentration firms and by just 18 in low-concentration firms. The difference is highly significant statistically.

The results in Panels A and B of Table 1 are consistent with the tradeoff logic of H2. That is, dividends react less to the dividend tax increase the more serious the potential shareholder conflict. However, these effects may also be driven by shifts in other dividend determinants than taxes and the rough classification of conflict potential. Panel C shows the difference in the after vs. before tax-reform value for our agency measures (average ownership concentration and free cash flow), and other possible determinants. The results show that compared to the situation before the tax reform, the average post-reform firm has the same ownership concentration and free cash flow. Hence, the potential seriousness of the shareholder conflict is typically unaffected by the tax reform. However, the average post-reform firm has more shareholders, larger size, less growth, and less risk. Therefore, the second test of H2 uses a multivariate model to examine the effects on dividends coming from taxes, potential agency conflicts, the interaction between the two, and control variables. Our baseline model is:

$$\begin{aligned} D_{it} = {} & \alpha + \beta_1 \textit{After tax reform} + \beta_2 \textit{Ownership}_{it} + \beta_3 \textit{Ownership}_{it} \cdot \textit{After tax reform} \\ & + \beta_4 \textit{Free cash flow}_{it} + \beta_5 \textit{Free cash flow}_{it} \cdot \textit{After tax reform} \\ & + \beta_6 \textit{Number of owners}_{it} + \beta_7 \textit{Number of owners}_{it} \cdot \textit{After tax reform} \\ & + \beta_8 \textit{Size}_{it} + \beta_9 \textit{Age}_{it} + \beta_{10} \textit{Growth}_{it} + \beta_{11} \textit{Risk}_{it} + \varepsilon_{it} \end{aligned} \qquad (1)$$

The dependent variable is the payout ratio *D*, which we calculate as cash dividends to operating earnings. We measure the agency conflict in three ways. The first is to let *Ownership* be the dummy variable *Single-owner firm*, which captures the dividend effect of not being subject to any shareholder conflict whatsoever. Our second and most important agency measure is to let *Ownership* be *High-concentration firm*, which is 0 if the majority shareholder's ultimate equity stake is 50–60% (low concentration and hence high conflict potential) and 1 if the stake is 90–99% (high concentration and hence low conflict potential). The third agency measure is *Free cash flow*,

where a higher value reflects higher conflict potential. We operationalize this variable as cash flow from operations over assets.

Because the ownership structure is extremely stable, we classify a firm's conflict potential based on the firm's ownership concentration in 2000–2003, which is before the tax increase was announced. We consider this ownership concentration exogenous to the tax shock, and Panel C of Table 1 confirms that it remains largely constant during the sample period. Because free cash flow is much less stable than ownership, we use contemporaneous values for free cash flow.

We control for financial constraints, growth opportunities, and risk (DeAngelo et al. 2009). We expect that payout will increase with the firm's *size* and *age* (Denis and Osobov 2008), which Hadlock and Pierce (2010) interpret as indicators of lower financial constraints. Fama and French (2001) show that dividends relate significantly to size, which we measure by the log of revenues in millions of NOK. We measure age by the log of the number of years since the firm was founded as of 2005. *Growth* is measured by sales to assets, using the logic that a higher ratio reflects lower slack, higher investment needs, and hence lower dividends. *Risk* is measured by the volatility of sales growth over the last three (minimum) to seven (maximum) years. Dividends have been shown to be inversely associated with risk (Grullon et al. 2002). Finally, we include the *Number of owners* and its interaction with the after-tax-reform dummy to account for possible coordination problems among shareholders that may reduce the elasticity of dividends to taxes (Jacob and Michaely 2017).

We first estimate (1) on the population of all firms regardless of ownership structure. In this version of (1) we do not include the ownership variable, predicting $\beta_1 < 0$, $\beta_4 > 0$, $\beta_5 < 0$, and $\beta_7 > 0$. We predict $\beta_5 < 0$ because the tax cost of paying out free cash flow is higher after the tax increase. Similarly, we expect $\beta_7 > 0$ because the need to coordinate more owners may make it harder to reduce dividends after the tax increase. For the control variables, we predict $\beta_8 > 0$, $\beta_9 > 0$, $\beta_{10} < 0$, and $\beta_{11} < 0$. Because we have several observations for each firm, we cluster standard errors at the firm level. We use industry dummies and year fixed effects in all specifications. Moreover, we

account for unobserved cross-sectional heterogeneity by considering the change in payout within each firm as described in model (2) below.

When using the subsample of firms with a controlling shareholder, we measure *Ownership* in (1) by the dummy variable *Single-owner firm*, which we also interact with *After tax reform*. We expect a negative coefficient for the interaction term, as single-owner firms have no shareholder conflict and are more likely to cut dividends when the dividend tax increases. Narrowing the sample further to multiple-owner firms with a controlling shareholder and either high or low ownership concentration, we measure *Ownership* as *High-concentration firm* (the majority shareholder's equity stake is 90–99% as opposed to 50–60%), and we also interact it with *After tax reform.* We expect a negative coefficient for the interaction term, as high-concentration firms have lower potential agency conflicts and hence find it less costly to reduce dividends in order to save taxes for their owners.

Table 2 reports the results. Panel A presents the results of estimating model (1). The strongly negative coefficient for the post-reform dummy in all three samples confirms the large decrease in payout, found in Table 1, even when we account for the heterogeneity of firm characteristics. These results support H1.

Table 2

As in Table 1, we use the subsample of firms with a controlling owner to test H2. Single-owner firms (no shareholder conflict) experience a larger decrease than multiple-owner firms, the interaction term being -0.0463. Multiple-owner firms with high ownership concentration (low shareholder conflict) reduce their payout more than do low-concentration firms, as the interaction term is -0.0792. Controlling for firm characteristics, the expected decrease in the payout ratio is eight percentage points smaller in firms with large potential agency conflicts. This difference is economically large, considering that the average decrease is 25 percentage points and that post-

reform average payout ratio is 18%. Higher free cash flow is associated with higher dividends in every sample, although the association is weaker after the tax shock in majority-held firms.

As expected from the coordination argument, a larger number of shareholders reduces the tax elasticity of dividends. Finally, the control variables are associated with dividends as predicted: Larger, older firms with fewer growth opportunities and lower risk pay higher dividends.

As an alternative to (1), we estimate a model where the dependent variable is the average payout ratio after (2006–2012) minus before (2000–2003) the tax reform:

$$\Delta D_i = \alpha + \beta_1 Ownership_i + \beta_2 \Delta Free\ cash\ flow_i + \beta_3 Number\ of\ \ owners_i + \beta_4 \Delta Size_i + \beta_5 Age_i + \beta_6 \Delta Growth_i + \beta_7 \Delta Risk_i + \varepsilon_i, \quad (2)$$

where Δ denotes difference. This model uses less information than (1), but reduces the possible problem caused by autocorrelated independent variables (Bertrand et al. 2004). *Ownership* is measured as the average for 2000–2003, and *Age* is the age of the firm in 2005.

Panel B presents the estimates of (2). We once more find that single-owner firms reduce their dividends more after the tax increase than multiple-owner firms do, and that high-concentration firms with multiple owners reduce payout more than low-concentration firms do. Increased free cash flow is associated with higher dividends after the tax reform. Having more owners reduces the decrease in payout, although the result is rather weak. Increased size and decreased risk are associated with higher dividends.

Panel C uses payer status as the dependent variable. Consistent with the results based on payout ratios in Panel B, we find that the likelihood of paying dividends decreases after the tax reform, and that the decrease is more pronounced for single-owner and high-concentration firms.

4.2 Robustness of the baseline results

The findings in Table 2 are consistent with H1 and H2. We next analyze whether this result is due to how we measure payout, to shifts from reduced dividend income to increased labor income, to the fact that we ignore manager-shareholder conflicts, and to possible shifts in the control variables around the time of the tax reform.

One worry about the classic payout measure we have used (dividends to earnings) is that controlling owners may inflate it by manipulating reported earnings downwards (La Porta et al. 2000). We address this problem in three ways. First, such manipulation is not possible for the positive dividends dummy used in Panel C of Table 2, which produces the same results as in Panels A and B. Second, we measure payout in Table A.1 of the Appendix as dividends to sales (Panel A) and as dividends to assets (Panel B), which may be harder to manipulate than dividends to earnings. The results are consistent with those in Table 2.

Third, the change in payout after the tax reform may come from firms that stop paying dividends altogether (omissions) or from reductions in still positive dividends (decreases). Along the lines of Chetty and Saez (2005), we therefore examine dividend changes at the extensive margin by considering the proportion of firms with dividend omissions. We also consider the intensive margin by analyzing firms with dividend decreases, which we define as firms that pay dividends both before and after the reform, but that reduce dividends by at least 20% after the reform. Table A.2 shows that firms with higher potential for agency conflicts change dividends less both at the extensive margin (Panel A) and the intensive margin (Panel B), with the former effect being larger than the latter. Thus, dividend changes around the tax reform are more likely to come from omissions than from decreases, particularly in single-owner firms and high-concentration firms. This finding is in line with our main results.[16]

[16] The findings on dividend initiations and increases are also consistent with our main result: Single-owner firms and high-concentration firms are significantly less likely to initiate or increase dividends after the tax reform.

A major rationale for the tax reform was to reduce the gap between the taxation of capital income (dividends and capital gains) and labor income by increasing the tax on capital income for individuals (Sørensen 2005). Therefore, one may suspect that the reduced dividend income we have observed has been compensated for by increased labor income, making total payout insensitive to the tax increase**.** This behavior may be more likely in firms controlled by a family, which constitute 95% of our main sample. If this neutralizing labor income does not materialize, however, we expect that total payout will decrease and also that the cash holdings will increase.

Panel A of Table A.3 considers the labor income paid to the firm's shareholders in a given year. We normalize the labor income by the sum of the firm's earnings and the labor income paid to shareholders. These gross earnings reflect resources that can be paid to the owners, whether as dividend income or labor income. The figures show that the labor income either stays constant or decreases after the dividend tax increase, and that the effect is unrelated to potential shareholder conflicts. For instance, the average ratio of labor income to gross earnings is unchanged at 64% for firms with a controlling owner as a whole, and the change is not significantly different in low- and high-concentration firms. Hence, it does not seem that increased labor income is used to offset reduced dividend income.

Panel B shows the average dividends paid from the firm to its shareholders per unit of gross earnings. The results are in line with those in Table 1: Dividends decrease after the tax reform, and the decrease is smaller the higher the potential agency conflict.

The findings in Panels A and B show that firms reduce total payout to shareholders per unit of gross earnings after the dividend tax increase. This evidence suggests that the firm may have increased its cash holdings. This intuition is confirmed by Panel C, which shows the average, annual change in cash holdings per unit of gross earnings. The figures show that while the cash holdings decrease slightly before the tax reform, they increase afterwards.

We have so far ignored potential agency conflicts between owners and managers, arguing that this problem is generally small in our sample, where the dominating agency conflict is between majority and minority shareholders. However, the controlling family may have concerns about potential conflicts of interest with a CEO who is not recruited from the family (Anderson and Reeb, 2003). Accordingly, family-controlled firms without a family CEO may pay higher dividends not in order to reduce shareholder conflicts, but to reduce shareholder-manager conflicts. Table A.4 estimates (1) in family-controlled firms that do vs. do not have a family CEO. The estimates show that the sensitivity of dividends to taxes, ownership concentration, and free cash flow is very similar in the two samples. Thus, potential concerns for shareholder conflicts do not dominate concerns for shareholder–manager conflicts when majority shareholders make the dividend decision.

Independent variables that are serially correlated may lead to inconsistent standard errors (Bertrand et al. 2004). To reduce this possibility, we estimate model (1) in Panel A of Table A.5 by collapsing the annual values for each variable into one average value pre-reform and one value post-reform. Moreover, we estimate (1) with annual dummies instead of the before/after tax reform dummy in Panel B. The results are consistent with what we found in Table 1. Finally, Panel C runs regressions separately before and the years after the tax reform. The results show that firms with higher potential for agency conflicts pay significantly more in the years following the tax reform.

Our final robustness test uses a version of (1) that interacts every control variable with the post-reform dummy variable. We do this to account for potential shifts in how control variables influence payout around the time of the tax reform. The findings as shown in Table A.6 are consistent with those in Table 2.

Altogether, the results in this section support the predictions of H1 and H2 that although dividend payout is highly sensitive to taxes in the average firm, the sensitivity varies strongly in the cross section. This happens because the costly tax effect of dividends is traded off against the beneficial agency effect, which is heterogeneous across firms. We find no evidence that this result

is due to the way we measure payout, to shifts from reduced dividend income to increased labor income, to conflicts between owners and managers, to serially correlated variables, or to shifts in control variables around the time of the tax reform. These results are consistent with the overall idea that the tradeoff between tax effects and agency effects makes shareholders more willing to incur the tax cost of dividends the higher the agency benefit.

5. Trading off tax effects and agency effects under indirect ownership

This section explores whether the choice of organizational form is used to more easily trade off tax effects against agency effects in dividend policy. We can study this mechanism because the tax reform introduced taxes on personal dividends, but not on intercorporate dividends. This tax system may have created incentives to hold shares through corporate entities, which we call holding companies. The holding companies have no special tax status and no economic activity. They do not allow shareholders to avoid taxes permanently, as dividends paid out for consumption trigger personal taxes. However, the cash paid out from the operating company to reduce its free cash flow problem can be stored in the holding company until the owner needs the cash for consumption.

Specifically, we test two hypotheses by analyzing whether the tax increase for individuals, but not for firms, makes shareholders switch from direct to indirect ownership in order to maintain payout (H3), particularly when potential shareholder conflicts are large (H4). Such a mechanism would support the main result from Section 4 by suggesting that shareholders ensure free cash flow can be paid at minimum tax costs when the agency benefit is substantial. We classify a firm as indirectly owned if at least one shareholder is a holding company. If not, the firm is directly owned.

We test H3 by analyzing whether indirect ownership is more common after the tax reform than before and whether this is a unique Norwegian phenomenon. We use *t* tests for the difference before vs. after in the proportion of holding companies and in the proportion of companies with a holding company owner.

Consistent with H3, Table 3 documents a strong increase in the use of indirect ownership around the time of the tax reform. Unlike for operating companies, the number of holding companies grows sharply from 725 in year 2000 to 5,869 in 2012 (column 4). As expected, the large jump happens around the time of the tax reform, the growth being 371% from 2004 to 2005. Also, while 6.3% of the operating companies have a holding company owner in 2004, the fraction almost triples to 18.6% in 2005 and grows every year thereafter to 31.8% in 2012 (column 6).

Table 3

Table 3 also shows that holding companies are increasingly set up by just one investor to own shares in just one operating company. For instance, the average number of owners per holding company decreases from 3.1 in 2004 to 2.2 in 2005 (column 7), while the average number of operating companies per holding company falls from 1.44 to 1.18 (column 8).

To explore whether this large growth in indirect ownership depends on more than increased dividend taxes for individuals, we use a difference-in-difference test to compare the prevalence of holding companies in Norway with the prevalence of holding companies in the neighboring countries Denmark, Finland, and Sweden before and after the Norwegian tax reform. Because the other Nordic countries did not change tax-based incentives for indirect ownership in this period, and because their regulatory environments are similar in general, these countries constitute a natural control group.

Figure 1 and Panel A of Table 4 document that the upwards shift in the number of Norwegian holding companies after the Norwegian tax reform has no equivalent elsewhere. This impression is supported by the estimates in Panel B. The expected ratio of holding companies to all companies increases by about ten percentage points more in Norway than in any other country around the time of the tax reform.

Figure 1

Table 4

Thus, a tax reform that allowed for tax-free dividends paid to firms but not to individuals produces a large, new layer of tax-free intermediaries between operating firms and their ultimate, taxable owners. This evidence is consistent with H3.

We can use this new layer of indirect ownership to better understand how firms with different agency costs respond differently to the tax shock. Indirect ownership allows for tax-free payout of free cash flow that would otherwise be at the majority shareholder's discretion inside the firm. The higher tax on dividends paid by individuals may therefore produce a positive link between conflict potential and indirect ownership. Given H2, firms with indirect ownership will also decrease their dividends less after the tax shock. H4 predicts that a move from direct to indirect ownership is more likely in firms with higher potential for agency conflicts, and that the dividends of indirectly owned firms will be less sensitive to the tax shock.

We examine H4 by first extending the univariate tests used for H1, looking separately at firms with and without indirect ownership. We expect that indirectly owned firms decrease payout less after the tax shock, and that the decrease is smaller the larger the conflict potential.

As predicted, Table 5 shows that payout does indeed decrease less with indirect ownership except in single-owner firms, where shareholder conflicts cannot exist. In the sample of indirectly owned firms, which have the lower tax costs of dividends after the reform, low-concentration firms (high conflict potential) reduce their payout by fewer percentage points than do high-concentration firms (low conflict potential), the numbers being 16 and 25, respectively. Among the directly owned firms, the numbers are 19 and 31, respectively. Both differences in payout response are economically large and statistically significant at the 1% level. These results are consistent with the findings for H2 in Section 4.

Table 5

The second test of H4 accounts for the possibility that if firms with higher conflict potential plan to pay higher dividends, they may self-select into indirect ownership in order to reduce taxes.

This means the tax cost will differ across our sample according to conflict severity, which may affect identification. To address this possibility, we estimate an endogenous switching model consisting of a selection equation and a dividend equation (Maddala 1983, Song 2004, Li and Prabhala 2007). We add instruments that have an exogenous effect on whether a firm is indirectly owned. The selection equation is:

$$\begin{aligned} IO_{it} = {} & \alpha + \beta_1 After\ tax\ reform_{it} + \beta_2 Number\ of\ \ investments_{it} + \beta_3 Large\ equity\ base_{it} \\ & + \beta_4 Ownership_{it} + \beta_5 Free\ cash\ flow_{it} + \beta_6 Number\ of\ \ owners_i \\ & + \beta_7 Size_{it} + \beta_8 Age_{it} + \beta_9 Growth_{it} + \beta_{10} Risk_{it} + \eta_{it} \end{aligned} \quad (3)$$

IO_{it} = 1 if the firm has indirect owners and 0 otherwise. Firms will presumably be indirectly owned if the benefit of this organizational form exceeds the cost. We use *Number of investments* and *Large equity base* as instruments for indirect ownership. *Number of investments* is the largest number of firms any of the firm's shareholders invests in. *Large equity base* equals 1 if the largest shareholder's investment in the firm exceeds the regulatory minimum share capital for holding companies, which is NOK 100,000. Given the fixed cost of setting up a holding company, indirect ownership is only worthwhile for non-tax reasons if the holding company can be used to manage multiple investments or large investments (the relevance condition).[17] The shareholder's number of investments or whether the investment in question is above a fixed threshold are unlikely to directly influence the fraction of earnings the firm pays out as dividends (the exclusion restriction). Finally, we add the control variables from (1) to our model.

The dividend equation of the switching model is identical to (1), but we estimate the equation separately for the two organizational forms. Because companies can self-select into one of the groups, the error terms of (1) (one for each organizational form) is assumed to be possibly

[17] Setting up a holding company involves several fixed costs. Out-of-pocket setup costs are registration and auditing fees totaling NOK 6,000 (about $700), while the annual auditing fee is around NOK 15,000. These costs are tax deductible at 28%. Because the average dividend received by a holding company in our sample is NOK 0.5 million, the average tax saving of indirect ownership exceeds the cost by a wide margin. Source: www.smbinfo.no.

correlated with the error term of (3). We make the standard assumption that the three error terms have a trivariate normal distribution.

This switching model, which consists of (1) and (3), allows us to measure the change in payout after the tax reform in (1) while controlling for possible self-selection into indirect ownership in (3). Moreover, (3) estimates the characteristics of firms that are more likely to be indirectly owned.

We also estimate a switching model using the dividend change equation in (2) and the following selection equation:

$$\begin{aligned} IO_i = {} & \alpha + \beta_1 Earlier\ indirect\ ownership + \beta_2 Number\ of\ \ investments_i + \beta_3 Large\ equity\ base_i \\ & + \beta_4 Ownership_i + \beta_5 Free\ cash\ flow_i + \beta_6 Number\ of\ \ owners_i \\ & + \beta_7 Size_i + \beta_8 Age_i + \beta_9 Growth_i + \beta_{10} Risk_i + \eta_i \end{aligned} \qquad (4)$$

Earlier indirect ownership is 1 if the firm had indirect ownership before the tax reform, which suggests the firm is more likely to also be indirectly owned after the reform. However, holding companies are unlikely to be set up in order to avoid dividend taxes before the reform is announced.

We use (2) as our dividend equation, estimating it separately for the two organizational forms. We allow the two error terms in (2) to be possibly correlated with the error term of (4), and we assume the three error terms have a trivariate normal distribution.

The findings from the two switching models are reported in Table 6. Panel A uses (1) as the dividend equation and (3) as the selection equation, while Panel B uses (2) as the dividend equation and (4) as the selection equation.

Table 6

The estimated coefficients for the selection equation (3) in Panel A show that majority-held firms are more often owned indirectly after the tax reform when their owners have several investments and when the firm has multiple owners, less concentrated ownership, larger size, lower age, and lower growth. Firms with higher potential agency problems are therefore more likely to

see indirect ownership after the tax reform. The estimates of the dividend equation (1) support the notion that multiple-owner firms decrease their payout less than single-owner firms do, and that multiple-owner firms with low ownership concentration decrease dividends less than their high-concentration counterparts do. Finally, the results in Panel B based on dividend changes in equations (2) and (4) are in line with the results in Panel A.

The findings in Table 6 are consistent with H4 and support the findings in Table 2: The self-selection into indirect ownership does not affect our main result on the tradeoff between tax effects and agency effects: Firms with higher potential agency problems do decrease their payout less even when we account for their self-selection into being indirectly owned.

These results also support the notion that the lack of an intercorporate dividend tax, which encourages the creation of holding companies, produces higher payout. The average firm with a controlling owner would have had a predicted payout decrease of 42% with direct ownership and of 37% with indirect ownership. In the subsample of firms with multiple owners, the numbers are 32% and 20%, respectively. These estimates suggest that a system of taxing intercorporate dividends as used in the United States has the disadvantage of increasing the cost of using dividends to bring cash outside the reach of insiders.

Overall, this section has shown that indirect ownership is more common after the tax reform made dividend income taxable for individuals, but not for corporations. The more important result from our tradeoff perspective on taxes and agency costs is that the tendency to own indirectly in order to protect dividends increases with the potential shareholder conflict. This evidence supports the idea that dividends are used to reduce shareholder conflicts, and that indirect ownership is a tool for ensuring that the beneficial dividends carry minimum tax costs.

6. Summary and conclusion

The existing literature reports both first-order effects and minor effects of taxes on dividends. Exploiting a large and clean regulatory shock to dividend taxation, we find that the tax effect is first-order. However, our major result is that the causal effect of taxes on dividends is strongly moderated by the relationship between agency costs and dividends. In particular, we show that dividends depend on the tradeoff between one important cost of dividend payments (higher taxes, which depend on whether ownership is direct or indirect) and one important benefit (lower shareholder conflicts, which depend on the controlling shareholder's equity stake). For instance, the average dividend drop is largest at 31 percentage points when the tax cost of dividends is high (direct ownership) and the agency benefit is low (high controlling stake). The average dividend drop is smallest at 16 percentage points when the tax cost is low (indirect ownership) and the agency benefit is high (low controlling stake). These results are influenced neither by tax-driven switching between labor income and dividends nor by the closeness between managers and controlling shareholders.

This evidence suggests that both taxes and agency costs are important determinants of dividend policy, that the costly effect of dividends on taxes is actively traded off against the beneficial effect on agency conflicts, and that investors organize their ownership in ways that allow them to capture the beneficial effect of dividends on agency conflicts at the lowest possible tax cost.

These results shed new light on how the effect of taxes on dividends interacts with the main agency problem for most firms in any economy, which is the conflict of interest between majority and minority shareholders. Our evidence also suggests that indirect ownership may have more positive effects than what the literature has claimed. While a system of taxing intercorporate dividends makes it costlier to reduce agency costs by paying out free cash flow, a system of tax-free intercorporate dividends faced by the firms we analyze avoids this problem.

We conclude that a key to understanding the role of taxes in dividend policy is to understand how shareholders trade off costly tax effects against beneficial agency effects, and how shareholders choose organizational form to alleviate this tradeoff.

References

Anderson, Ronald C., and David M. Reeb, 2003, Founding-family ownership and firm performance: Evidence from the S&P 500, *Journal of Finance* 58, 1301–1328.

Bernheim, B. Douglas, 1991, Tax policy and the dividend puzzle, *RAND Journal of Economics* 22, 455–476.

Bernheim, B. Douglas, and Adam Wantz, 1995, A tax-based test of the dividend signaling hypothesis, *American Economic Review* 85, 532–551.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan, 2004, How much should we trust differences-in-differences estimators?, *Quarterly Journal of Economics* 119, 249–275.

Bhattacharya, Sudipto, 1979, Imperfect information, dividend policy and the 'bird in the hand' fallacy, *Bell Journal of Economics* 10, 259–270.

Black, Fisher, 1976, The dividend puzzle, *Journal of Portfolio Management* 2, 5–8.

Brav, Alon, John R. Graham, Campbell R. Harvey, and Roni Michaely, 2008, Managerial response to the May 2003 dividend tax cut, *Financial Management* 37, 611–624.

Cheffins, Brian R., 2006, Dividends as a substitute for corporate law: The separation of ownership and control in the United Kingdom, *Washington and Lee Law Review* 63, 1273–1338.

Chetty, Raj, and Emmanuel Saez, 2005, Dividend taxes and corporate behavior: Evidence from the 2003 tax cut, *Quarterly Journal of Economics* 70, 791–833.

Chetty, Raj, and Emmanuel Saez, 2006, The effects of the 2003 tax cut on corporate behavior: Interpreting the evidence, *American Economic Review* 96, 124–129.

Chetty, Raj, and Emmanuel Saez, 2010, Dividend and corporate taxation in an agency model of the firm, *American Economic Journal: Economic Policy*, 1–31.

DeAngelo, Harry, Linda DeAngelo, and Douglas J. Skinner, 2009, Corporate payout policy, *Foundations and Trends® in Finance* 3, Now Publishers.

Demsetz, Harold, and Kenneth Lehn, 1985, The structure of corporate ownership – causes and consequences, *Journal of Political Economy* 93, 1155–1177.

Denis, David J., and Igor Osobov, 2008, Why do firms pay dividends? International evidence on the determinants of dividend policy, *Journal of Financial Economics* 89, 62-82.

Desai, Mihir A., and Li Jin, 2011, Institutional tax clienteles and payout policy, *Journal of Financial Economics* 100, 68–84.

Dyck, Alexander, and Luigi Zingales, 2004, Private benefits of control: An international comparison, *Journal of Finance* 59, 537–600.

Eckbo, Espen, and Savita Verma, 1994, Managerial share ownership, voting power, and cash dividend policy, *Journal of Corporate Finance* 1, 33–62.

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

Faccio, Mara, Larry H.P. Lang, and Leslie Young, 2001, Dividends and expropriation, *American Economic Review* 91, 54–78.

Fama, Eugene F., and Kenneth R. French, 2001, Disappearing dividends: Changing firm characteristics or lower propensity to pay?, *Journal of Financial Economics* 60, 3–43.

Feenberg, Daniel, 1981, Does the investment interest limitation explain the existence of dividends?, *Journal of Financial Economics* 9, 265–269.

Gomes, Armando, 2000, Going public without governance: Managerial reputation effects, *Journal of Finance* 55, 615–646.

Grinstein, Yaniv, and Roni Michaely, 2005, Institutional holdings and payout policy, *Journal of Finance* 60, 1389–1426.

Grullon, Gustavo, Roni Michaely, and Bhaskaran Swaminathan, 2002, Are dividend changes a sign of firm maturity?, *Journal of Business* 75, 387–424.

Hadlock, Charles J., and Joshua R. Pierce, 2010, New evidence on measuring financial constraints: Moving beyond the KZ index, *Review of Financial Studies* 23, 1909–1940.

Hubbard, Jeff, and Roni Michaely, 1997, Do investors ignore dividend taxes? A reexamination of the Citizens Utilities case, *Journal of Financial and Quantitative Analysis* 32, 117–135.

Jacob, Martin, and Roni Michaely, 2017, Taxation and dividend policy: The muting effect of agency issues and shareholder conflicts, *Review of Financial Studies* 30, 3176–3222.

Jensen, Michael C., and William H. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305–360.

Jensen, Michael C., 1986, Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review* 76, 323–329.

Kobe, Kathryn, 2012, Small business GDP: Update 2002–2010, US Small Business Administration.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 1999, Corporate ownership around the world, *Journal of Finance* 54, 471–517.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 2000, Agency problems and dividend policies around the world, *Journal of Finance* 55, 1–33.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 2000, Investor protection and corporate governance, *Journal of Financial Economics* 58, 3-27.

Laeven, Luc, and Ross Levine, 2008, Complex ownership structures and corporate valuations, *Review of Financial Studies* 21, 579–604.

Li, Kai, and Nagpurnanand Prabhala, 2007, Self-selection models in corporate finance, In B. Espen Eckbo (Ed.), Handbook of Corporate Finance: Empirical Corporate Finance, Vol. I, Elsevier/North-Holland, 37-86.

Maddala, G. S., 1983, Limited-Dependent and Qualitative Dependent Variables in Econometrics, Cambridge University Press.

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 Myron S. Scholes, 1978, Dividends and taxes, *Journal of Financial Economics* 6, 333–364.

Morck, Randall, and Bernard Yeung, 2005, Dividend taxation and corporate governance, *Journal of Economic Perspectives* 19, 163–180.

Nagar, Venky, Kathy Petroni, and Daniel Wolfenzon, 2011, Governance problems in closely held corporations, *Journal of Financial and Quantitative Analysis* 46, 943–966.

Poterba, James, 2004, Taxation and corporate payout policy, *American Economic Review* 94, 171–175.

Rozeff, Michael S., 1982, Growth, beta and agency costs as determinants of dividend payout ratios, *Journal of Financial Research* 5, 249–259.

Shleifer, Andrei, and Robert W. Vishny, 1986, Large shareholders and corporate control, *Journal of Political Economy* 94, 461–488.

Song, Wei-Ling, 2004, Competition and coalition among underwriters: The decision to join a syndicate, *Journal of Finance* 59, 2421–2444.

Spamann, Holger, 2010, The anti-director rights index revisited, *Review of Financial Studies* 23, 467–486.

Sørensen, Peter B., 2005, Neutral taxation of shareholder income, *International Tax and Public Finance* 12, 777–801.

Yagan, Danny, 2015, Capital tax reform and the real economy: The effects of the 2003 dividend tax cut, American Economic Review 105, 3531–3563.

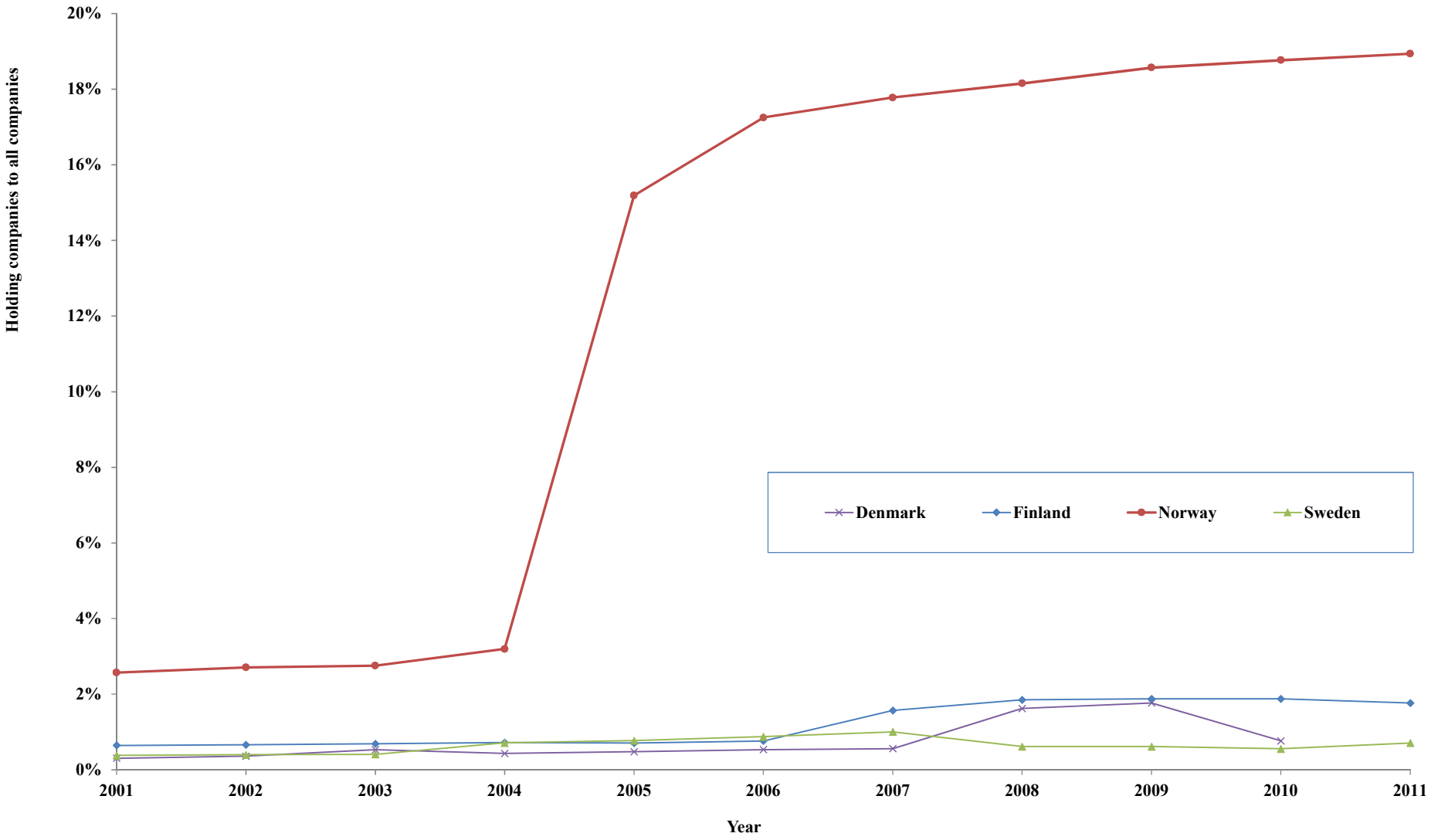

Figure 1. Holding Companies in Denmark, Finland, Norway, and Sweden. This figure shows the ratio of holding companies to all companies in four Nordic countries. The sample is based on the sector code for holding companies. Data sources: Statistics Denmark, Statistics Finland, Statistics Norway, and Statistics Sweden.

Table 1

Summary Statistics

This table compares payout and firms characteristics before (2000–2003) and after (2006–2012) the dividend tax reform. Panel A shows the mean payout ratio (cash dividends divided by operating earnings) and Panel B shows the payout propensity (fraction of firms with positive dividends) before and after the tax reform across six different samples. "All firms" is every limited-liability Norwegian firm that is active, not among the 5% smallest, not a financial, not a holding company, and not part of a business group. "Firms with a controlling owner" have more than 50% ownership by a family, a domestic institutional investor, or a foreign entity. "Single-owner firms" have only one shareholder, while "Multiple-owner firms" have at least two. "Low-concentration firms" are firms where the largest shareholder's stake is between 50% and 60%. "High-concentration firms" are firms where the largest shareholder's stake is between 90% and 99%. Panel C compares the mean values before and after the tax reform for select explanatory variables used in our regressions. The numbers in this panel refer to the sample of multiple-owner firms with a controlling shareholder. "Ownership concentration" is the largest ultimate equity stake in the firm, "Free cash flow" is cash flow from operations divided by assets, and "Number of owners" is the number of ultimate individual shareholders in the firm. "Size" is real sales in million 2005 NOK, "Age" is the number of years since the firm was founded as of 2005, "Growth" is sales over assets, and "Risk" is the standard deviation of sales growth over the last three (minimum) to seven (maximum) years. The payout ratio is winsorized at the 0% and 95% values, while "Free cash flow", "Risk", "Growth", and "Size" are winsorized at the 0.5% and 99.5% tails. The *p*- values are shown in parentheses.

Panel A: The Mean Payout Ratio

Sample	After tax reform	Before tax reform	Difference	
All firms	0.176	0.426	-0.251 (0.000)	
- Firms with a controlling owner	0.163	0.455	-0.292 (0.000)	
- Single-owner firms	0.155	0.459	-0.304 (0.000)	Single vs. Multiple Owner Firms:
- Multiple-owner firms	0.177	0.447	-0.270 (0.000)	-0.034 (0.000)
- High-concentration firms	0.164	0.463	-0.299 (0.000)	High vs. Low Concentration Firms:
- Low-concentration firms	0.200	0.382	-0.182 (0.000)	-0.117 (0.000)

Panel B: The Proportion of Dividend Payers

Sample	After tax reform	Before tax reform	Difference	
All firms	0.230	0.408	-0.178 (0.000)	
- Firms with a controlling owner	0.230	0.438	-0.208 (0.000)	
- Single-owner firms	0.218	0.438	-0.220 (0.000)	Single vs. Multiple Owner Firms:
- Multiple-owner firms	0.250	0.437	-0.187 (0.000)	-0.032 (0.000)
- High-concentration firms	0.241	0.433	-0.191 (0.000)	High vs. Low Concentration Firms:
- Low-concentration firms	0.275	0.393	-0.118 (0.000)	-0.073 (0.000)

Panel C: Characteristics of Multiple-Owner Firms with a Controlling Owner

Sample	After tax reform	Before tax reform	Difference
Ownership concentration	0.718	0.713	0.005 (0.110)
Free cash flow	0.128	0.131	-0.003 (0.157)
Number of owners	3.227	3.030	0.197 (0.000)
Size	15.853	11.348	4.505 (0.000)
Age	13.719	13.719	-
Growth	2.310	2.406	-0.096 (0.000)
Risk	0.318	0.375	-0.057 (0.000)

Table 2

The Sensitivity of Dividends to Taxes and Agency Conflicts

This table shows regressions results for models (1) and (2) in the main text, using the payout ratio (cash dividends divided by operating earnings) as the dependent variable in panels A and B, and a dummy variable for positive dividends in Panel C. "All firms" is the population of limited-liability Norwegian firms that are active, not among the 5% smallest, not a financial, not part of a business groups, and not a holding company. "All firms with a controlling owner" are those among all firms that have more than 50% ownership by a family, a domestic institutional investor, or a foreign entity. "Multi-owner firms with a controlling owner" are those among all firms with a controlling owner that have more than one shareholder. "After tax reform" is 0 if the observation is from 2000–2003 and 1 if the observation is from 2006–2012. "Single-owner firm" is 1 if the firm has just one shareholder and 0 otherwise. "High-concentration firm" is 1 if the largest ultimate equity stake is between 90% and 99% and 0 otherwise. "Free cash flow" is cash flow from operations divided by assets, "Number of owners" is the number of ultimate individual shareholders, "Size" is real sales in million 2005 NOK, "Age" is the log of the firm's age in years as of 2005, "Growth" is sales over assets, "Risk" is the standard deviation of sales growth over the last three (minimum) to seven (maximum) years. The payout ratio is winsorized at the 0% and 95% values, while "Free cash flow", "Risk", "Growth", and "Size" are winsorized at the 0.5% and 99.5% tails. Panel A (C) uses the payout ratio (payout propensity) from years before and after the tax reform as the dependent variable, reporting results from pooled regressions with standard errors clustered at the firm level. Panel B uses the difference between the average payout ratio after and before the tax reform as the dependent variable. We report the p-values in parentheses.

Panel A: The Payout Ratio

Independent variable	All firms	All firms with a controlling owner	Multiple-owner firms with a controlling owner
Intercept	0.5556 (0.0000)	0.4593 (0.0000)	0.4122 (0.0000)
After tax reform	-0.3391 (0.0000)	-0.3203 (0.0000)	-0.2736 (0.0000)
Single-owner firm		0.0329 (0.0000)	
Single-owner firm * After tax reform		-0.0463 (0.0000)	
High-concentration firm			0.0376 (0.0207)
High-concentration firm * After tax reform			-0.0792 (0.0000)
Free cash flow	0.3873 (0.0000)	0.3838 (0.0000)	0.4239 (0.0000)
Free cash flow * After tax reform	-0.0296 (0.0044)	-0.0206 (0.1147)	-0.0416 (0.2808)
Number of owners	-0.0144 (0.0000)	-0.0035 (0.0619)	-0.0133 (0.0004)
Number of owners * After tax reform	0.0141 (0.0000)	0.0028 (0.1542)	0.0115 (0.0028)
Size	0.0386 (0.0000)	0.0402 (0.0000)	0.0411 (0.0000)
Age	-0.0018 (0.2461)	0.0039 (0.0000)	0.0176 (0.0004)
Growth	-0.0166 (0.0000)	-0.0160 (0.0000)	-0.0190 (0.0000)
Risk	-0.1643 (0.0000)	-0.1724 (0.0000)	-0.1739 (0.0000)
Industry effects	Yes	Yes	Yes
Adjusted R^2	0.1300	0.1387	0.1200
n	474,154	332,931	35,451

Panel B: The Change in the Payout Ratio

Independent variable	All firms	All firms with a controlling owner	Multiple-owner firms with a controlling owner
Intercept	-0.1506 (0.0000)	0.0111 (0.0000)	0.0751 (0.0000)
Single-owner firm		-0.0375 (0.0000)	
High-concentration firm			-0.0621 (0.0000)
Change in free cash flow	0.1631 (0.0000)	0.1603 (0.0000)	0.2045 (0.0000)
Number of owners	0.0015 (0.0000)	0.0032 (0.1492)	0.0098 (0.0466)
Change in size	0.0841 (0.0000)	0.0018 (0.0000)	0.0016 (0.0000)
Age	-0.0881 (0.0000)	-0.1184 (0.0000)	-0.1300 (0.0000)
Change in growth	-0.0121 (0.0000)	-0.0042 (0.0639)	-0.0023 (0.7237)
Change in risk	-0.0890 (0.0000)	-0.1575 (0.0000)	-0.0842 (0.0056)
Industry effects	Yes	Yes	Yes
Adjusted R^2	0.0685	0.0444	0.0619
n	67,889	33,493	3,803

Table 2—*Continued*

Panel C: The Payout Propensity

	All firms	All firms with a controlling owner	Multiple-owner firms with a controlling owner
Intercept	0.4353 (0.0000)	0.4028 (0.0000)	0.3458 (0.0000)
After tax reform	-0.2578 (0.0000)	-0.2294 (0.0000)	-0.2008 (0.0000)
Single-owner firm		0.0219 (0.0000)	
Single-owner firm * After tax reform		-0.0395 (0.0000)	
High-concentration firm			0.0045 (0.7422)
High-concentration firm * After tax reform			-0.0399 (0.0068)
Free cash flow	0.3328 (0.0000)	0.3250 (0.0000)	0.3631 (0.0000)
Free cash flow * After tax reform	0.0628 (0.0000)	0.0798 (0.0000)	0.0639 (0.0697)
Number of owners	-0.0112 (0.0000)	0.0002 (0.8802)	-0.0078 (0.0195)
Number of owners * After tax reform	0.0111 (0.0000)	0.0020 (0.2554)	0.0077 (0.0314)
Size	0.0564 (0.0000)	0.0580 (0.0000)	0.0657 (0.0000)
Age	0.0040 (0.0256)	0.0072 (0.0026)	0.0236 (0.0026)
Growth	-0.0188 (0.0000)	-0.0173 (0.0000)	-0.0200 (0.0000)
Risk	-0.1572 (0.0000)	-0.1570 (0.0000)	-0.1519 (0.0000)
Industry effects	Yes	Yes	Yes
Adjusted R^2	0.1163	0.1222	0.1152
n	480,360	337,470	35,938

Table 3

Operating Companies and Holding Companies

This table presents aggregate statistics for the prevalence of operating companies and holding companies, and for how these companies are owned. An operating company is sampled from the population of limited-liability Norwegian companies that are active, not among the 5% smallest, not financials, not part of a business group, but is a firm where more than 50% of the equity is owned by a family, a domestic institutional investor, or a foreign entity. A holding company has some ownership stake in an operating company and has either a sales-to-assets ratio under 5% or uses the Statistics Norway sector code for a holding company. A holding company may have a parent, but the parent cannot be a subsidiary. Ownership is based on ultimate cash flow rights. Except for column 1, we exclude single-owner operating companies. Columns (1)–(4) show the number of companies, while the three bottom rows show statistics from the pooled samples in the two subperiods. "All (.)" refers to the sample of all private limited-liability companies and not just those with a controlling shareholder. We report the *p*- values (in parentheses) for the differences between the two subperiod averages in the last row.

	1	2	3	4	5	6	7	8	9	10
Year	Operating companies	Operating companies with multiple owners	Owners in operating companies	Holding companies	Owners per operating company	Fraction operating companies with holding company	Owners per holding company	Operating companies per holding company	Holding companies per operating company	Fraction single-owner operating companies with holding-company
2000	45,985	22,611	56,961	725	2.92	4.9%	3.68	1.54	1.03	3.4%
2001	47,727	23,470	58,023	796	2.87	5.5%	3.36	1.58	1.03	3.6%
2002	48,209	23,733	58,472	853	2.86	5.5%	3.30	1.52	1.04	3.5%
2003	49,911	24,431	60,430	904	2.84	5.7%	3.27	1.52	1.03	3.5%
2004	49,911	24,462	60,444	1,047	2.82	6.3%	3.11	1.44	1.05	3.7%
2005	49,407	22,577	55,820	4,471	2.82	18.6%	2.21	1.18	1.29	14.1%
2006	50,063	22,162	53,792	5,404	2.81	22.5%	1.82	1.19	1.31	14.9%
2007	49,821	20,772	52,136	5,687	2.89	25.5%	1.83	1.18	1.28	14.1%
2008	50,187	20,298	51,316	5,887	2.95	27.4%	1.90	1.19	1.28	14.1%
2009	50,121	19,710	49,802	5,965	2.94	28.6%	1.89	1.19	1.28	14.4%
2010	50,417	19,247	48,886	5,957	2.93	29.4%	1.89	1.19	1.27	14.7%
2011	49,151	18,306	46,331	5,851	2.92	30.5%	1.88	1.20	1.27	14.7%
2012	49,280	17,450	52,341	5,869	3.92	31.8%	2.64	1.20	1.28	14.3%
All (2000–2004)	92,036	60,704	224,265	2,757	3.85	5.7%	4.48	1.54	1.09	4.3%
All (2005–2012)	112,092	66,695	278,438	18,407	4.04	24.9%	2.55	1.22	1.31	15.7%
(*p*- value, difference)					(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Table 4

Indirect Ownership in Four Nordic Countries

This table compares the use of indirect ownership through holding companies in Denmark, Finland, Norway, and Sweden. Panel A shows the ratio of holding companies to all companies year by year in each country, while Panel B uses a difference-in-difference approach to compare the use of holding companies in Norway with their use in the three other countries one by one, and with their use in the other countries as a group. The reported coefficient in Panel B is the effect on the ratio of holding companies to all companies when the observation is from Norway rather than from the other countries and from after the Norwegian tax reform (2006–2010) rather than before (2001–2005). The sample is based on the sector code for holding companies. Data sources: Statistics Denmark, Statistics Finland, Statistics Norway, and Statistics Sweden.

Panel A: The Ratio of Holding Companies to All Companies

Year	Denmark	Finland	Norway	Sweden
2000			1.1%	0.4%
2001	0.3%	0.6%	1.3%	0.4%
2002	0.4%	0.7%	2.6%	0.4%
2003	0.5%	0.7%	2.0%	0.4%
2004	0.4%	0.7%	2.0%	0.7%
2005	0.5%	0.7%	2.3%	0.8%
2006	0.5%	0.8%	11.4%	0.9%
2007	0.6%	1.6%	11.9%	1.0%
2008	0.5%	1.8%	12.6%	0.6%
2009	1.8%	1.9%	13.0%	0.6%
2010	0.8%	1.9%	13.5%	0.6%
2011		1.8%	13.6%	0.7%
Average	0.6%	1.2%	7.3%	0.6%

Panel B: Difference-in-Difference Estimates

	Coefficient (*p*- value)
Norway vs. Denmark	10.1750 (0.0000)
Norway vs. Finland	9.8690 (0.0000)
Norway vs. Sweden	10.5770 (0.0000)
Norway vs. Denmark, Finland, and Sweden	10.2000 (0.0000)

Table 5

Dividends, Potential Shareholder Conflicts, and Indirect Ownership

This table shows how the average payout ratio before and after the tax reform depends on whether the firm has potential agency problems and whether it has indirect ownership through holdings companies. We measure the payout ratio as cash dividends to operating earnings. The *p* -values are reported in parentheses. "Indirect ownership" is when at least one owner is a holding company. "Direct ownership" is when no owner is a holding company ."Before tax reform" is 2000–2003, and "After tax reform" is 2006–2012. We measure potential agency problems by ownership concentration as reflected in the largest ultimate equity stake. "All firms" is the population of limited-liability Norwegian firms that are active, not among the 5% smallest, not a financial, not part of a business groups, and not a holding company. "Firms with a controlling owner" have more than 50% ownership by a family, a domestic institutional investor, or a foreign entity. "Single-owner firms" have only one shareholder, while "Multiple-owner firms" have at least two. "Low-concentration firms" are firms where the largest shareholder's stake is between 50% and 60%. "High-concentration firms" are firms where the largest shareholder's stake is between 90% and 99%.

	Indirect ownership			Direct ownership		
Sample	After tax reform	Before tax reform	Difference (*p*- value)	After tax reform	Before tax reform	Difference (*p*- value)
All firms	0.234	0.511	-0.277 (0.0000)	0.148	0.441	-0.293 (0.0000)
- Firms with a controlling owner	0.242	0.532	-0.289 (0.0000)	0.147	0.441	-0.294 (0.0000)
- Single-owner firms	0.225	0.567	-0.341 (0.0000)	0.144	0.443	-0.299 (0.0000)
- Multiple-owner firms	0.264	0.490	-0.227 (0.0000)	0.155	0.438	-0.283 (0.0000)
- High-concentration firms	0.235	0.484	-0.249 (0.0000)	0.147	0.460	-0.313 (0.0000)
- Low-concentration firms	0.304	0.461	-0.157 (0.0000)	0.165	0.357	-0.192 (0.0000)

Table 6

The Relationship Between Dividends, Taxes, Agency Costs, and Indirect Ownership

This table shows the estimates of two switching models, where operating companies may self-select into being owned by holding companies. Panel A uses (1) of the main text as the dividend equation and (3) as the selection equation, while Panel B uses (2) as the dividend equation and (4) as the selection equation. Every variable relates to an operating company, which is sampled from the population of limited-liability Norwegian firms that are active, not among the 5% smallest, not financials, not part of a business group, not a holding company, and that have more than 50% ownership by a family, a domestic institutional investor, or a foreign entity. The dependent variable in the selection equation is the dummy variable "Indirect ownership", which is 1 if at least one owner is a holding company and 0 otherwise. The dependent variable in the dividend equation is the payout ratio (cash dividends to operating earnings) in Panel A and the average payout ratio after minus before the tax reform in Panel B. "After tax reform" is 1 in 2006–2012 and 0 otherwise. "Number of investments" is the largest number of investments by any of the firm's shareholders in 2005. "Large equity base" equals 1 if the largest shareholder's investment in the firm exceeds the regulatory minimum share capital for holding companies and 0 otherwise. A "Single-owner firm" has only one shareholder, while a "Multiple-owner firm" has at least two. A "High-concentration firm" is where the largest shareholder's stake is between 90% and 99%. An owner is a family unit, a domestic institutional investor, or a foreign entity. "Free cash flow" is cash flow from operations divided by assets, "Number of owners" is the number of ultimate shareholders, "Size" is the log of real sales in million 2005 NOK, "Age" is the log of the company's age in 2005, "Growth" is sales over assets, and "Risk" is the standard deviation of sales growth over the last three (minimum) to seven (maximum) years. "Holding company" has some ownership stake in an operating company and has either a sales-to-assets ratio under 5% or uses the Statistics Norway sector code for a holding company. In Panel B, variables denoted "before reform" are averages for 2000–2003, while variables denoted "change" are differences between averages for 2006–2012 and 2000–2003. "Earlier indirect ownership" is a dummy variable that is 1 if the operating company had a holding company among its owners before the tax reform and 0 otherwise. The payout ratio is winsorized at the 0% and 95% values, while "Free cash flow", "Risk", "Growth", and "Size" are winsorized at the 0.5% and 99.5% tails. All regressions include industry dummies. The *p*- values are in parentheses.

Panel A: The Payout Ratio

	All firms with a controlling owner			Multiple-owner firms with a controlling owner		
Independent\ dependent variable	Indirect ownership	Payout ratio for firms with indirect ownership	Payout ratio for firms with direct ownership	Indirect ownership	Payout ratio for firms with indirect ownership	Payout ratio for firms with direct ownership
The selection equation:						
After tax reform	1.1891 (0.0000)			1.0876 (0.0000)		
Number of investments	0.2146 (0.0000)			0.1408 (0.0000)		
Large equity base	0.0062 (0.6000)			0.0578 (0.3930)		
Single-owner firm	-0.2087 (0.0000)					
High-concentration firm				-0.1018 (0.0310)		
Free cash flow	0.4511 (0.0000)			0.3048 (0.0040)		
Number of owners	-0.0104 (0.0000)			0.0218 (0.0380)		
Size	0.5191 (0.0000)			0.4672 (0.0000)		
Age	0.0419 (0.0000)			-0.0674 (0.0670)		
Growth	-0.1457 (0.0000)			-0.1603 (0.0000)		
Risk	0.3032 (0.0000)			0.2654 (0.0010)		
The dividend equation:						
Intercept		0.0543 (0.0880)	0.4373 (0.0000)		0.1578 (0.3030)	0.4316 (0.0000)
After tax reform		-0.0300 (0.0000)	-0.3084 (0.0000)		-0.0405 (0.0360)	-0.2631 (0.0000)
Single-owner firm		-0.0884 (0.0000)	0.0474 (0.0000)			
Single-owner firm * After tax		-0.0469 (0.0030)	-0.0571 (0.0000)			
High-concentration firm					-0.1135 (0.0540)	0.0508 (0.0040)
High-concentration firm * After tax reform					-0.0181 (0.0076)	-0.0816 (0.0000)
Free cash flow		0.1952 (0.0000)	0.5030 (0.0000)		0.2158 (0.0210)	0.5612 (0.0000)
Free cash flow * After tax reform		0.2893 (0.0000)	-0.0955 (0.0000)		0.3103 (0.0030)	-0.1442 (0.3010)
Number of owners		0.0013 (0.6870)	0.0062 (0.0000)		-0.0024 (0.7960)	-0.0141 (0.0030)
Number of owners * After tax		0.0034 (0.2930)	-0.0028 (0.1050)		0.0006 (0.9500)	0.0151 (0.0030)
Size		0.0358 (0.0000)	0.0978 (0.0000)		0.0287 (0.0000)	0.0907 (0.0000)
Age		0.0097 (0.0020)	0.0113 (0.0000)		0.0165 (0.2650)	0.0143 (0.1060)
Growth		-0.0003 (0.8720)	-0.0308 (0.0000)		-0.0013 (0.8750)	-0.0344 (0.0000)
Risk		-0.0975 (0.0000)	-0.1337 (0.0000)		-0.0998 (0.0080)	-0.1530 (0.0000)
n	332,931	48,860	284,071	34,541	6,774	28,677

Table 6—*Continued*

Panel B: The Change in the Payout Ratio

Independent\ dependent variable	All firms with a controlling owner			Multiple-owner firms with a controlling owner		
	Indirect ownership	Change in payout ratio for firms with indirect ownership	Change in payout ratio for firms with direct ownership	Indirect ownership	Change in payout ratio for firms with indirect ownership	Change in payout ratio for firms with direct ownership
The selection equation:						
Earlier indirect ownership	2.0348 (0.0000)			1.9745 (0.0000)		
Number of investments	0.0593 (0.0000)			0.0281 (0.0680)		
Large equity base	0.4332 (0.0000)			0.4399 (0.0000)		
Single-owner firm	-0.1995 (0.0000)					
High-concentration firm				-0.1642 (0.0090)		
Free cash flow before reform	0.1462 (0.0110)			0.0228 (0.8890)		
Number of owners before reform	0.0175 (0.0340)			0.0268 (0.1510)		
Size before reform	0.1041 (0.0000)			0.0166 (0.0000)		
Age	-0.0155 (0.4120)			-0.0115 (0.8170)		
Growth before reform	-0.0388 (0.0000)			-0.0730 (0.0000)		
Risk before reform	-0.1000 (0.0050)			-0.0507 (0.6090)		
The dividend equation:						
Single-owner firm		-0.0437 (0.0040)	-0.0698 (0.0000)			
High-concentration firm					-0.0503 (0.0030)	-0.1573 (0.0000)
Change in free cash flow		0.1785 (0.0010)	0.1854 (0.0000)		0.2299 (0.0068)	0.1597 (0.0040)
Number of owners before reform		0.0091 (0.1380)	0.0053 (0.1260)		0.0085 (0.6800)	0.0090 (0.2600)
Change in size		0.0007 (0.0000)	0.0051 (0.0000)		0.0020 (0.0740)	0.0051 (0.0000)
Age		-0.1058 (0.0000)	-0.1011 (0.0000)		-0.1372 (0.0000)	-0.1140 (0.0000)
Change in growth		-0.0141 (0.0240)	-0.0006 (0.8390)		-0.0141 (0.5980)	-0.0010 (0.9920)
Change in risk		-0.1998 (0.0000)	-0.1756 (0.0000)		-0.1979 (0.0390)	-0.1180 (0.0080)
n	33,493	5,680	27,453	3,803	864	2,889

Appendix

The tables in this appendix present the robustness results in Section 4.2.

The baseline model (1) measures payout by the dividends to earnings ratio. A potential concern with this measure is that insiders may boost it by manipulating earnings (La Porta et al. 2000). Table A.1 shows the results of (1) using the dividends to sales ratio (Panel A) and the dividends to assets ratio (Panel B) as the dependent variable, respectively. Similarly, Table A.2 examines dividend change at the extensive margin (dividend omissions) in Panel A and at the intensive margin in Panel B (dividend decreases)

Reduced dividend income after the dividend tax increase may be compensated for by increased labor income to the shareholders, making total payout insensitive to the tax increase. Panel A of Table A.3 shows the labor income, Panel B shows the dividends, while Panel C shows the change in the firm's cash holdings

Dividends may be influenced by conflicts of interest between shareholders and owners even in firms with a controlling shareholder. Table A.4 examines this possibility by estimating (1) in family-controlled firms that do vs. do not have a family CEO.

The standard errors of difference-in-difference models may be affected by autocorrelation in the explanatory variables (Bertrand et al. 2004). Panel A of Table A.5 addresses this problem by using average values of the variables before and after the tax shock. Panel B replaces the after-tax-reform dummy by individual year dummies, while Panel C estimates the relationship between payout and our main variables separately for the years before and the years after the tax reform

Table A.6 expands (1) by interacting every control variable with the post-reform dummy in order to capture possible shifts in how control variables influence payout around the time of the tax reforı

Appendix Table A.1

Robustness to Alternative Payout Measures

This table estimates the baseline model (1) of the main text, measuring the dependent variable as the dividends to sales ratio in Panel A and as the dividends to assets ratio in Panel B. "All firms" is the population of limited-liability Norwegian firms that are active, not among the 5% smallest, not a financial, not part of a business groups, and not a holding company. "All firms with a controlling owner" are those among all firms that have more than 50% ownership (controlling owner) by a family, a domestic institutional investor, or a foreign entity. "Multi-owner firms with a controlling owner" are those among all firms with a controlling owner that have more than one shareholder. "After tax reform" is 1 in 2006–2012 and 0 otherwise. "Single-owner firm" is 1 if the firm has just one shareholder and 0 otherwise. "High-concentration firm" is 1 if the largest ultimate equity stake is between 90% and 99% and 0 otherwise. "Free cash flow" is cash flow from operations divided by assets, "Number of owners" is the number of ultimate individual shareholders in the firm, "Size" is real sales in million 2005 NOK, "Age" is the log of the firm's age in years in 2005, "Growth" is sales over assets, while "Risk" is the standard deviation of sales growth over the last three (minimum) to seven (maximum) years. The payout ratio is winsorized at the 0% and 95% values, while "Free cash flow", "Risk", "Growth", and "Size" are winsorized at the 0.5% and 99.5% tails. We report results from pooled regressions with standard errors clustered at the firm level. The *p*- values are shown in parentheses.

Panel A: The Dividends to Sales Ratio

	All firms	All firms with a controlling owner	Multiple-owner firms with a controlling owner
Intercept	0.0666 (0.0000)	0.0651 (0.0000)	0.0551 (0.0000)
After tax reform	-0.0264 (0.0000)	-0.0303 (0.0000)	-0.0192 (0.0000)
Single-owner firm		0.0033 (0.0149)	
Single-owner firm * After tax reform		-0.0456 (0.0000)	
High-concentration firm			0.0049 (0.0116)
High-concentration firm * After tax reform			-0.0090 (0.0000)
Free cash flow	0.0577 (0.0000)	0.0577 (0.0000)	0.0559 (0.0000)
Free cash flow * After tax reform	-0.0019 (0.2223)	-0.0142 (0.2342)	-0.0103 (0.5011)
Size	0.0013 (0.0002)	0.0013 (0.0003)	0.0015 (0.0000)
Age	0.0013 (0.2373)	0.0004 (0.1240)	0.0019 (0.0274)
Growth	-0.0061 (0.0000)	-0.0053 (0.0000)	-0.0057 (0.0000)
Risk	-0.0092 (0.0000)	-0.0102 (0.0000)	-0.0712 (0.0005)
Number of owners	-0.0012 (0.0000)	-0.0004 (0.1205)	-0.0004 (0.3698)
Number of owners * After tax reform	0.0010 (0.0000)	0.0003 (0.2802)	0.0004 (0.4385)
Industry effects	Yes	Yes	Yes
Adjusted R^2	0.1159	0.1403	0.1250
Number of observations	480,327	337,447	35,936

Appendix Table A.1—*Continued*

Panel B: The Dividends to Assets Ratio

	All firms	All firms with a controlling owner	Multiple-owner firms with a controlling owner
Intercept	0.0694 (0.0000)	0.0731 (0.0000)	0.0662 (0.0000)
After tax reform	-0.0440 (0.0000)	-0.0471 (0.0000)	-0.0389 (0.0000)
Single-owner firm		0.0044 (0.0000)	
Single-owner firm * After tax reform		-0.0013 (0.0068)	
High-concentration firm			-0.0016 (0.5636)
High-concentration firm * After tax reform			-0.0055 (0.0046)
Free cash flow	0.1021 (0.0000)	0.1067 (0.0000)	0.1066 (0.0000)
Free cash flow * After tax reform	-0.0121 (0.0010)	-0.0193 (0.0896)	0.0116 (0.1609)
Size	0.0058 (0.0000)	0.0058 (0.0000)	0.0058 (0.0000)
Age	-0.0035 (0.0000)	-0.0031 (0.0000)	-0.0023 (0.0602)
Growth	-0.0030 (0.0000)	-0.0025 (0.0000)	-0.0028 (0.0000)
Risk	-0.0209 (0.0000)	-0.0220 (0.0000)	-0.0202 (0.0000)
Number of owners	-0.0020 (0.0000)	-0.0017 (0.0000)	-0.0028 (0.0000)
Number of owners * After tax reform	0.0018 (0.0000)	0.0015 (0.0000)	0.0024 (0.0000)
Industry effects	Yes	Yes	Yes
Adjusted R^2	0.1181	0.1293	0.1133
n	480,327	337,446	35,936

Appendix Table A.2

The Extensive Margin and the Intensive Margin

This table compares the dividend policy of firms before (2000–2003) and after (2006–2012) the tax reform. Panel A shows the proportion of firms that pay dividends prior to the tax reform, but not after (dividend omissions). Panel B shows the proportion of firms that pay at least 20% less dividends on average per year post-reform compared to pre-reform, excluding firms that stop paying post-reform (dividend decreases). "All firms" is the population of limited-liability Norwegian firms that are active, not among the 5% smallest, not a financial, not part of a business groups, and not a holding company. "Firms with a controlling owner" have more than 50% ownership by a family, a domestic institutional investor, or a foreign entity. "Single-owner firms" have only one shareholder, while "Multiple-owner firms" have at least two. "Low-concentration firms" are firms where the largest shareholder's stake is between 50% and 60%. "High-concentration firms" are firms where the largest shareholder's stake is between 90% and 99%. The *p*- values for the Chi-square test for the equality of proportions are shown in parentheses.

Panel A: Dividend Omissions (The Extensive Margin)

Sample	Proportion of firms that omit dividends	
All firms	0.447	
- Firms with a controlling owner	0.450	
- Single-owner firms	0.461	Single vs. Multiple Owner Firm:
- Multiple-owner firms	0.420	0.041 (0.001)
- High-concentration firms	0.423	High vs. Low Concentration Firm:
- Low-concentration firms	0.353	0.070 (0.000)

Panel B: Dividend Decreases (The Intensive Margin)

Sample	Proportion of firms that decrease dividends	
All firms	0.475	
- Firms with a controlling owner	0.476	
- Single-owner firms	0.620	Single vs. Multiple Owner Firm:
- Multiple-owner firms	0.600	0.020 (0.031)
- High-concentration firms	0.486	High vs. Low Concentration Firm:
- Low-concentration firms	0.421	0.065 (0.015)

Appendix Table A.3

Dividend Income, Labor Income, and Cash Holdings

This table compares the shareholders' dividend income and labor income from the firm and also the firm's cash holdings before (2000–2003) and after (2006–2012) the dividend tax reform. Panel A shows the mean ratio between the labor income received by the shareholders and the firm's gross earnings, which we calculate as after-tax operating earnings plus salaries paid to shareholders. Panel B shows the mean of dividend income received by the shareholders divided by the firm's gross earnings, while Panel C shows the mean change in the annual ratio of cash holdings to gross earnings. "Firms with a controlling owner" have more than 50% ownership by one owner. "Single-owner firms" have only one shareholder, while "Multiple-owner firms" have at least two. "Low-concentration firms" are firms where the largest shareholder's stake is between 50% and 60%. "High-concentration firms" are firms where the largest shareholder's stake is between 90% and 99%. The sample is all majority-controlled limited-liability Norwegian firms that are active, not among the 5% smallest, not financials, not part of business groups, not holding companies, but are owned more than 50% by a family, a domestic institutional investor, or a foreign entity. The ratios in Panel A and B are winsorized at the 0% and 95% quantiles, while the ratios in Panel C are winsorized at 2.5% and 97.5%. We report *p*- values in parentheses.

Panel A: Labor Income

Sample	After tax reform	Before tax reform	Difference	
Firms with a controlling owner	0.635	0.642	-0.007 (0.001)	
- Single-owner firms	0.634	0.635	-0.001 (0.610)	Single vs. Multiple Owner Firm:
- Multiple-owner firms	0.638	0.655	-0.016 (0.001)	0.015 (0.087)
- High-concentration firms	0.617	0.619	-0.002 (0.854)	High vs. Low Concentration Firm:
- Low-concentration firms	0.630	0.693	-0.063 (0.000)	0.062 (0.282)

Panel B: Dividend Income

Sample	After tax reform	Before tax reform	Difference	
Firms with a controlling owner	0.100	0.259	-0.159 (0.000)	
- Single-owner firms	0.096	0.259	-0.163 (0.000)	Single vs. Multiple Owner Firm:
- Multiple-owner firms	0.108	0.258	-0.150 (0.000)	-0.013 (0.000)
- High-concentration firms	0.101	0.269	-0.168 (0.000)	High vs. Low Concentration Firm:
- Low-concentration firms	0.123	0.220	-0.097 (0.000)	-0.071 (0.000)

Panel C: Change in Cash Holdings

Sample	After tax reform	Before tax reform	Difference	
Firms with a controlling owner	0.030	-0.011	0.041 (0.000)	
- Single-owner firms	0.028	-0.011	0.039 (0.000)	Single vs. Multiple Owner Firm:
- Multiple-owner firms	0.032	-0.012	0.044 (0.000)	-0.006 (0.566)
- High-concentration firms	0.041	-0.002	0.043 (0.021)	High vs. Low Concentration Firm:
- Low-concentration firms	0.046	-0.018	0.064 (0.035)	-0.020 (0.480)

Appendix Table A.4

The Sensitivity of Dividends to Taxes and Agency Conflicts with and without a Family CEO

This table shows regression results for models (1) and (2) in the main text, using the payout ratio (cash dividends divided by operating earnings) as the dependent variable in Panels A and B, and a dummy for positive dividends (payout propensity) in Panel C. "All firms with a controlling owner" is the population of limited-liability Norwegian firms that are active, not among the 5% smallest, not a financial, not part of a business group, not a holding company, but that are controlled by a family. "Multi-owner firms with a controlling owner" are those among all firms with a controlling owner that have more than one shareholder. "After tax reform" is 0 if the observation is from 2000–2003 and 1 if the observation is from 2006–2012. "Single-owner firm" is 1 if the firm has just one shareholder and 0 otherwise. "High-concentration firm" is 1 if the largest ultimate equity stake is between 90% and 99% and 0 otherwise. "Free cash flow" is cash flow from operations divided by assets, "Number of owners" is the number of ultimate individual shareholders, "Size" is real sales in million 2005 NOK, "Age" is the log of the firm's age in years as of 2005, "Growth" is sales over assets, "Risk" is the standard deviation of sales growth over the last three (minimum) to seven (maximum) years. The payout ratio is winsorized at the 0% and 95% values, while "Free cash flow", "Risk", "Growth", and "Size" are winsorized at the 0.5% and 99.5% tails. Panel A uses the payout ratio from years before and after the tax reform as the dependent variable, reporting results from pooled regressions with standard errors clustered at the firm level. Panel B uses the difference between the average payout ratio after and before the tax reform as the dependent variable. We report the p-values in parentheses.

Panel A: The Payout Ratio

	All firms with a controlling family		Multiple-owner firms with a controlling family	
Independent variable	Family CEO	No family CEO	Family CEO	No family CEO
Intercept	0.4757 (0.0000)	0.4623 (0.0000)	0.4128 (0.0000)	0.5316 (0.0000)
After tax reform	-0.3626 (0.0000)	-0.3400 (0.0000)	-0.2941 (0.0000)	-0.3301 (0.0000)
Single-owner firm	0.0412 (0.0000)	0.0142 (0.3465)		
Single-owner firm * After tax reform	-0.0479 (0.0000)	-0.0416 (0.0080)		
High-concentration firm			0.0534 (0.0067)	0.0237 (0.4921)
High-concentration firm * After tax reform			-0.0940 (0.0000)	-0.0324 (0.0037)
Free cash flow	0.3780 (0.0000)	0.3509 (0.0000)	0.4420 (0.0000)	0.3177 (0.0000)
Free cash flow * After tax reform	-0.0099 (0.5147)	-0.0140 (0.6292)	-0.0658 (0.1714)	0.0946 (0.1903)
Number of owners	-0.0123 (0.0000)	-0.0148 (0.0033)	-0.0168 (0.0003)	-0.0297 (0.0029)
Number of owners * After tax reform	0.0069 (0.0041)	0.0146 (0.0045)	0.0139 (0.0034)	0.0228 (0.0216)
Size	0.0656 (0.0000)	0.0419 (0.0000)	0.0527 (0.0000)	0.0502 (0.0000)
Age	0.0049 (0.0364)	0.0023 (0.6761)	0.0230 (0.0052)	0.0011 (0.9421)
Growth	-0.0218 (0.0000)	-0.0201 (0.0000)	-0.0248 (0.0000)	-0.0180 (0.0009)
Risk	-0.1474 (0.0000)	-0.1804 (0.0000)	-0.1569 (0.0000)	-0.1968 (0.0000)
Industry effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.1617	0.1317	0.1351	0.1152
n	253,762	46,230	25,194	6,227

Appendix Table A.4—*Continued*

Panel B: The Change in The Payout Ratio

	All firms with a controlling family		Multiple-owner firms with a controlling family	
Independent variable	Family CEO	No family CEO	Family CEO	No family CEO
Intercept	0.0448 (0.0449)	-0.0301 (0.5497)	0.1280 (0.0509)	0.0805 (0.5033)
Single-owner firm	-0.0382 (0.0000)	-0.0085 (0.0487)		
High-concentration firm			-0.0882 (0.0000)	-0.0069 (0.0403)
Change in free cash flow	0.1618 (0.0000)	0.1158 (0.0002)	0.2657 (0.0000)	0.0526 (0.4772)
Number of owners	0.0053 (0.0712)	0.0182 (0.0054)	0.0089 (0.1745)	0.0224 (0.0842)
Change in size	0.0025 (0.0000)	0.0016 (0.0000)	0.0015 (0.0734)	0.0011 (0.0810)
Age	-0.1378 (0.0000)	-0.1186 (0.0000)	-0.1513 (0.0000)	-0.0846 (0.0155)
Change in growth	-0.0049 (0.0706)	-0.0092 (0.1484)	-0.0672 (0.4770)	-0.0080 (0.5984)
Change in risk	-0.1470 (0.0000)	-0.1669 (0.0000)	-0.0672 (0.0087)	-0.0722 (0.0362)
Industry effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.0450	0.0405	0.0734	0.0363
n	23,480	4,256	2,416	587

Panel C: The Payout Propensity

	All firms with a controlling family		Multiple-owner firms with a controlling family	
Independent variable	Family CEO	No family CEO	Family CEO	No family CEO
Intercept	0.4079 (0.0000)	0.4314 (0.0000)	0.3552 (0.0000)	0.4143 (0.0000)
After tax reform	-0.2633 (0.0000)	-0.2388 (0.0000)	-0.2309 (0.0000)	-0.2066 (0.0000)
Single-owner firm	0.0322 (0.0000)	0.0126 (0.2879)		
Single-owner firm * After tax reform	-0.0386 (0.0000)	-0.0495 (0.0002)		
High-concentration firm			0.0116 (0.4795)	0.0001 (0.9984)
High-concentration firm * After tax reform			-0.0488 (0.0141)	-0.0576 (0.0376)
Free cash flow	0.3159 (0.0000)	0.3127 (0.0000)	0.3618 (0.0000)	0.3106 (0.0000)
Free cash flow * After tax reform	0.0906 (0.0000)	0.0629 (0.0167)	0.0566 (0.1882)	0.1449 (0.0367)
Size	0.0910 (0.0000)	0.0629 (0.0000)	0.0829 (0.0000)	0.0741 (0.0000)
Age	0.0078 (0.0030)	0.0078 (0.1950)	0.0250 (0.0058)	0.0121 (0.4665)
Growth	-0.0246 (0.0000)	-0.0217 (0.0000)	-0.0260 (0.0000)	-0.0196 (0.0002)
Risk	-0.1218 (0.0000)	-0.1597 (0.0000)	-0.1293 (0.0000)	-0.1576 (0.0000)
Number of owners	-0.0082 (0.0000)	-0.0116 (0.0048)	-0.0118 (0.0029)	-0.0171 (0.0502)
Number of owners * After tax reform	0.0047 (0.0269)	0.0117 (0.0071)	0.0124 (0.0041)	0.0073 (0.4028)
Industry effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.1519	0.1240	0.1314	0.1218
n	257,414	46,884	25,582	6,298

Appendix Table A.5

Robustness to Alternative Ways of Accounting for the Tax Reform

Panels A–C present regressions results for model (1) in the main text using alternative ways of accounting for the dividend tax reform. The dependent variable is the payout ratio (cash dividends divided by operating earnings). Panel A collapses the pre and post tax reform values for each variable into one average value for the pre period and one value for the post period. Panel B replaces the before/after tax reform dummy with year-by-year dummies. Panel C runs the regressions separately for the period before (2000–2003) and after (2006–2012) the tax reform. "All firms" is the population of limited-liability Norwegian firms that are active, not among the 5% smallest, not a financial, not part of a business group, and not a holding company. "All firms with a controlling owner" are those among all firms that have more than 50% ownership by a family, a domestic institutional investor, or a foreign entity. "Multi-owner firms with a controlling owner" are those among All firms with a controlling owner that have more than one shareholder. "After tax reform" is 0 if the observation is from 2000–2003 and 1 if the observation is from 2006–2012. "Single-owner firm" is 1 if the firm has just one shareholder and 0 otherwise. "High-concentration firm" is 1 if the largest ultimate equity stake is between 90% and 99% and 0 otherwise. "Free cash flow" is cash flow from operations divided by assets, "Number of owners" is the number of ultimate individual shareholders in the firm, "Size" is real sales in million 2005 NOK, "Age" is the log of the firm's age in years in 2005, "Growth" is sales over assets, while "Risk" is the standard deviation of sales growth over the last three (minimum) to seven (maximum) years. The payout ratio is winsorized at the 0% and 95% values, while "Free cash flow", "Risk", "Growth", and "Size" are winsorized at the 0.5% and 99.5% tails. We report results from pooled regressions with standard errors clustered at the firm level. The *p*- values are shown in parentheses.

Panel A: Using Averaged Data Before and After the Tax Reform

	All firms	All firms with a controlling owner	Multiple-owner firms with a controlling owner
Intercept	0.5562 (0.0000)	0.3663 (0.0000)	0.3440 (0.0000)
After tax reform	-0.3643 (0.0000)	-0.2937 (0.0000)	-0.2708 (0.0000)
Single-owner firm		0.0251 (0.0000)	
Single-owner firm * After tax reform		-0.0389 (0.0000)	
High-concentration firm			0.0331 (0.1099)
High-concentration firm * After tax reform			-0.0741 (0.0000)
Free cash flow	0.4364 (0.0000)	0.5193 (0.0000)	0.5152 (0.0000)
Free cash flow * After tax reform	-0.0794 (0.0000)	-0.1019 (0.0000)	-0.0726 (0.1179)
Number of owners	-0.0151 (0.0000)	-0.0043 (0.0119)	-0.0148 (0.0002)
Number of owners * After tax reform	0.0169 (0.0000)	0.0034 (0.1098)	0.0136 (0.0040)
Size	0.0256 (0.0000)	0.0380 (0.0000)	0.0397 (0.0000)
Age	0.0028 (0.0496)	0.0288 (0.0000)	0.0412 (0.0000)
Growth	-0.0192 (0.0000)	-0.0154 (0.0000)	-0.0200 (0.0000)
Risk	-0.1861 (0.0000)	-0.1804 (0.0000)	-0.1907 (0.0000)
Industry effects	Yes	Yes	Yes
Adjusted R^2	0.2417	0.2371	0.2143
Number of observations	114,001	76,648	8,211

Appendix Table A.5—*Continued*

Panel B: Using Year Dummies Instead of Dummy for Before vs. After the Tax Reform

	All firms	All firms with a controlling owner	Multiple-owner firms with a controlling owner
Intercept	0.1556 (0.0000)	0.1426 (0.0000)	0.1418 (0.0000)
Year 2000	0.1069 (0.0000)	0.0558 (0.0000)	0.0085 (0.0000)
Year 2001	0.2896 (0.0000)	0.2704 (0.0000)	0.2092 (0.0000)
Year 2002	0.4480 (0.0000)	0.4503 (0.0000)	0.3770 (0.0000)
Year 2003	0.3539 (0.0000)	0.3409 (0.0000)	0.2922 (0.0000)
Year 2006	-0.0359 (0.0000)	-0.0381 (0.0000)	-0.0324 (0.0000)
Year 2007	-0.0064 (0.0028)	-0.0054 (0.0344)	0.0014 (0.8637)
Year 2008	-0.0387 (0.0000)	-0.0373 (0.0000)	-0.0393 (0.0000)
Year 2009	-0.0376 (0.0000)	-0.0343 (0.0000)	-0.0371 (0.0000)
Year 2010	-0.0316 (0.0000)	-0.0297 (0.0000)	-0.0285 (0.0000)
Year 2011	-0.0140 (0.0000)	-0.0128 (0.0000)	-0.0174 (0.0000)
Single-owner firm		0.0341 (0.0000)	
Single-owner firm * After tax reform		-0.0480 (0.0000)	
High-concentration firm			0.0491 (0.0270)
High-concentration firm * After tax reform			-0.0930 (0.0000)
Free cash flow	0.3801 (0.0000)	0.3763 (0.0000)	0.4081 (0.0000)
Free cash flow * After tax reform	-0.0215 (0.0397)	-0.0480 (0.3912)	-0.0253 (0.5154)
Number of owners	-0.0160 (0.0000)	-0.0154 (0.0000)	-0.0184 (0.0000)
Number of owners * After tax reform	-0.1654 (0.0000)	-0.1733 (0.0000)	-0.1766 (0.0000)
Size	-0.0142 (0.0000)	-0.0040 (0.0294)	-0.0116 (0.0018)
Age	0.0137 (0.0000)	0.0031 (0.1103)	0.0096 (0.0122)
Growth	-0.0160 (0.0000)	0.0399 (0.0000)	0.0406 (0.0000)
Risk	0.0036 (0.0215)	0.0109 (0.0000)	0.0247 (0.0005)
Industry effects	Yes	Yes	Yes
Adjusted R^2	0.1502	0.1628	0.1436
Number of observations	474,154	332,931	35,451

Panel C: Estimating Separate Regressions Before and After the Tax Reform

	All firms with a controlling owner		Multiple-owner firms with a controlling owner	
	After tax reform	Before tax reform	After tax reform	Before tax reform
Intercept	0.1231 (0.0000)	0.4174 (0.0000)	-0.1315 (0.0006)	0.2863 (0.0000)
Single-owner firm	-0.0126 (0.0000)	0.0301 (0.0000)		
High-concentration firm			-0.0341 (0.0001)	0.0040 (0.3120)
Free cash flow	0.3622 (0.0000)	0.3949 (0.0000)	0.3792 (0.0000)	0.4327 (0.0000)
Size	0.0382 (0.0000)	0.0418 (0.0000)	0.0385 (0.0000)	0.0441 (0.0000)
Age	0.0030 (0.1203)	0.0580 (0.0000)	0.0066 (0.0000)	0.0833 (0.0000)
Growth	-0.0030 (0.0000)	-0.0368 (0.0000)	-0.0050 (0.0000)	-0.0385 (0.0000)
Risk	-0.0936 (0.0000)	-0.2701 (0.0000)	-0.1233 (0.0000)	-0.2181 (0.0000)
Number of owners	0.0002 (0.8205)	-0.0068 (0.0002)	-0.0014 (0.3673)	-0.0130 (0.0000)
Year effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.0811	0.0889	0.0828	0.0933
Number of observations	220,892	112,039	22,372	13,079

Appendix Table A.6

Interacting the Control Variables with the Tax Reform Dummy

This table presents regressions results for the main model (1) in the main text, with added interaction terms between every control variable and the post-reform dummy. The dependent variable is the payout ratio (cash dividends divided by operating earnings) in panel A and a dummy for positive dividends in Panel B. "All firms" is the population of limited-liability Norwegian firms that are active, not among the 5% smallest, not a financial, not part of a business groups, and not a holding company. "All firms with a controlling owner" are those among all firms that have more than 50% ownership by a family, a domestic institutional investor, or a foreign entity. "Multi-owner firms with a controlling owner" are those among All firms with a controlling owner that have more than one shareholder. "After tax reform" is 0 if the observation is from 2000–2003 and 1 if the observation is from 2006–2012. "Single-owner firm" is 1 if the firm has just one shareholder and 0 otherwise. "High-concentration firm" is 1 if the largest ultimate equity stake is between 90% and 99% and 0 otherwise. "Free cash flow" is cash flow from operations divided by assets, "Number of owners" is the number of ultimate individual shareholders in the firm, "Size" is real sales in million 2005 NOK, "Age" is the log of the firm's age in years in 2005, "Growth" is sales over assets, while "Risk" is the standard deviation of sales growth over the last three (minimum) to seven (maximum) years. The payout ratio is winsorized at the 0% and 95% values, while "Free cash flow", "Risk", "Growth", and "Size" are winsorized at the 0.5% and 99.5% tails. We report results from pooled regressions with standard errors clustered at the firm level. The *p*- values are shown in parentheses.

Panel A: The Payout Ratio

	All firms	with a controlling owner	with a controlling owner
Intercept	0.5312 (0.0000)	0.4850 (0.0000)	0.3578 (0.0000)
After tax reform	-0.4330 (0.0000)	-0.3946 (0.0000)	-0.2371 (0.0000)
Single-owner firm		0.0308 (0.0000)	
Single-owner firm * After tax reform		-0.0439 (0.0000)	
High-concentration firm			0.0293 (0.1077)
High-concentration firm * After tax reform			-0.0626 (0.0000)
Free cash flow	0.3941 (0.0000)	0.3951 (0.0000)	0.4436 (0.0000)
Free cash flow * After tax reform	-0.0370 (0.0003)	-0.0326 (0.0102)	-0.0644 (0.0863)
Number of owners	-0.0151 (0.0000)	-0.0066 (0.0004)	-0.0157 (0.0002)
Number of owners * After tax reform	0.0153 (0.0000)	0.0071 (0.0002)	0.0150 (0.0000)
Size	0.0425 (0.0000)	0.0440 (0.0000)	0.0477 (0.0000)
Size * After tax reform	-0.0058 (0.0002)	0.0370 (0.0000)	-0.0101 (0.0738)
Age	0.0052 (0.2479)	0.0244 (0.0000)	0.0561 (0.0005)
Age * After tax reform	-0.0058 (0.1994)	-0.0224 (0.0002)	-0.0500 (0.0018)
Growth	-0.0340 (0.0000)	-0.0370 (0.0000)	-0.0379 (0.0000)
Growth * After tax reform	0.0277 (0.0000)	0.0330 (0.0000)	0.0314 (0.0001)
Risk	-0.2479 (0.0000)	-0.2695 (0.0000)	-0.2153 (0.0000)
Risk * After tax reform	0.1467 (0.0000)	0.1716 (0.0000)	0.0909 (0.0013)
Industry effects	Yes	Yes	Yes
Adjusted R^2	0.1340	0.1440	0.1243
Number of observations	474,154	332,931	35,451

Appendix Table A.6—*Continued*

Panel B: The Payout Propensity

	All firms	All firms with controlling owner	Multiple-owner firms
Intercept	0.4658 (0.0000)	0.4293 (0.0000)	0.3223 (0.0000)
After tax reform	-0.3152 (0.0000)	-0.2837 (0.0000)	-0.1828 (0.0000)
Single-owner firm		0.0204 (0.0000)	
Single-owner firm * After tax reform		-0.0377 (0.0000)	
High-concentration firm			0.0013 (0.9265)
High-concentration firm * After tax reform			-0.0333 (0.0025)
Free cash flow	0.3333 (0.0000)	0.3263 (0.0000)	0.3699 (0.0000)
Free cash flow * After tax reform	-0.0631 (0.0003)	-0.0799 (0.0100)	0.0556 (0.1116)
Number of owners	-0.0113 (0.0000)	-0.0009 (0.5749)	-0.0086 (0.0102)
Number of owners * After tax reform	0.0113 (0.0000)	0.0036 (0.0411)	0.0089 (0.0143)
Size	0.0555 (0.0000)	0.0560 (0.0000)	0.0666 (0.0000)
Size * After tax reform	0.0013 (0.3532)	0.0028 (0.1215)	-0.0014 (0.0012)
Age	0.0052 (0.1118)	0.0136 (0.0048)	0.0394 (0.0027)
Age * After tax reform	-0.0011 (0.7629)	-0.0066 (0.1805)	-0.0207 (0.1240)
Growth	-0.0264 (0.0000)	-0.0258 (0.0000)	-0.0273 (0.0000)
Growth * After tax reform	0.0865 (0.0000)	0.0135 (0.0000)	0.0124 (0.0012)
Risk	-0.2071 (0.0000)	-0.2130 (0.0000)	-0.1602 (0.0000)
Risk * After tax reform	0.0865 (0.0000)	0.0972 (0.0000)	0.0210 (0.4248)
Industry effects	Yes	Yes	Yes
Adjusted R^2	0.1174	0.1236	0.1159
Number of observations	480,360	337,470	35,938

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The European Corporate Governance Institute has been established to improve *corporate governance through fostering independent scientific research and related activities.*

The ECGI will produce and disseminate high quality research while remaining close to the concerns and interests of corporate, financial and public policy makers. It will draw on the expertise of scholars from numerous countries and bring together a critical mass of expertise and interest to bear on this important subject.

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