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# Illiquid Owners and Firm Behavior: Financial and Real Effects of the Personal Wealth Tax on Private Firms

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We examine how negative liquidity shocks to households propagate to the firms they own. Our main tool for identification is a tax-driven shock to the household's personal liquidity that is independent of the firm and of the household's income and preexisting liquidity. We find that higher wealth tax payments on the personal home of a private firm's controlling shareholders are associated with higher payments from the firm to the shareholder and with lower cash holdings, investments, sales, and performance in the firm. A one percentage-point increase in the shareholder's wealth-tax-to-liquidity ratio is on average followed by a half percentage-point increase in the firm's dividends-to-earnings ratio, a one-third percentage-point decrease in investment, and a half percentage-point decrease in sales growth and profitability. These findings suggest that even strictly personal liquidity shocks to shareholders have causal effects on firm behavior. Because we find the strongest effects for controlling shareholders with relatively low wealth, the negative spillover to the firm might be mitigated by increasing the wealth tax threshold rather than excluding corporate assets from the tax base.

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JEL classification codes: G32; G35; G51; H24

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take out larger dividends or salary from the firm. Such increased payouts would reduce the firm's liquidity, which in turn might reduce investment, growth, and profitability if the firm were financially constrained. This is the chain of events we follow in our paper.

Specifically, the tax value of private homes in Norway was gradually increased during 2006–2010, thereby raising the wealth tax liability of most business owners. Unlike other taxes, such as income taxes, an increased wealth tax liability is not associated with an increase in the cash needed to pay the tax. As a first step, business owners can use their personal liquid assets to cover the increased tax bill. If the tax increase is large relative to personal liquidity, however, the owner may have to tap the firm's liquidity through dividend and salary payments. If the firm cannot raise additional capital easily, which is the case of most small private firms, the lost liquidity may affect the firm's investment and growth prospects.

Using the controlling shareholder's wealth-tax-to-liquidity ratio (wealth tax payment per unit of liquid assets) as our major independent variable, we have two main results. First, the increased tax value of the controlling shareholder's personal home, which produces higher wealth tax payments, is associated with higher dividend and salary payments to the shareholder and with lower cash holdings in the firm. On average, when the controlling shareholder's wealth-tax-to-liquidity ratio increases by 1 percentage point, the firm's payout ratio (dividends plus salary paid to the controlling shareholder per unit of firm earnings before salary) increases by 0.54 percentage points, and the firm's cash ratio (cash holdings per unit of assets) decreases by 1.09 percentage points. Firms are also more likely to pay dividends after a wealth tax shock. Thus, the shock to personal liquidity propagates to the firm's liquidity because the shareholder withdraws cash to cover larger personal tax payments. This is particularly the case when the shareholder has moderate wealth.

Our baseline sample of about 33,000 firms on average per year is from the population of active, non-financial, private firms with limited liability. We consider only firms controlled by a family, defining control as ultimate ownership of more than 50% of the firm's equity. We use this definition to ensure that

effects on the firm. A different way to identify these effects is by comparing owners having high vs. low exposure to the shock. Therefore, we also run difference-in-difference regressions, using firms controlled by wealth-tax-paying families with a personal home as the treatment group. The control group includes the remaining firms, where the majority shareholder is a family that either rents its home or owns it, but does not pay wealth tax. We find that after the personal wealth tax shock, firms in the treated group decrease investment, growth,

While rare globally, the personal wealth tax is not the only tax that must be paid regardless of personal income and liquidity.[2] This principle also applies to property taxes, which are widespread and an important source of tax revenue (OECD 2019).[3] Recent policy recommendations propose an increased use of property taxes because of their moderate distortionary effects and "potential gains to inclusive growth" (OECD 2018). The Norwegian wealth tax system offers a quasi-natural experiment to assess this idea. Our results, which are likely to be valid in any country with property taxes, suggest that one should carefully consider the distortive effects on firm liquidity, investment, growth, and performance.

Our fourth contribution is to identify shareholder liquidity needs as a new determinant of firm payout (DeAngelo, DeAngelo, and Skinner 1992). There is evidence from public firms that reduced share liquidity is associated with increased dividends (Banerjee, Gatchev, and Spindt 2007; Griffin 2010). These studies implicitly assume, however, that shareholders can easily construct their homemade dividend policy by trading the firm's shares, and that control over the firm does not affect the trading decision (Miller and Modigliani 1961). In contrast, all shares in our sample firms are illiquid, and the controlling shareholder may want to keep the shares to preserve private benefits. This situation makes the cost of not receiving dividends higher in private firms than elsewhere. This property of our sample firms allows for a more powerful test of how shareholder liquidity interacts with dividend policy.

Finally, we uncover a novel determinant of cash holdings in private firms, where the lack of a liquid equity market may make cash particularly important (Gao, Harford, and Li 2013). We show that the controlling shareholder's personal liquidity needs spill over to the firm's cash holdings. Because most private firms are majority owned (Be Tj in oln(o)6(se )6(t tho8 o)lln( Tw5.w Tw

The tax base for the wealth tax is the person's net assets (i.e., personal assets less personal debt) above a standard exemption threshold. The assets include shares, bonds, bank savings, and residential real estate. Bank savings, listed shares, and other traded securities are valued at their year-end market value. The tax base for nonlisted shares in year *t* is based on the book value of the firm's assets and liabilities at the end of accounting year *t - 1*.[4]

Until 2009, residential real estate had a conventional value set by local authorities based on the historic construction cost. The system was changed in 2010 to one where the tax base depends on local transaction prices. Because the tax rate was 1.1% during the entire sample period, the tax shocks in our sample work exclusively through the changes in tax-value rules.

While the tax value of a personal home has historically been far below the market value, two changes in tax-value rules in our sample period reduced the gap. First, starting in 2006, successive upward adjustments were applied to existing tax values across the board. Specifically, the tax value was increased by 25% in 2006 and by 10% annually in 2007, 2008, and 2009, producing a cumulative increase of 67%. Second, in 2010 the tax value based on historic cost was replaced by a value based on local transaction prices of similar homes. As we show below, this switch to market-based valuation produced, once again, a large increase in tax value. We also show that the tax value grew faster than the market value from 2006 on, and that the increased tax value was unrelated to economic growth. Thus, the wealth tax shock was independent not just of wealth shocks coming from the person's ownership in the firm, but also of the market value of the home and the overall economy.

The third significant change in the wealth tax system was a gradual increase in the standard deduction from NOK 120,000 in 2000 to NOK 700,000 in 2010.[5] As a result, many households that used tdipay very small amounts of wealth tax paid nothingt 6.97e thc0 Twcfoe w [(fir)5(m)]TJ

mostly listed and nonlisted equity (Fagereng et al. 2020). Therefore, our findings are not driven by wealth tax shocks to the wealthiest shareholders in the economy.

The increases in tax value were announced in advance. For instance, the increase for 2006 was announced after the general elections in September 2005, while the increase for 2009 was announced in October 2008. Despite the resulting opportunity to respond to the tax shock before it became effective, the incentives and the ability to do so were weak. First, because the home is still among the most tax-advantaged assets even after the increase in its tax value, selling the home and replacing it by another asset type will likely increase the tax base. Second, because the shareholder needs a place to live, selling the home and instead renting may generate large transaction costs. Nevertheless, we account for the family's possible response by carving out a sample where we know for sure that the family remains in the same home and has not remodeled.

Tax evasion through underreporting may be a concern for wealth taxes (Saez and Zucman 2019; Durán-Cabré, Esteller-Moré, and Mas-Montserrat 2019), but should not be important in our study. First, the Norwegian wealth tax system relies mostly on third-party reporting (Fagereng et al. 2020). Residential real estate values are assessed by local tax authorities, while financial intermediaries report liquid assets, such as bank savings and marketable securities. Also, all limited-liability firms had to submit audited accounts during our sample period, making the reported equity holdings in private firms unusually reliable. Second, tax evasion primarily happens at the top of the wealth distribution (Alstadsæter, Johannesen, and Zucman 2019). Unlike wealth taxes in other wealth tax systems, however, such as the Danish one (Jakobsen et al. 2020), the Norwegian wealth tax affects not only the very rich, but also a large proportion of moderately wealthy households.[6]

tax effect produced volatile and unrepresentative

4. We include only firms where a wide family (persons related up to the fourth degree of kinship) owns more than 50% of the shares measured by ultimate (i.e., direct plus indirect) ownership. We restrict our attention to firms with a controlling family to ensure that one household can single-handedly make the financing and investment decisions. The family's gross assets must be positive.

decreasing proportion of families paying wealth tax. For instance, while 63.4% of those owning their home pay wealth tax in 2000, only 49.4% do so in 2010.

Panel C measures the wealth tax burden by relating the wealth tax payment to the controlling family's liquid assets (cash

two subsequent years regardless of homeownership (0% growth). This finding of stable employment is similar to earlier findings in French family firms (Sraer and Thesmar 2007). Finally, and as already mentioned, mean performance is higher when the controlling family owns its home (9% vs. 7% mean return on assets).

Table A1 in the Appendix shows the equivalent of Table 3 when we include all family-controlled firms (i.e., also those where the family does not experience a standard change in the tax value of its home). The table shows that the family characteristics, firm characteristics, and firm behavior variables in this extended sample are quite close to those in Table 3, although some shareholders are wealthier than those in the restricted sample.

In order to illustrate the magnitude of the tax shock, we examine the cumulative, forward-looking effect of tax increases on the current

while average wealth is 3.4 mill. NOK for families in the 25th–50th percentiles of the distribution, average wealth is only 1.8 mill. in the 50th–75th percentiles.

Panel C takes a first look at the relationship between the shareholder's tax shock and the cash flow from the firm to the shareholder. We compare two groups. Shareholders in the first group are homeowners, pay wealth tax in 2005, and are in the top 10% of the distribution of the cumulative-wealth-tax-to-initial-liquidity ratio. Shareholders in the second group either do not own their home or are not wealth tax payers in 2005, and are not in the top 10% of the cumulative-wealth-tax-to-initial-liquidity distribution. The table shows the mean and median for the dividends-to-earnings ratio, the proportion of dividend payers, and the dividends-and-salary-to-earnings-before-salary ratio. The numbers reflect that shareholders in the first group, where the tax-driven liquidity drain is the larger, receive more cash from the firm. For instance, the average shareholder's dividend and salary is 70.1% of earnings before salary in the first group and 65.8% in the sec Tj05 T4.99 0 Td[008.n 2005

is the residual:

$$\begin{aligned} Financial\ effect_{it} &= \alpha + \beta_1 Personal\ liquidity\ shock_{it} + \beta_2 Family\ characteristics_{it} \\ &\quad + \beta_3 Firm\ characteristics_{it} + f_i + z_t + \varepsilon_{it} \end{aligned} \tag{1}$$

We regress several dependent variables reflecting financial effects in the firm on measures of the personal liquidity shock, accounting for family and firm characteristics. We use two-stage OLS (2SLS) panel regressions with instrumented wealth tax payments, firm fixed effects to account for unobserved, time-invariant firm and family characteristics, and year fixed effects to control for the business cycle. We cluster the standard errors at the firm level to account for correlated observations.

We use four alternative dependent variables. The first is the classic *Dividends to earnings* (the dividends ratio), which we measure as dividends to operating earnings.[21] We test whether the personal liquidity shock for the shareholder is followed by unusually high dividends. Our second measure uses the extensive margin with a dummy variable that equals 1 if the firm pays dividends in a given year and 0 otherwise (*Dividend payer).*

The firm may have a controlling owner who receives salary from the firm. What matters for this owner may be the sum of dividends and salary rather than each component. Our third dependent variable is *Dividends and salary to earnings before salary*. We measure this variable as the sum of the dividends and salary the controlling shareholder receives from the firm divided by the shareholder's part of the firm's operating earnings and salary.

Finally, the increased cash flow from the firm to shareholders facing a liquidity shock may reduce the firm's cash holdings. We capture this possibility by our fourth dependent variable, *Change in cash to assets,* which we measure as the difference in the firm's cash-to-assets ratio from the previous year.

Our main independent variable for the year-by-year liquidity shock is the family's *wealth-tax-to-liquidity* ratio. The higher it is, the heavier burden the wealth tax puts on the family's liquidity, and the stronger the need for liquidity from other sources, such as the family firm. This measure takes into account both the tax liability and the family's ability to

[21] We ignore repurchases because less than 1% of our sample firms buy back their shares. This very low propensity is not surprising, because the sample firms are private and have illiquid shares. Also, because the tax rate is the same for dividends and capital gains, there is no tax advantage for repurchases.

cover it using its own liquid assets. However, running an OLS regression of financial effects in the firm on this ratio may create an endogeneity problem. First, there may be characteristics that influence both sides of the equation. For instance, successful firms may pay larger dividends, and their owners may be wealthier and hence pay larger wealth tax. Second, the wealth tax payment is based on all personal assets the shareholder owns, including the shares in the firm. Third, the shareholder's personal liquidity may depend on firm characteristics.

For these reasons, there may be omitted variables correlated with both the wealth-tax-to-liquidity ratio and the firm's payout and liquid assets. This possibility is why we instrument the wealth-tax-to-liquidity ratio by the change in the tax value of the home and by the home's tax value as a proportion of the family's gross assets. The larger the first variable and the smaller the second, the stronger the tax shock (the relevance criterion). Neither variable is likely to influence the firm's payout, growth, or profitability except indirectly through their impact on the family's need to finance its wealth tax payments (the exclusion criterion).

The owner's wealth tax obligations and liquidity are not the only characteristics that may influence the cash flow from the firm to its owners. Therefore, we include more variables in the regression that reflect family and firm characteristics. Regarding family characteristics, we account for the family's gross assets because wealthier families may need less cash from the firm. A high pre-shock leverage for the family may increase the need for cash if a large part of the family's liquidity is already used to cover debt payments. We account for this possibility by personal indebtedness measured as the ratio of debt to gross assets.[22]

Regarding firm characteristics, firms with larger liquidity reserves (measured as the cash-to-assets ratio) and higher profitability (measured as return on assets) are more likely to pay higher dividends (DeAngelo, DeAngelo, and Stulz 2006). Conversely, firms with higher growth opportunities and higher risk tend to pay less (Grullon, Michaely, and Swaminathan 2002). We measure growth opportunities by the sales-to-assets ratio and risk by the coefficient of variation of sales over the previous three years.

Larger and older firms are more likely to pay dividends (Fama and French 2001). Therefore, we include the firm's sales and age, taking logs in both cases to reduce skewness. Firms with higher leverage may find it difficult to pay their owners large amounts because of contractual obligations to creditors (Jensen 1988). Because mature firms are more likely to

[22] Owners faced with higher wealth tax payments can also react by reducing their personal consumption. We do not observe personal consumption, but the fact that we find effects on the firm implies that personal consumption adjustments were insufficient to cover the increased liquidity need.

pay dividends (Grullon et al. 2002), we include the ratio of retained earnings to equity as a proxy for firm maturity (DeAngelo et al. 2006). We lag personal and family leverage one year to reduce effects of endogenous response to the wealth tax shock.

Appendix Table A2 shows the estimates for the first stage of the 2SLS regression, which are consistent with our predictions. The estimates from the second stage in Table 5 show that, regardless of how we measure payout (as dividends to earnings, payer/non-payer, or dividends plus salary to earnings before salary), a higher liquidity drain on the controlling family is associated with a higher cash flow paid from the firm to the family. Moreover, the regression using the change in the cash-to-assets ratio as the dependent variable shows that a larger liquidity drain on the family is associated with lower cash holdings in the firm.

Table 5

The payout effect and the cash-holding effect on the firm are the two main results in this section. They support the hypothesis that liquidity shocks to the owner induce the firm to pay out more to mitigate the shock, which reduces the firm's liquid position. Economically, a one percentage-point increase in the wealth-tax-to-liquidity ratio increases the expected dividend payout ratio by 0.49 percentage points, increases total cash payments to shareholders per unit of firm earnings before salary by 0.84 percentage points, and decreases the firm's cash-to-assets ratio by 1.09 percentage points. The sample means for the dividend payout ratio, total cash payout ratio, and cash-to-assets ratio are 16%, 66%, and 30%, respectively.

The coefficients of the control variables have the expected signs: Families with low gross assets and high debt more often receive cash after a tax shock that is unrelated to the firm. Higher payout also associates positively with slow-growth firms that are more liquid, more profitable, larger, less risky, less leveraged, and older.[23]

Summing up this section, we find that a higher wealth tax payment for the firm's controlling owner due to a higher tax value of the owner's personal home is associated with higher dividends and salaries paid from the firm to the owner, with more often being a dividend payer, and with reduced cash holdings in the firm. These findings suggest a causal effect from the owners' personal liquidity position to the firm's payout and liquidity.

[23] The large and decreasing tax rebate in 2006 ( ) 0 Td( ) Tj0.00Td( ) Tj6[(c)cein Tj(u)4.

The results in Section 5 identify an effect going from owner liquidity to firm liquidity. In the absence of financing frictions in the firm, however, sudden cash drains on the firm should not have real effects. New funding for profitable projects would be raised at no extra cost from investors unaffected by the liquidity shock. If market frictions such as information asymmetry makes it costly to raise finance from other investors, however, profitable projects may be lost. This lost value would be a cost due to the firm's financial constraints.

Our sample consists of private firms with concentrated ownership that are generally less known to investors and thought to be more financially constrained than are public firms. Therefore, we hypothesize that the controlling owner's personal tax shock, which generates higher payout and lower cash holdings in the firm, will slow down the firm. Our first model for real effects has the following structure:

$$\begin{aligned} \textit{Real effect}_{it+1} &= \alpha + \beta_1 \textit{Personal liquidity shock}_{it} + \beta_2 \textit{Family characteristics}_{it} \\ &\quad + \beta_3\ \textit{Firm characteristics}_{it} + f_i + z_t + \varepsilon_{it+1} \end{aligned} \tag{2}$$

We first measure the real effect by the firm's investment. The second measure is growth, alternatively considering the growth rates of sales and of employment. We use the investment and the growth in year *t + 1* to capture the effect of the increased wealth tax payment in year *t*g20E3.ntIi25ae-0 Tc35 0 Td[i(ectvB i)3 245 0 Td[i)-2(nve)-1(s1( m)3(a)4()-1(s)-)1(t -1(r)-2(a)4()1(t)4( i)-0.

Larger, more mature, and more leveraged firms may grow more slowly, while cash-rich firms may find it easier to support growth. Higher risk may hinder the financing of growth. We expect that

account for the average price change per square meter of residential real estate in the local county in a given year, which we match with the home owner's address.[28] We rerun the baseline models augmented by the change in local market prices, which we call *Change in local home prices*.

Table A6 shows the results for financial effects in Panel A, while real effects are in Panel B (IV regressions) and Panel C (DiD regressions), respectively. The estimates show that the results from the baseline model remain unchanged. We also find evidence in Panel C that changes in the market price of residential real estate correlate positively with investment, growth, and profitability. This result is consistent with earlier findings on commercial real estate and the collateral channel (Chaney et al. 2012; Schmalz et al. 2017).

### *7.5. Debt Capacity*

We have so far used leverage to capture the idea that higher existing debt reduces the capacity for more debt and the resulting possibility to use new debt to mitigate the liquidity problem after a wealth tax shock. An alternative approach is to measure debt capacity by asset tangibility, which is a deeper determinant of capital structure than is leverage and is arguably more costly to adjust (Frank and Goyal 2009). Firms with more tangible assets, such as manufacturing firms, have higher debt capacity and may find it easier to raise new debt than do firms with less tangible assets, such as software firms. Unlike leverage, asset tangibility also reflects the ability to borrow rather than the decision to do so. Moreover, asset tangibility can be considered a proxy for the strength of the collateral channel (Chaney et al. 2012).

We modify the baseline model by excluding personal and corporate leverage and instead use *Asset tangibility*, which we measure as the ratio between the firm's fixed and total assets. Using this revised model, Table A7 reports financial effects in Panel A, while real effects are in Panel B. The results are very close to those from the main specification using leverage.

### *7.6. Fixed Effects and Interaction Terms*

Our DiD regressions in Panel B of Table 6 use a single dummy variable for the shock period, which starts in 2006 and ends in 2010. As a robustness test, we use dummy variables for each

[28] The data source is Statistics Norway.

Our findings suggest that even moderate changes in personal taxes can have significant effects on the corporate sphere through the equity channel. This happens because the personal tax is draining liquidity away from the firm's shareholders, who use their control rights to partially fill the gap with a higher payout from the firm, which in turn reduces its investment, growth, and performance. These effects of shareholder illiquidity on the firm should be carefully considered when evaluating the merits of the wealth tax, which is receiving increasing global attention from policymakers. The tight relationship we identify between personal and corporate liquidity suggests that the negative spillover of personal illiquidity on firm behavior could be made less severe by increasing the threshold for taxable wealth rather than excluding corporate assets from the tax base.

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This figure shows indexes of the market value and tax value of residential real estate (i.e., personal homes) owned by controlling families. The figure also shows the standard change in the tax value according to the tax rule change that year. The base year is 2005 (index value = 1). The year 2010 does not have a standard change and reflects the median change in tax value in our sample. The sample includes all activle

*Panel A. Mean wealth tax paid by the controlling fam952 599.v5(i)€P MCIDieaiCBT10.9756 0 0 10.9756 215.854 TEMCP56 208.244 762.585 Tm(*

| Year | All | Homeowner | Not homeowner | Homeowner; wealth tax payer | Not homeowner; wealth tax payer | Proportion homeowners | Number of firms |
|---|---|---|---|---|---|---|---|
| 2000 | 35 284 | 38 418 | 19 361 | 60 571 | 39 166 | 83,6% | 29 528 |
| 2001 | 33 769 | 36 728 | 18 813 | 57 559 | 37 524 | 83,5% | 30 987 |
| 2002 | 39 123 | 43 175 | 17 437 | 69 044 | 35 714 | 84,3% | 31 341 |
| 2003 | 40 708 | 45 416 | 14 477 | 74 979 | 30 001 | 84,8% | 32 400 |
| 2004 | 53 111 | 59 372 | 16 875 | 101 364 | 35 701 | 85,3% | 33 031 |
| 2005 | 30 308 | 32 428 | 18 533 | 56 746 | 38 563 | 84,7% | 32 929 |
| 2006 | 57 004 | 62 131 | 24 074 | 111 296 | 50 465 | 86,5% | 33 630 |
| 2007 | 54 904 | 60 435 | 21 319 | 111 828 | 45 987 | 85,9% | 33 014 |
| 2008 | 55 693 | 60 792 | 24 121 | 111 505 | 51 373 | 86,1% | 33 510 |
| 2009 | 57 100 | 62 660 | 18 946 | 116 863 | 44 152 | 87,3% | 33 437 |
| 2010 | 66 245 | 71 099 | 27 571 | 144 061 | 76 898 | 88,8% | 34 386 |
| Average | 47 568 | 52 059 | 20 139 | 92 347 | 44 140 | 85,5% | 32 563 |

| Year | All | Homeowner | Not homeowner |
|---|---|---|---|
| 2000 | 61,1% | 63,4% | 49,3% |
| 2001 | 61,6% | 63,8% | 50,1% |
| 2002 | 60,4% | 62,5% | 48,8% |
| 2003 | 58,7% | 60,6% | 48,3% |
| 2004 | 56,9% | 58,6% | 47,3% |
| 2005 | 55,8% | 57,1% | 48,1% |
| 2006 | 54,7% | 55,8% | 47,7% |
| 2007 | 53,0% | 54,0% | 46,4% |
| 2008 | 53,5% | 54,5% | 47,0% |
| 2009 | 52,3% | 53,6% | 42,9% |
| 2010 | 47,8% | 49,4% | 35,9% |
| Average | 56,0% | 57,6% | 46,5% |

*Panel C. The controlling family's wealth-tax-to-liquidity ratio*

| Year | All | Homeowner | Not homeowner | Homeowner; wealth tax payer | Not homeowner; wealth tax payer |
|---|---|---|---|---|---|
| 2000 | 3,6% | 3,7% | 2,7% | 5,9% | 5,4% |
| 2001 | 3,7% | 3,8% | 2,7% | 6,0% | 5,4% |
| 2002 | 2,6% | 2,7% | 2,1% | 4,3% | 4,3% |
| 2003 | 1,9% | 2,0% | 1,5% | 3,3% | 3,2% |
| 2004 | 1,6% | 1,6% | 1,3% | 2,8% | 2,8% |
| 2005 | 1,3% | 1,3% | 1,1% | 2,3% | 2,2% |
| 2006 | 1,5% | 1,5% | 1,3% | 2,7% | 2,6% |
| 2007 | 1,9% | 2,0% | 1,6% | 3,7% | 3,4% |
| 2008 | 3,4% | 3,5% | 2,8% | 6,4% | 6,0% |
| 2009 | 3,8% | 4,0% | 3,1% | 7,4% | 7,2% |
| 2010 | 3,6% | 3,6% | 2,9% | 7,4% | 8,1% |
| Average | 2,6% | 2,7% | 2,1% | 4,7% | 4,6% |

| | 5th percentile | Mean | Median | 95th percentile | | | | |
|---|---|---|---|---|---|---|---|---|
| 2000 | 74 800 | 352 145 | 305 700 | 770 308 | 9,8% | | 76,3% | 24 673 |
| 2001 | 86 242 | 402 679 | 348 508 | 885 500 | 15,0% | | 76,6% | 25 869 |
| 2002 | 85 388 | 404 612 | 349 970 | 890 970 | 0,0% | | 77,0% | 26 407 |
| 2003 | 81 719 | 386 632 | 331 683 | 856 322 | -5,0% | | | |

*Panel A. Percentiles of the cumulative-wealth-tax-to-initial-liquidity ratio*

| | 10th | 25th | 50th | 75th | 90th | 95th | 99th |
|---|---|---|---|---|---|---|---|
| The cumulative-wealth-tax-to-initial-liquidity ratio | 0,00 % | 0,27 % | 1,16 % | 4,86 % | 19,81 % | 49,32 % | 455,96 % |

*Panel B. Average family wealth across the distribution of the cumulative-wealth-tax-to-initial-liquidity ratio*

| | Family gross assets (NOK) | |
|---|---|---|
| Pecentile of the cumulative-wealth-tax-to-initial-liquidity ratio | Mean | Median |
| Below 25th | 6 581 654 | 2 712 037 |
| 25th–50th | 3 385 088 | 2 309 856 |
| 50th–75th | 1 796 310 | 1 244 298 |
| 75th–90th | 1 206 891 | 804 778 |
| 90th–95th | 1 001 106 | 648 792 |
| 95th–99th | 855 753 | 577 097 |
| Above 99th | 791 709 | 573 974 |

*Panel C. Firm payout to shareholders with high vs. low liquidity shock*

| | Homeowner, wealth tax taxpayer, above 90th | | | | | |
|---|---|---|---|---|---|---|
| Payout measure | Mean | Median | Mean | Median | Means | Medians |
| Dividends to earnings | 14,67 % | 0,00 % | 12,53 % | 0,00 % | 0.009 | 0,001 |
| Dividend payer | 21,26 % | 0,00 % | 17,84 % | 0,00 % | 0,001 | 0,001 |
| Dividends and salary to earnings before salary | 65,79 % | 73,92 % | 61,70 % | 70,05 % | 0,004 | 0,052 |

*Panel A. Instrumental variables (IV) estimation*

| | Dependent variable | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Investment | | Sales growth | | Employment growth | | Profitability | |
| Independent variable | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
| *Family characteristics* | | | | | | | | |
| Family wealth tax to liquidity | -0,301 * | *0,159* | -0,450 *** | *0,150* | -0,186 | *0,158* | -0,486 * | *0,084* |
| Family gross assets | 0,001 | *0,001* | 0,001 | *0,001* | 0,001 | *0,001* | 0,001 ** | *0,001* |
| Family leverage | -0,002 | *0,002* | -0,005 *** | *0,002* | -0,001 | *0,002* | 0,002 ** | *0,001* |
| *Firm characteristics* | | | | | | | | |
| Cash to assets | 0,024 *** | *0,009* | -0,205 *** | *0,009* | 0,087 ** | *0,010* | -0,049 *** | *0,005* |
| Return on assets | -0,046 *** | *0,010* | -0,114 *** | *0,010* | 0,018 *** | *0,010* | | |
| Sales to assets | 0,170 *** | *0,002* | -0,030 *** | *0,002* | -0,004 *** | *0,002* | 0,027 *** | *0,001* |
| Volatility of sales | 0,017 | *0,013* | -0,019 | *0,012* | 0,016 | *0,013* | 0,001 | *0,007* |
| Size | -0,414 *** | *0,006* | -0,533 *** | *0,005* | -0,063 *** | *0,006* | -0,076 *** | *0,003* |
| Age | 0,059 *** | *0,022* | 0,081 *** | *0,021* | -0,004 | *0,022* | 0,009 | *0,012* |
| Firm leverage | -0,060 *** | *0,010* | 0,061 *** | *0,010* | -0,038 *** | *0,010* | 0,124 *** | *0,005* |
| Retained earnings to equity | 0,001 | *0,002* | -0,001 | *0,002* | 0,001 | *0,002* | 0,001 | *0,001* |
| Firm fixed effects | Yes | | Yes | | Yes | | Yes | |
| Year fixed effects | Yes | | Yes | | Yes | | Yes | |
| $R^2$ | 0,006 | | 0,005 | | 0,010 | | 0,007 | |
| Number of observations | 71 841 | | 71 707 | | 71 841 | | 71 830 | |
| Number of firms | 28 594 | | 28 564 | | 28 594 | | 28 592 | |

The models in this table estimate how the controlling shareholder's personal wealth tax payments relate to the firm's real investment, growth, and profitability, using instrumental variables (IV) for the controlling shareholder's wealth tax shock. We use the clean sample, which includes all active limited-liability firms in Norway where a nuclear family (i.e., parents and their underage children) holds more than 50% of the equity and either does not own its home, experiences a standard change in the home's tax value plus/minus 1% (2006–2009), or where the change in tax value is between NOK -100,000 and NOK +500,000 (year 2010). We exclude financials, business groups, holding companies, the families with zero gross wealth, and the smallest 5% of firms by assets, sales, and employment. The sample period is 2006–2010. "Investment" is the log of the percentage change in real assets the year after the tax shock. "Sales growth" and "Employment growth" are the log of the percentage change in sales and employment in the year after the wealth tax shock, respectively. "Profitability" is the return on assets the year after the tax shock. "Family wealth tax to liquidity" is the controlling family's wealth tax payments divided by its liquid assets. This variable is instrumented by the change in the tax value of the family's home and by the home's tax value as a proportion of the family's gross assets. "Family gross assets" is the controlling family's assets from the family's tax returns. "Family leverage" is the controlling family's personal debt to gross wealth lagged. "Cash to assets" is the ratio of the firm's cash holdings to total assets. "Return on assets" is the firm's operating earnings divided by its assets. "Sales to assets" is the ratio of the firm's sales to total assets. "Volatility of sales" is the coefficient of variation of sales over the past three years. "Size" is the log of the firm's revenues in million NOK as of 2010. "Age" is the log of the number of years since the firm was founded. "Firm leverage" is the firm's liabilities to assets lagged. "Retained earnings to equity" is the firm's retained earnings divided by its equity. "SE" is standard error. Standard errors are clustered at the firm level. Investment, sales growth, employment growth, cash to assets, sales to assets, volatility of sales, and retained earnings to equity are winsorized at 97.5%. Profitability is winsorized at 2.5% and 97.5%. Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

*Continued on the next page*

*(continued)*

*Panel B. Difference-in-Difference (DiD) estimation*

| Independent variable | Coefficient | | SE | Coefficient | | SE | Coefficient | | SE | Coefficient | | SE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Family characteristics* | | | | | | | | | | | | |
| After tax shock | -0,015 | *** | *0,002* | -0,006 | *** | *0,002* | -0,001 | | *0,002* | -0,013 | *** | *0,001* |
| Home owner | 0,006 | *** | *0,002* | 0,011 | *** | *0,003* | -0,002 | | *0,002* | 0,018 | *** | *0,002* |
| Homeowner * After tax shock | -0,006 | ** | *0,003* | -0,010 | *** | *0,003* | -0,003 | | *0,002* | -0,009 | *** | *0,002* |
| Family gross assets | 0,008 | *** | *0,001* | -0,002 | ** | *0,001* | -0,004 | *** | *0,001* | 0,003 | *** | *0,001* |
| Family leverage | 0,002 | *** | *0,001* | 0,002 | *** | *0,001* | 0,001 | * | *0,001* | -0,001 | *** | *0,000* |
| *Firm characteristics* | | | | | | | | | | | | |
| Cash to assets | -0,040 | *** | *0,003* | -0,043 | *** | *0,004* | -0,008 | *** | *0,003* | -0,013 | *** | *0,003* |
| Return on assets | 0,095 | *** | *0,006* | -0,256 | *** | *0,008* | 0,078 | *** | *0,005* | | | |
| Sales to assets | 0,024 | *** | *0,001* | -0,012 | *** | *0,001* | -0,003 | *** | *0,000* | -0,005 | *** | *0,000* |
| Volatility of sales | 0,033 | *** | *0,003* | 0,013 | *** | *0,004* | -0,001 | | *0,002* | -0,024 | *** | *0,002* |
| Size | -0,019 | *** | *0,001* | -0,008 | *** | *0,001* | 0,009 | *** | *0,001* | 0,017 | *** | *0,001* |
| Age | -0,010 | *** | *0,001* | -0,025 | *** | *0,001* | -0,012 | *** | *0,001* | -0,013 | *** | *0,001* |
| Firm leverage | -0,044 | *** | *0,003* | 0,011 | *** | *0,004* | -0,019 | *** | *0,003* | 0,042 | *** | *0,002* |
| Retained earnings to equity | -0,002 | * | *0,001* | -0,004 | *** | *0,001* | -0,002 | *** | *0,001* | 0,002 | *** | *0,001* |
| Industry fixed effects | Yes | | | Yes | | | Yes | | | Yes | | |
| $R^2$ | 0,025 | | | 0,026 | | | 0,010 | | | 0,063 | | |
| Number of observations | 164 271 | | | | | | | | | | | |

*Panel A. Difference-in-Difference (DiD) estimation, low personal-liquidity group*

| Independent variable | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
|---|---|---|---|---|---|---|---|---|
| *Family characteristics* | | | | | | | | |
| After tax shock | -0,026 *** | *0,004* | -0,003 | *0,004* | -0,004 | *0,003* | -0,002 | *0,002* |
| Home owner | 0,002 | *0,005* | 0,014 ** | *0,006* | -0,004 | *0,004* | 0,032 *** | *0,003* |
| Homeowner * After tax shock | 0,015 *** | *0,005* | -0,018 ** | *0,007* | -0,003 | *0,006* | -0,012 *** | *0,003* |
| Family gross assets | 0,009 *** | *0,001* | 0,001 | *0,002* | -0,003 ** | *0,001* | 0,003 ** | *0,001* |
| Family leverage | 0,003 ** | *0,001* | 0,001 | *0,001* | 0,001 | *0,001* | -0,001 * | *0,001* |
| *Firm characteristics* | | | | | | | | |
| Cash to assets | -0,039 *** | *0,006* | -0,038 *** | *0,009* | -0,014 ** | *0,007* | 0,073 *** | *0,005* |
| Return on assets | 0,068 *** | *0,009* | -0,253 *** | *0,012* | 0,080 *** | *0,009* | | |
| Sales to assets | 0,029 *** | *0,001* | -0,015 *** | *0,001* | -0,002 *** | *0,001* | 0,003 *** | *0,001* |
| Volatility of sales | 0,021 *** | *0,005* | 0,037 *** | *0,007* | 0,005 | *0,005* | -0,011 *** | *0,004* |
| Size | -0,026 *** | *0,002* | -0,026 *** | *0,003* | 0,009 *** | *0,002* | 0,000 | *0,001* |
| Age | -0,012 *** | *0,003* | -0,024 *** | *0,004* | -0,014 *** | *0,003* | -0,003 | *0,002* |
| Firm lev 0 T,012*** | | | | | | | | |

*(continued)*

*Panel B. Difference-in-Difference (DiD) estimation for high personal-liquidity group*

| Independent variable | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
|---|---|---|---|---|---|---|---|---|
| *Family characteristics* | | | | | | | | |
| After tax shock | -0,007 ** | *0,004* | -0,007 | *0,006* | -0,001 | *0,004* | -0,010 *** | *0,002* |
| Home owner | 0,017 *** | *0,005* | 0,014 ** | *0,006* | 0,001 | *0,004* | 0,027 *** | *0,003* |
| Homeowner * After tax shock | -0,007 | *0,006* | -0,012 | *0,007* | -0,002 | *0,005* | -0,007 ** | *0,003* |
| Family gross assets | 0,008 *** | *0,002* | 0,000 | *0,002* | -0,004 *** | *0,001* | 0,000 | *0,001* |
| Family lev⁄AMCo3.3(m)26.4(i)4.6(l)19.91ax shock | | | | | | | | |

This figure shows, clockwise from upper left, the evolution of investment, sales growth, employment growth, and profitability for the treatment group (solid line) and the control group (dashed line) in the full sample prior to the first wealth tax shock in 2006. The treatment group consists of firms where a family is a majority shareholder, owns a home, and pays wealth tax in 2005. The control group consists of the remaining firms. "Investment" is the percentage change in real assets the year after the tax shock. We measure "Sales growth" and "Esn.6.2(ploy)36.9(m)6.2(e)5.6(nt)]TJ 5.84x72.58 0 Td(The) Tj1.877 0 Td53.6

| Variable | Mean | Median | Mean | Median | Mean | Median |
|---|---|---|---|---|---|---|
| *Family characteristics* | | | | | | |
| Family gross assets | 7,52 | 2,17 | 8,12 | 2,31 | 3,50 | 1,15 |
| Family leverage | 1,09 | 0,58 | 1,05 | 0,58 | 1,39 | 0,60 |
| Family net wealth | 5,44 | 0,71 | 5,96 | 0,81 | 1,96 | 0,25 |
| Family home to gross assets | 0,28 | 0,21 | 0,32 | 0,25 | 0,00 | 0,00 |
| Family liquid assets to gross assets | 0,27 | 0,20 | 0,25 | 0,19 | 0,39 | 0,29 |
| Family wealth tax to liquidity | 0,04 | 0,01 | 0,04 | 0,01 | 0,03 | 0,01 |
| Family salary from outside the firm | 0,12 | 0,00 | 0,13 | 0,00 | 0,06 | 0,00 |

Dependent variable: Family wealth tax to liquid assets

| Independent variable | Coefficient | | SE | Coefficient | | SE | Coefficient | | SE |
|---|---|---|---|---|---|---|---|---|---|
| *Instruments* | | | | | | | | | |
| Change in home's tax value | 0,078 | *** | *0,003* | 0,036 | *** | *0,003* | 0,036 | *** | *0,003* |
| Home's tax value to family gross assets | -0,062 | *** | *0,001* | -0,064 | *** | *0,002* | -0,064 | *** | *0,002* |
| *Family characteristics* | | | | | | | | | |
| Family gross assets | | | | 0,003 | *** | *0,000* | 0,003 | *** | *0,000* |
| Family leverage | | | | -0,002 | *** | *0,000* | -0,002 | *** | *0,000* |
| *Firm characteristics* | | | | | | | | | |
| Cash to assets | | | | -0,002 | | *0,002* | -0,003 | *** | *0,002* |
| Return on assets | | | | -0,007 | *** | *0,002* | | | |
| Sales to assets | | | | -0,001 | * | *0,000* | 0,000 | *** | *0,000* |
| Volatility of sales | | | | 0,010 | *** | *0,003* | 0,010 | *** | *0,003* |
| Size | | | | 0,003 | ** | *0,001* | 0,001 | *** | *0,001* |
| Age | | | | -0,026 | *** | *0,004* | -0,026 | *** | *0,004* |
| Firm leverage | | | | -0,018 | *** | *0,002* | -0,021 | *** | *0,002* |
| Retained earnings to equity | | | | 0,001 | *** | *0,000* | 0,001 | *** | *0,000* |
| Firm fixed effects | | | | Yes | | | Yes | | |
| Year fixed effects | | | | Yes | | | Yes | | |
| $R^2$ | 0,047 | | | 0,033 | | | 0,032 | | |
| Number of observations | 86 473 | | | 78 263 | | | 78 263 | | |
| Number of firms | 35 141 | | | 31 941 | | | 31 941 | | |

The models in this table use the clean sample and the 2006–2010 period to estimate the first stage of the instrumental variables (IV) regressions. The clean sample includes all active limited-liability firms in Norway where a nuclear family (i.e., parents and their underage children) holds more than 50% of the equity and either does not own its home, experiences a standard change in the home's tax value plus/minus 1% (2006–2009), or where the change in tax value is between NOK -100,000 and NOK +500,000 (year 2010). We exclude financials, business groups, holding companies, the families with zero gross wealth, and the smallest 5% of firms by assets, sales, and employment. "Family wealth tax to liquid assets" is the family's wealth tax payments divided by its liquid assets. "Change in home's tax value" is the change in the tax value of the family's residential real estate, and "Home's tax value to family gross assets" is the tax value of the family's residential real estate as a proportion of the family's gross assets. "Family gross assets" is the family's assets from the family's tax returns. "Family leverage" is the family's personal debt to gross wealth lagged. "Cash to assets" is the ratio of the firm's cash holdings to total assets. "Return on assets" is the firm's operating earnings divided by its assets. "Sales to assets" is the ratio of the firm's sales to total assets. "Volatility of sales" is the coefficient of variation of sales over the past three years. "Size" is the log of the firm's revenues in million NOK as of 2010. "Age" is the log of the number of years since the firm was founded. "Firm leverage" is the firm's liabilities to assets lagged. "Retained earnings to equity" is the firm's retained earnings divided by its equity. "SE" is standard error. Standard errors are clustered at the firm level. Cash to assets, sales to assets, volatility of sales, and retained earnings to equity are winsorized at 97.5%. Return on assets is winsorized at 2.5% and 97.5%. Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

*(continued)*

*Panel B. Real effects*

| Independent variable | Coefficient | | SE | Coefficient | | SE | Coefficient | | SE | Coefficient | | SE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Family characteristics* | | | | | | | | | | | | |
| Family wealth tax to liquidity | -0,367 | ** | *0,181* | -0,442 | *** | *0,171* | -0,284 | * | *0,182* | -0,501 | *** | *0,096* |
| Family gross assets | 0,000 | | *0,001* | 0,000 | | *0,001* | 0,000 | | *0,001* | 0,001 | * | *0,001* |
| Family leverage | -0,001 | | *0,002* | -0,007 | *** | *0,002* | -0,001 | | *0,002* | -0,001 | | *0,001* |
| *Firm characteristics* | | | | | | | | | | | | |
| Cash to assets | -0,062 | *** | *0,011* | -0,128 | *** | *0,011* | 0,014 | | *0,011* | -0,062 | *** | *0,006* |
| Return on assets | 0,016 | | *0,012* | -0,212 | *** | *0,011* | 0,084 | *** | *0,012* | | | |
| Sales to assets | 0,181 | *** | *0,002* | -0,030 | *** | *0,002* | -0,007 | *** | *0,002* | 0,026 | *** | *0,001* |
| Volatility of sales | 0,003 | | *0,016* | -0,079 | *** | *0,016* | 0,016 | | *0,016* | -0,006 | | *0,009* |
| Size | -0,460 | *** | *0,007* | -0,583 | *** | *0,007* | -0,062 | *** | *0,007* | -0,084 | *** | *0,003* |
| Age | 0,044 | | *0,029* | 0,103 | *** | *0,027* | 0,021 | | *0,029* | -0,003 | | *0,015* |
| Firm leverage | -0,047 | *** | *0,012* | 0,070 | *** | *0,011* | -0,035 | *** | *0,012* | 0,110 | *** | *0,006* |
| Retained earnings to equity | 0,001 | | *0,002* | -0,001 | | *0,002* | 0,000 | | *0,002* | -0,002 | ** | *0,001* |
| Firm fixed effects | Yes | | | Yes | | | Yes | | | Yes | | |
| Year fixed effects | Yes | | | Yes | | | Yes | | | Yes | | |
| $R^2$ | 0,01 | | | 0,01 | | | 0,01 | | | 0,01 | | |
| Number of observations | 59 027 | | | 58 916 | | | 59 027 | | | 59 017 | | |
| Number of firms | 25 925 | | | 25 895 | | | 25 925 | | | 25 922 | | |

This table shows

*Panel A. Matching on family and firm characteristics*

| | Average treatment effect | | SE | Number of observations |
|---|---|---|---|---|
| *Financial effects* | | | | |
| Dividends to earnings | 0,006 | * | 0,035 | 98,345 |
| Dividend payer | 0,013 | *** | 0,005 | 99,278 |
| Dividends and salary to earnings before salary | 0,011 | ** | 0,005 | 73,640 |
| Change in cash to assets | -0,018 | *** | -0,006 | 99,126 |
| *Real effects* | | | | |
| Investment | -0,003 | ** | 0,015 | 91,177 |
| Sales growth | -0,015 | *** | 0,004 | 90,992 |
| Employment growth | -0,008 | *** | 0,003 | 91,178 |
| Profitability | -0,003 | * | 0,002 | 91,164 |

*Panel B. Difference-In-Difference (DiD) estimation with matching*

| *Real effects* | Difference before (treatment-control) | Difference after (treatment-control) | Difference in difference | | SE |
|---|---|---|---|---|---|
| Investment | 0,013 | 0,009 | -0,004 | ** | 0,002 |
| Sales growth | 0,015 | 0,001 | -0,014 | *** | 0,003 |
| Employment growth | -0,001 | -0,005 | -0,004 | * | 0,002 |
| Profitability | 0,015 | 0,008 | -0,008 | *** | 0,001 |

This table presents results using propensity score matching in the full sample. Panel A shows the average treatment effect for our proxies of the firm's financial effects and real effects. "Dividends to earnings" is the ratio of the firm's dividends to operating earnings. "Dividend payer" is equal to 1 if the firm pays dividends in a given year and 0 otherwise. "Dividends and salary to earnings before salary" is the sum of dividends and salary paid to the controlling family divided by the family's part of the firm's operating earnings plus salary. "Change in cash to assets" is the change in the firm's cash-to-assets ratio. "Investment" is the log of the percentage change in real assets the year after the tax shock. "Sales growth" and "Employment growth" are the log of the percentage change in sales and employment in the year after the wealth tax shock, respectively. "Profitability" is the return on assets the year after the tax shock. All ratios are winsorized at 5% (0% if only positive values are meaningful) and 95%. "SE" is standard error. The full sample includes all active limited-liability firms in Norway where a nuclear family (i.e., parents and their underage children) holds more than 50% of the equity and is vs. is not affected by a tax shock on the personal home. We exclude financials, business groups, holding companies, the families with zero gross wealth, and the smallest 5% of firms by assets, sales, and employment. The sample period is 2006–2010. We match on industry, year, firm, and family characteristics. Panel B shows difference-in-difference results for matched firms where the controlling shareholder is vs. is not affected by a tax shock on the personal home. We match on industry, firm, and family characteristics measured as averages over the 2000–2005 period, which is prior to the tax shock. "SE" is standard error. The time period is 2000–2010. Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

*Panel A. Financial effects*

| Independent variable | Coefficient | | SE | Coefficient | | SE | Coefficient | | SE | Coefficient | | SE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Family characteristics* | | | | | | | | | | | | |
| Family wealth tax to bank deposits | 0,120 | ** | *0,058* | 0,138 | * | *0,074* | 0,171 | *** | *0,054* | -1,583 | *** | *0,109* |
| Family gross assets | -0,002 | * | *0,001* | -0,003 | * | *0,002* | 0,000 | ** | *0,001* | 0,000 | ** | *0,002* |
| Family leverage | 0,003 | * | *0,002* | 0,007 | *** | *0,002* | 0,007 | *** | *0,002* | 0,031 | *** | *0,003* |
| *Firm characteristics* | | | | | | | | | | | | |
| Cash to assets | 0,088 | *** | *0,010* | 0,121 | *** | *0,012* | -1,041 | *** | *0,010* | 0,261 | *** | *0,018* |
| Return on assets | 0,245 | *** | *0,010* | 0,405 | *** | *0,013* | 0,054 | *** | *0,016* | 1,304 | *** | *0,019* |
| Sales to assets | -0,006 | *** | *0,002* | -0,014 | *** | *0,002* | 0,035 | *** | *0,002* | -0,068 | *** | *0,003* |
| Volatility of sales | -0,035 | *** | *0,013* | -0,044 | *** | *0,016* | -0,030 | ** | *0,014* | -0,005 | | *0,024* |
| Size | 0,041 | *** | *0,006* | 0,092 | *** | *0,007* | 0,004 | | *0,006* | 0,210 | *** | *0,011* |
| Age | -0,004 | | *0,022* | -0,006 | | *0,028* | -0,026 | | *0,022* | -0,170 | *** | *0,041* |
| Firm leverage | -0,274 | *** | *0,010* | -0,323 | *** | *0,012* | -0,185 | *** | *0,011* | 0,012 | | *0,018* |
| Retained earnings to equity | 0,012 | *** | *0,002* | 0,010 | *** | *0,002* | 0,006 | *** | *0,002* | 0,000 | | *0,003* |
| Firm fixed effects | Yes | | | Yes | | | Yes | | | Yes | | |
| Year fixed effects | Yes | | | Yes | | | Yes | | | Yes | | |
| $R^2$ | 0,079 | | | 0,140 | | | 0,050 | | | 0,058 | | |
| Number of observations | 69 717 | | | 70354 | | | 51 010 | | | 70 271 | | |
| Number of firms | 29 596 | | | 29684 | | | 25 095 | | | 29 655 | | |

The models estimated in this table use a modified measure of the controlling shareholder's wealth tax shock to show how illiquidity shocks to the controlling family's personal wealth influence the cash flow from the firm to the family and the firm's liquid position in the clean sample. The clean sample includes all

*(continued)*

*Panel B. Real effects*

| Independent variable | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
|---|---|---|---|---|---|---|---|---|

*Panel A. Financial effects using IV regressions*

| Independent variable | Coefficient | | SE | Coefficient | | SE | Coefficient | | SE | Coefficient | | SE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Family characteristics* | | | | | | | | | | | | |
| Family wealth tax to liquidity | 0,494 | *** | *0,151* | 0,544 | *** | *0,190* | 0,536 | *** | *0,136* | -1,087 | *** | *0,087* |
| Family gross assets | -0,003 | *** | *0,001* | -0,004 | *** | *0,002* | -0,003 | *** | *0,001* | 0,002 | *** | *0,001* |
| Family leverage | 0,003 | ** | *0,002* | 0,006 | *** | *0,002* | 0,006 | *** | *0,002* | -0,001 | | *0,001* |
| *Firm characteristics* | | | | | | | | | | | | |
| Cash to assets | 0,084 | *** | *0,009* | 0,111 | *** | *0,011* | 0,052 | *** | *0,009* | 0,969 | *** | *0,005* |
| Return on assets | 0,245 | *** | *0,010* | 0,401 | *** | *0,012* | -1,023 | *** | *0,015* | -0,005 | | *0,005* |
| Sales to assets | -0,005 | *** | *0,002* | -0,013 | *** | *0,002* | 0,035 | *** | *0,002* | 0,000 | | *0,001* |
| Volatility of sales | -0,040 | *** | *0,012* | -0,045 | *** | *0,015* | -0,040 | *** | *0,013* | 0,006 | | *0,007* |
| Size | 0,033 | *** | *0,005* | 0,084 | *** | *0,007* | 0,004 | | *0,006* | 0,021 | *** | *0,003* |
| Age | -0,011 | | *0,020* | -0,014 | | *0,026* | -0,022 | | *0,021* | 0,003 | | *0,012* |
| Firm leverage | -0,261 | *** | *0,009* | -0,311 | *** | *0,012* | -0,173 | *** | *0,010* | 0,096 | *** | *0,005* |
| Retained earnings to equity | 0,011 | *** | *0,002* | 0,010 | *** | *0,002* | 0,007 | *** | *0,002* | -0,002 | * | *0,001* |
| Change in local home prices | 0,046 | | *0,031* | 0,075 | * | *0,039* | 0,073 | ** | *0,031* | 0,029 | | *0,018* |
| Firm fixed effects | Yes | | | | | | Yes | | | Yes | | |
| Year fixed effects | Yes | | | | | | Yes | | | Yes | | |
| $R^2$ | 0,08 | | | 0,14 | | | 0,06 | | | 0,13 | | |
| Number of observations | 77 516 | | | 78 234 | | | 56 878 | | | 78 234 | | |
| Number of firms | 31 833 | | | 31 928 | | | 27 067 | | | 31 928 | | |

The models in this table estimate how the controlling owner's tax payments relate to the firm's payout and cash holdings when we account for changes in market value of the controlling owner's personal home and use instrumental variables (IV) estimation in the clean sample. The clean sample includes all active limited-liability firms in Norway where a nuclear family (i.e., parents and their underage children) holds more than 50% of the equity and either does not own its home, experiences a standard change in the home's tax value plus/minus 1% (2006–2009), or where the change in tax value is between NOK -100,000 and NOK +500,000 (year 2010). We exclude financials, business groups, holding companies, the families with zero gross wealth, and the smallest 5% of firms by assets, sales, and employment. The sample period is 2006–2010. "Dividends to earnings" is the ratio of the firm's dividends to operating earnings. "Dividend payer" is equal to 1 if the firm pays dividends in a given year and 0 otherwise. "Dividends and salary to earnings before salary" is the sum of dividends and salary paid to the controlling family divided by the family's part of the firm's operating earnings plus salary. "Change in cash to assets" is the change in the firm's cash-to-assets ratio. "Family wealth tax to liquidity" is the family's wealth tax payments divided by its liquid assets. This variable is instrumented by the change in the tax value of the family's residential real estate and by the ratio between residential real estate and the

*Panel A. Financial effects using IV regressions*

| | Dependent variable | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Dividends to earnings | | Dividend payer | | Dividends and salary to earnings before salary | | Change in cash to assets | |
| Independent variable | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
| *Family characteristics* | | | | | | | | |
| Family wealth tax to liquidity | 0,896 *** | *0,147* | 1,024 *** | *0,185* | 0,654 *** | *0,134* | -1,237 *** | *0,085* |
| Family gross assets | -0,001 *** | *0,001* | -0,005 *** | *0,002* | -0,003 *** | *0,001* | 0,001 *** | *0,001* |
| *Firm characteristics* | | | | | | | | |
| Cash to assets | 0,103 *** | *0,010* | 0,137 *** | *0,012* | 0,064 *** | *0,010* | 0,976 *** | *0,005* |
| Return on assets | 0,155 *** | *0,010* | 0,295 *** | *0,012* | -1,094 *** | *0,015* | 0,032 *** | *0,006* |
| Sales to assets | -0,014 *** | *0,002* | -0,024 *** | *0,002* | 0,028 *** | *0,002* | 0,005 *** | *0,001* |
| Volatility of sales | -0,038 *** | *0,012* | -0,043 *** | *0,015* | -0,034 ** | *0,013* | 0,006 | *0,007* |
| Size | 0,041 *** | *0,005* | 0,092 *** | *0,007* | 0,007 | *0,006* | 0,018 *** | *0,003* |
| Age | -0,030 | *0,021* | -0,037 | *0,026* | -0,032 | *0,021* | 0,011 | *0,012* |
| Asset tangibility | -0,031 ** | *0,013* | -0,023 | *0,015* | -0,022 | *0,014* | 0,073 *** | *0,007* |
| Retained earnings to equity | 0,004 *** | *0,002* | 0,001 | *0,002* | 0,003 * | *0,002* | 0,001 | *0,001* |
| Firm fixed effects | Yes | | Yes | | Yes | | Yes | |
| Year fixed effects | Yes | | Yes | | Yes | | Yes | |
| $R^2$ | 0,06 | | 0,11 | | 0,06 | | 0,12 | |
| Number of observations | 77 561 | | 78 345 | | 56 949 | | 78 329 | |
| Number of firms | 31 852 | | 31 982 | | 27 105 | | 31 976 | |

The models in this table estimate how the controlling owner's tax payments relate to the firm's cash flows when we use asset tangibility to replace leverage in the clean sample. The clean sample includes all active limited-liability firms in Norway where a nuclear family (i.e., parents and their underage children) holds more than 50% of the equity and either does not own its home, experiences a standard change in the home's tax value plus/minus 1% (2006–2009), or where the change in tax value is between NOK -100,000 and NOK +500,000 (year 2010). We exclude financials, business groups, holding companies, the families with zero gross wealth, and the smallest 5% of firms by assets, sales, and employment. The sample period is 2006–2010. "Dividends to earnings" is the ratio of the firm's dividends and operating earnings. "Dividend payer" is equal to 1 if the firm pays dividends in a given year and 0 otherwise. "Dividends and salary to earnings before salary" is the sum of dividends and salary paid to the controlling family divided by the family's part of the firm's operating earnings plus salary. "Change in cash to assets" is the change in firm's cash-to-assets ratio. "Family wealth tax to liquidity" is the family's wealth tax payments divided by its liquid assets. This variable is instrumented by the change in the tax value of the family's residential real estate and by the ratio between residential real estate and the family's gross assets. "Family gross assets" is the family's assets from the tax returns. "Cash to assets" is the ratio of the firm's cash holdings to total assets. "Return on assets" is the firm's operating earnings divided by its assets. "Sales to assets" is the ratio of the firm's sales to total assets. "Volatility of sales" is the coefficient of variation of sales over the past three years. "Size" is the log of the firm's revenues in million NOK as of 2010. "Age" is the log of the number of years since the firm was founded. "Asset tangibility" is fixed assets divided by total assets. "Retained earnings to equity" is the firm's retained earnings divided by its equity. "SE" is standard error. Standard errors are clustered at the firm level. Dividends to earnings, dividends and salary to earnings, cash to assets, sales to assets, volatility of sales, and retained earnings are winsorized at 97.5%. Return on assets is winsorized at 2.5% and 97.5%. Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

*Continued on the next page*

*(continued)*

*Panel B. Real effects using IV regressions*

| | Dependent variable | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Investment | | Sales growth | | Employment growth | | Profitability | |
| Independent variable | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
| *Family characteristics* | | | | | | | | |
| Family wealth tax to liquidity | -0,218 ** | *0,102* | -0,533 *** | *0,144* | -0,131 | *0,151* | -0,743 *** | *0,082* |
| Family gross assets | 0,001 | *0,001* | 0,001 | *0,001* | 0,001 | *0,001* | 0,001 *** | *0,001* |
| *Firm characteristics* | | | | | | | | |
| Cash to assets | 0,004 | *0,010* | -0,187 *** | *0,010* | 0,058 *** | *0,010* | -0,047 *** | *0,006* |
| Return on assets | -0,040 *** | *0,010* | -0,128 *** | *0,010* | 0,022 *** | *0,010* | | |
| Sales to assets | 0,167 *** | *0,002* | -0,028 *** | *0,002* | -0,004 *** | *0,002* | 0,031 *** | *0,001* |
| Volatility of sales | 0,018 | *0,013* | -0,022 * | *0,012* | 0,009 | *0,013* | 0,002 | *0,007* |
| Size | -0,412 *** | *0,006* | -0,534 *** | *0,006* | -0,048 *** | *0,006* | -0,071 *** | *0,003* |
| Age | 0,054 ** | *0,022* | 0,085 | *0,021* | -0,002 | *0,022* | 0,013 | *0,012* |
| Asset tangibility | -0,001 | *0,012* | -0,035 *** | *0,013* | 0,004 | *0,012* | 0,033 ** | *0,007* |
| Retained earnings to equity | -0,001 | *0,002* | 0,001 | *0,002* | 0,000 | *0,002* | 0,001 | *0,001* |
| Firm fixed effects | Yes | | Yes | | Yes | | Yes | |
| Year fixed effects | Yes | | Yes | | Yes | | Yes | |
| $R^2$ | 0,01 | | 0,01 | | 0,01 | | 0,01 | |
| Number of observations | 71 906 | | 71 772 | | 71 906 | | 71 895 | |
| Number of firms | 28 622 | | 28 593 | | 28 622 | | 28 622 | |

The models in this table present the clean sample estimates of how the controlling owner's tax payments relate to the firm's investment, growth, and profitability when we use asset tangibility to replace leverage. The clean sample includes all active limited-liability firms in Norway where a nuclear family (i.e., parents and their underage children) holds more than 50% of the equity and either does not own its home, experiences a standard change in the home's tax value plus/minus 1% (2006–2009), or where the change in tax value is between NOK -100,000 and NOK +500,000 (year 2010). We exclude financials, business groups, holding companies, the families with zero gross wealth, and the smallest 5% of firms by assets, sales, and employment. The sample period is 2006–2010. "Investment" is the log of the percentage change in real assets the year after the tax shock. "Sales growth" and "Employment growth" are the log of the percentage change in sales and employment in the year after the wealth tax shock, respectively. "Profitability" is the return on assets the year after the tax shock. "Family wealth tax to liquidity" is the family's wealth tax payments divided by its liquid assets. This variable is instrumented by the change in the tax value of the family's residential real estate and by the ratio between residential real estate and the family's total gross assets. "Family gross assets" is the family's assets from the tax returns. "Cash to assets" is the ratio of the firm's cash holdings to total assets. "Return on assets" is the firm's operating earnings divided by its assets. "Sales to assets" is the ratio of the firm's sales to total assets. "Volatility of sales" is the coefficient of variation of sales over the past three years. "Size" is the log of the firm's revenues in million NOK as of 2010. "Age" is the log of the number of years since the firm was founded. "Asset tangibility" is fixed assets divided by total assets. "Retained earnings to equity" is the firm's retained earnings divided by its equity. "SE" is standard error. Standard errors are clustered at the firm level. Investment, sales growth, employment growth, cash to assets, sales to assets, volatility of sales, and retained earnings to equity are winsorized at 97.5%. Return on assets is winsorized at 2.5% and 97.5%. Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

| Independent variable | Coefficient | | SE | Coefficient | | SE | Coefficient | | SE | Coefficient | | SE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Family characteristics* | | | | | | | | | | | | |
| Homeowner * After tax shock | -0,008 | ** | *0,003* | -0,022 | *** | *0,004* | -0,006 | * | *0,003* | -0,005 | *** | *0,002* |
| Family gross assets | -0,003 | ** | *0,001* | -0,006 | *** | *0,002* | -0,001 | | *0,001* | -0,005 | *** | *0,001* |
| Family gross assets* After tax shock | -0,003 | * | *0,001* | -0,008 | *** | *0,002* | 0,000 | | *0,002* | 0,000 | | *0,001* |
| Family leverage | -0,001 | | *0,001* | -0,001 | | *0,001* | -0,001 | | *0,001* | 0,002 | *** | *0,001* |
| Family leverage* After tax shock | 0,001 | | *0,001* | -0,002 | | *0,002* | 0,001 | | *0,001* | -0,001 | * | *0,001* |
| *Firm characteristics* | | | | | | | | | | | | |
| Cash to assets | -0,073 | | *0,006* | -0,127 | *** | *0,008* | 0,015 | ** | *0,006* | 0,002 | | *0,003* |
| Return on assets | 0,016 | ** | *0,008* | -0,328 | *** | *0,009* | 0,101 | *** | *0,008* | | | |
| Sales to assets | 0,121 | *** | *0,001* | -0,032 | *** | *0,001* | -0,006 | *** | *0,001* | 0,016 | *** | *0,001* |
| Volatility of sales | 0,014 | ** | *0,006* | 0,030 | *** | *0,007* | 0,034 | *** | *0,006* | 0,008 | *** | *0,003* |
| Size | -0,284 | *** | *0,003* | -0,442 | *** | *0,004* | -0,050 | *** | *0,003* | -0,025 | *** | *0,001* |
| Age | 0,070 | *** | *0,010* | 0,080 | *** | *0,013* | -0,016 | | *0,011* | 0,015 | *** | *0,005* |
| Firm leverage | -0,035 | *** | *0,006* | 0,035 | *** | *0,007* | -0,031 | *** | *0,006* | 0,097 | *** | *0,003* |
| Retained earnings to equity | -0,003 | *** | *0,001* | -0,001 | | *0,002* | -0,002 | | *0,001* | 0,001 | | *0,001* |
| Cash to assets* After tax shock | 0,052 | *** | *0,007* | -0,009 | | *0,008* | -0,009 | | *0,007* | -0,013 | *** | *0,003* |
| Return on assets* After tax shock | 0,085 | *** | *0,010* | 0,116 | *** | *0,012* | 0,015 | | *0,010* | | | |
| Sales to assets* After tax shock | 0,007 | *** | *0,001* | -0,003 | ** | *0,001* | 0,000 | | *0,001* | 0,000 | | *0,000* |
| Volatility of sales* After tax shock | -0,001 | | *0,006* | 0,012 | * | *0,007* | 0,030 | *** | *0,006* | 0,013 | *** | *0,003* |
| Size* After tax shock | 0,009 | *** | *0,002* | 0,019 | *** | *0,002* | -0,001 | | *0,002* | 0,001 | | *0,001* |
| Age* After tax shock | 0,006 | | *0,004* | 0,002 | | *0,005* | 0,001 | | *0,00P MCID 939 BDC** | | | |

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*Panel A: Financial effects*

| Independent variable | | SE | | SE | | SE | | SE |
|---|---|---|---|---|---|---|---|---|
| *Family characteristics* | | | | | | | | |
| Tax value real estate, 2005 * After tax shock | 0.032 *** | *0,009* | 0,011 * | *0,006* | 0.025 *** | *0,007* | -0.005 * | *0,002* |
| Family gross assets | 0.024 *** | *0,003* | 0,012 *** | *0,002* | 0.017 *** | *0,002* | 0.010 *** | *0,001* |
| Family gross assets* After tax shock | -0.025 *** | *0,003* | -0,011 *** | *0,002* | -0.035 *** | *0,002* | -0.004 *** | *0,001* |
| Family leverage | -0.003 * | *0,002* | -0,003 ** | *0,001* | -0.003 *** | *0,002* | 0,001 | *0,001* |
| Family leverage* After tax shock | 0.017 *** | *0,002* | 0,016 *** | *0,002* | 0.008 *** | *0,002* | -0.005 *** | *0,001* |
| *Firm characteristics* | | | | | | | | |
| Cash to assets | 0.245 *** | *0,011* | 0,194 *** | *0,008* | 0.123 *** | *0,008* | | |
| Return on assets | 0.592 *** | *0,013* | 0,720 *** | *0,010* | -0.788 *** | *0,015* | 0,194 *** | *0,004* |
| Sales to assets | -0.013 *** | *0,002* | -0,017 *** | *0,001* | 0.027 *** | *0,002* | 0.006 *** | *0,001* |

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***continued***

*Panel B: Real effects*

| Independent variable | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
|---|---|---|---|---|---|---|---|---|
| *Family characteristics* | | | | | | | | |
| Tax value real estate, 2005 * After tax shock | -0.009 * | *0,005* | -0.033 *** | *0,006* | -0,003 | *0,005* | -0.009 ** | *0,003* |
| Family gross assets | -0.003 ** | *0,001* | -0.006 *** | *0,002* | 0,000 | *0,001* | 0.001 | *0,001* |
| Family gross assets* After tax shock | -0.003 * | *0,002* | -0.007 *** | *0,002* | -0,001 | *0,002* | -0.001 | *0,001* |
| Family leverage | -0.002 * | *0,002* | -0.002 * | *0,001* | -0,002 | *0,001* | 0.002 ** | *0,001* |
| Family leverage* After tax shock | 0.002 * | *0,001* | 0.002 | *0,353* | 0,002 | *0,001* | -0,001 | *0,067* |
| *Firm characteristics* | | | | | | | | |
| Cash to assets | -0.072 *** | *0,006* | -0.127 *** | *0,008* | 0.015 ** | *0,006* | 0,002 | *0,003* |
| Return on assets | 0.011 | *0,007* | -0.339 *** | *0,009* | 0.104 ** | *0,008* | | |
| Sales to assets | 0.122 *** | *0,001* | -0.032 *** | *0,001* | -0.007 ** | *0,001* | 0.016 ** | *0,001* |
| Volatility of sales | 0.011 ** | *0,006* | 0.027 *** | *0,007* | 0.034 ** | *0,006* | 0.007 ** | *0,003* |
| Size | -0.284 *** | *0,003* | -0.444 *** | *0,004* | -0.052 ** | *0,003* | -0.025 ** | *0,001* |
| Age | 0.070 *** | *0,010* | 0.079 *** | *0,013* | -0.015 ** | *0,011* | 0.015 ** | *0,005* |
| Firm leverage | -0.034 *** | *0,006* | 0.032 *** | *0,007* | -0.034 ** | *0,006* | 0.095 ** | *0,003* |
| Retained earnings to equity | -0.003 ** | *0,001* | 0,000 | *0,002* | -0.002 * | *0,001* | 0.001 ** | *0,001* |
| Cash to assets* After tax shock | 0.051 *** | *0,007* | -0,012 | *0,008* | -0,010 | *0,007* | 0,005 | *0,003* |
| Return on assets* After tax shock | 0.089 *** | *0,010* | 0.126 *** | *0,012* | 0,013 | *0,010* | | |
| Sales to assets* After tax shock | 0.007 *** | *0,001* | -0,002 | *0,001* | 0,000 | *0,001* | 0,000 | *0,000* |
| Volatility of sales* After tax shock | 0.002 | *0,006* | 0.017 ** | *0,007* | 0.031 ** | *0,006* | 0.014 ** | *0,003* |
| Size* After tax shock | 0.009 *** | *0,002* | 0.019 *** | *0,002* | -0,001 | *0,002* | 0,000 | *0,001* |
| Age* After tax shock | 0.006 | *0,004* | 0,002 | *0,005* | 0,001 | *0,004* | 0,003 | *0,002* |
| Firm leverage* After tax shock | -0.051 *** | *0,007* | 0.035 *** | *0,008* | -0,004 | *0,007* | 0,053 | *0,003* |
| Retained earnings to equity* After tax shock | 0.005 *** | *0,002* | -0.005 *** | *0,002* | 0,002 | *0,002* | -0.004 ** | *0,001* |
| D2002 | -0.006 *** | *0,003* | -0.029 *** | *0,004* | -0.009 ** | *0,003* | -0.009 ** | *0,002* |
| D2003 | 0.029 *** | *0,003* | 0.014 *** | *0,004* | 0,004 | *0,003* | -0.002 ** | *0,002* |
| D2004 | 0.029 *** | *0,004* | 0.015 *** | *0,005* | -0,002 | *0,004* | 0,000 | *0,002* |
| D2005 | 0.083 *** | *0,004* | 0.045 *** | *0,005* | 0,006 | *0,005* | -0,005 | *0,002* |
| D2006 | 0.101 *** | *0,026* | 0.120 *** | *0,033* | 0,001 | *0,027* | -0,035 | *0,014* |
| D2007 | 0,037 | *0,027* | 0.074 ** | *0,033* | 0,012 | *0,028* | -0,059 | *0,014* |
| D2008 | 0,016 | *0,027* | -0,008 | *0,034* | 0,001 | *0,028* | -0,068 | *0,014* |
| D2009 | 0,034 | *0,028* | 0,041 | *0,035* | 0,009 | *0,029* | -0,073 | *0,015* |
| D2010 | 0.045 * | *0,029* | 0.064* | *0,035* | -0,006 | *0,029* | -0,062 | *0,015* |
| Firm fixed effects | Yes | | Yes | | Yes | | Yes | |
| $R^2$: overall | 0,011 | | 0,008 | | 0,008 | | 0,001 | |
| within | 0,167 | | 0,208 | | 0,002 | | 0,058 | |
| between | 0,001 | | 0,001 | | 0,001 | | 0,043 | |
| Number of ob0010,162702 | | | | | | | | |

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