NORGES HANDELSHØYSKOLE

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Liquidity Effects of the Norwegian Wealth Tax

A study from Norway

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Master thesis in Financial Economics

NORGES HANDELSHØYSKOLE

1. Abstract

We use panel data provided by the Norwegian Tax Authorities to estimate the effect the Norwegian wealth tax has on dividend payments from owners of unlisted firms. Using individual tax return data from 2009 to 2016, we use a difference-in-differences model to estimate the effect wealth tax has on received dividends for households. We utilize the wealth tax policy change in 2014-15 to compare those households that shift wealth tax position to those households not affected by the new wealth tax threshold. Our main finding suggests that going from a wealth tax position to not being taxed is associated with 7.81 percent decrease in dividend payments.

2. Preface

This master's thesis is written as part of our MSc in Economics and Business Administration at the Norwegian School of Economics.

We would like to thank our supervisor for guidance and help with this thesis. Also, we would like to thank NOCET and The Norwegian Tax Authority for the grant opportunity, we greatly appreciate it.

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3. Introduction

The wealth tax is globally an uncommon tax. As of 2018, only 4 countries within OECD have a wealth tax in place, declining from 12 in 1990 (OECD, 2018). Within both the political and academic sphere there are discussions about the economic, behavioral, and social effects of a wealth tax. The total effect of the tax is not clear-cut, and the tax must balance different social, economic, and political expectations between groups. The efficiency of the tax is therefore often discussed conditional on which metric in question. Wealth inequality is rising globally, where more and more of the global wealth and income are concentrated around fewer individuals. Wealth taxation is in this setting argued to be a social solution for redistributing wealth from the top to the bottom.

As wealth in most countries are more concentrated than wage and carries the added possibility of indefinitely deferring taxes, wealth tax is often proposed to mitigate the increasing wealth gap and ensure that wealth-income generated from ownership does not escape taxation indefinitely. From the economical viewpoint, governments need to balance between efficiency and equality. Wealth tax can also trigger behavioral responses such as evasion and avoidance strategies which create tax losses for governments (Alstadsæter, Johannesen, & Zucman, 2019) and (Seim, 2017).

Our interest in wealth taxation started with last year´s national debates initiated by the political center-right collision before the upcoming parliament election. The Coalition, led by the conservative party, argued for higher wealth tax exemption for what is known as “arbeidende kapital” which most accurately can be translated to operational business assets. The right center side argues that the wealth tax drains Norwegian enterprises of capital and distorts investments (Høyre, 2022). In comparison, the Labour party argues that the tax is efficient at taxing the wealthiest and does not create such liquidity or investment problems. They further accuse the wealth tax cuts proposed by the right-wing of transferring the majority of tax revenues back to the one percent wealthiest.

The current literature on wealth tax is dispersed. There is extensive research on behavioral responses to wealth taxation. Studies by Alstadsæter et al (2019) and Seim (2017) document such evasion responses done by different groups to avoid taxation. Others have focused on the on income and substitution effects which is especially important for policy makers when evaluating real effects of the tax. As found by both Jacobsen, Kleven, & Zucman (2020) and Brülhart, Gruber, Krapf, & Schmidheiny (2019), effects are difficult to estimate as both reporting, and avoidance responses are undertaken by individuals to minimize tax burden, creating difficulties in estimating real effects.

In the recent days the public discussion has moved to liquidity effects faced by owners of firms. With NHO (2017) strongly advocating for the abolishment of the tax on behalf of Norwegian business owners. Two Norwegian studies have further fueled the debate related to the liquidity issue for Norwegian's owners and firms. Berzins, Bøhren, & Stacescu (2022) is the first study to our knowledge which investigates unlisted firms` performance and cashflows between owners in a wealth tax position. By use of various empirical methods, they document negative effects on the firm level and corresponding higher cashflows to the owners following wealth tax-induced liquidity shocks. Contrary to Berzin et al. (2022) the other Norwegian study is conducted by Bjørneby, Markussen, & Røed (2020). They find no increase in pay-outs or negative firm effects caused by wealth tax increases, but rather an increased investment in human capital in private firms. They attribute this effect partly to an avoidance response which is done by owners to lessen the tax burden, as such investments don't show up in the balance of firms and therefore escape taxes.

In this thesis we want to contribute to the empirical research on the relationship between dividends and wealth taxation. There are many opinions but only a few studies look directly on how wealth tax affect dividends.

By using panel data of consisting of tax records from the period 2009-2016 and changing tax thresholds, to estimate the effect the changing thresholds has on the dividends taken out by owners. Panel data gives us the opportunity to control for unobserved heterogeneity between households and time specific events. Furthermore, the changing thresholds and tax rates gives a natural variation of some owner's wealth tax position. Our plan is to utilize the threshold changes between 2014 to 2015 as our identification strategy. The choice of this year was with intent as the tax breaks given are large and provide us with many years before the treatment. This gives better chance of discovering an actual effect while it also enables a longer period

to test for common trends. As several other studies on wealth taxation have done, we use a difference in difference design as it seems to be the preferred method. Our control group should not be influenced by treatment occurring in 2015. We will therefore use multiple specifications for samples of households which are under the 2014 threshold as control groups, to try to estimate an average treatment effect. This is to ensure that we measure the cleanest possible effect of going under the threshold.

Our research question will therefore be:

Does the wealth tax affect dividend payments from unlisted firms?

The reform period of interest is 2014-2015. Two tax changes occurred; the threshold was raised from NOK 1.000.000 to NOK 1.200.000 and the rate reduced from 1 percent to 0,85 percent. This creates two effects. When tax thresholds increase, fewer people pay taxes and those who still get a lower part of their wealth taxed. The rate changes only affect those over the threshold for both periods. Our identification strategy is based on identifying those above the threshold for 2014 but after the changes in threshold drop under the new threshold in 2015. This narrows our study down to looking at only dividend changes related to an increase in the wealth tax threshold, which push some taxpayer out of the wealth tax position.

The thesis is divided in (14) chapters. In Chapter 3 we presented an introduction of the wealth tax and our thesis question. Chapter 4 presents relevant literature used to investigate the research question. Chapter 5 is an overview of the institutional setting and tax rules. In chapter 6, 7 and 8 we present methodology, data and descriptive statistics. In chapter 9 and 10 we present results and discussions. In chapter 11 we compare our results to other studies. Chapter 12 and 13 consist of robustness testing and limitations of our results. Lastly, we provide a conclusion in chapter 14.

4. Literature review

In this chapter we will present both arguments and literature which relates to the topic of this thesis. We have focused our search on literature related to wealth tax and private firms as this is most relevant for our research question. We will also explain how our thesis difference itself from others and how we contribute to the growing literature of wealth taxation.

The prime minister representing Høyre proposed massive cuts in thresholds in 2013. The argument was to shelter both entrepreneurs, private savers and small business owners (Aftenposten , 2013). The cut was proposed to be up to NOK 20.000.000. The intuition was to shift the tax base away from these groups to overcome the liquidity problem supposedly created by the wealth tax. This cut was never realized but smaller increases in thresholds have followed since 2013. The argument of increasing the tax threshold is also raised by Berzin et al. (2022) to mitigate liquidity effects spilling over from owners to private firms. The effect of liquidity drains was uncovered to be largest for moderately wealthy households. A higher threshold could therefore be an easy solution to implement if one want to reduce this group´s tax burden.

Thoresen, Ring, Nygård , & Epland (2020) find that 93% of the wealth tax burden is paid by the top 10^{th} decile ranked by net wealth. The tax burden accounted for 0,3% of this decile's total wealth. Comparing gross income and taxable wealth on the individual level, they find a u-shaped distribution. The same distribution is also relevant when income tax and wealth tax are sorted by gross income. This suggest that exempt for the lowest deciles, wealth levels seem to corelate with gross income. An important contribution as it shows that for some individuals with low income and high net wealth the wealth tax burden is relatively large. These individuals could evidently by more inclined to take out dividend from their firms to cover wealth tax liabilities. It is typically in this group that one can expect to find many entrepreneurs and small business owners whose wealth and income are tied to their businesses.

Research done by Halvorsen & Thoresen (2021), distinguish itself from many other studies, including ours by looking at wealth tax and the wealth tax burden in a lifetime perspective. Addressing the problem of using annual income to evaluate wealth tax burden they propose the concept of a lifetime income to evaluate the effectiveness of the tax. Using panel data collected from tax records spanning over a long period of time they show how the adverse tax burden faced by lower income, but high wealth individuals is eliminated over a lifetime view.

Contrary to Halvorsen & Thoresen (2021), our thesis looks at a possible change in dividend outflows right after a wealth tax change, which are assumed to be created by a higher threshold. Even though such changes may be evened out over a lifetime, shocks affecting already constraint individuals could affect their investment decision (Evans & Jovanovic, 1988). The individual could of course borrow to cover the payments, but this could hurt the same collateral which could be used to expand the firm as instigated by Schmalz, Sraer, & Thesmar (2016).

These findings seem to reflect some of the opponent arguments for a higher threshold to mitigate the liquidity constrains, which could be faced by individuals on the lower end of the wealth distribution. This is what motivates us to look at threshold values in our thesis.

An increase of the threshold is arguably social optimal if the loss of tax revenues is relatively small compared to the possible efficiency gains experienced by the same group. However, for the society this notation relies on the assumption that tax revenues lost are offset by increased productivity or other efficiency gains.

Some individuals have a tax base where assets such as holding companies or firms where large excess liquidity could be hold. From the corporate finance literature, we know that excess free cash in firms could create investment inefficiencies and enable consumption of private perks as discussed by Jensen (1986) and Jensen, & Meckling (1976). If threshold changes affect inefficient owners, then the government would be in danger of lowering the after-tax cost for individuals who does not maximizes economic output. For our thesis this could be owners of firms who due to incentives created by the dividend tax holds an excessive amount of liquidity in their firm or have other non-economic reasons to horde capital in their firms. Such cases where observed by Alstadsæter, Kopczuk,& Telle (2014) when investigating Norwegian firms before and after the a big dividend tax change happening in 2006.

Alstadsæter, Jacob, & Michaely (2016) using company data from Sweden shows how closely held cash constrained private firms received more capital and increased investments after dividend taxes where cut, compared to cash rich firm. The authors use a bigger dividend reform occurring in Sweden in 2006. The reform reduced dividend taxes and thereby made it cheaper for owners to move capital. The authors used a difference in differences strategy to estimate firms' behavior before and after the dividend tax cut. Their research indicate that reduced dividend taxes benefited cash-constrained firms, as more capital was invested in these

firms and led to higher investments. In our thesis, we look at the wealth tax using a similar empirical strategy but with individuals and wealth tax position as the identifying treatment.

An argument of efficiency gains created by wealth tax is put forward by Guvenen, Kambourov, Kuruscu, Ocampo-Dias, & Chen (2019) showing how wealth tax can incentivize unproductive owners and create efficiency gains. As wealth tax is flat for all entrepreneurs it shifts the tax burden from the productive entrepreneurs to the unproductive ones. Central for their theory is the assumption of a heterogenous rate of return between owners caused by different inherent abilities. Their article shows how the more productive entrepreneur ends up with more wealth, higher after-tax returns, relative to the more unproductive one. Comparably a passive owner sitting on wealth could avoid dividend taxes but due to wealth tax experience a negative after-tax return on unproductive assets. This should incentives the owner to invest or consume their wealth, or alternately invest it in firms of more profitable entrepreneurs.

Fagereng, Guiso, Malacrino, & Pistaferri (2020) finds a corelation between wealth and returns when researching Norwegian administrative panel data. After controlling for differences and allocations choices for individuals in wealth groups they still find evidence of persistently higher returns for individuals belonging to higher wealth levels. They show how wealth correlates with returns, differences suggesting that wealth is partly explained by heterogeneous entrepreneurial and financial abilities as assumed in the model by Guvenen et al. (2019).

Dividend taxes can also influence households to save through their companies while at the same time benefiting from excessive private consumption, at the expense of the company's profitability as found by Alstadsæter et al. (2014). After the introduction of the Norwegian dividend tax, they find strong evidence for behavioral responses to incentives generated by the new dividend tax reform. Their results indicated that private firms in a higher rate retained earnings, grew assets, lowered economic activity while at the same time become less profitable and distributed less dividends. This is evidence that some firms in a larger degree were used for private savings and consumption (Alstastadsæter et al., 2014). Wealth taxation could be a mechanism mitigating some of these avoidance responses, increasing tax revenues, and to some degree punishing negative behavior.

Studies and theories on closely held private companies point out the importance of firm generated liquidity. As suggested by Ang (1992) "Owner/managers in small businesses have to make business and financial decisions on how they would ultimately affect their own

personal wealth". Ang (1992) points out several reasons why liquidity could be vital in small firms. Small businesses face larger risks related to uncertainties than bigger firms. Higher costs of outside financing created by asymmetries make internally generated liquidity cheaper and therefore favored over outside capital as explained by Myers & Majluf (1984). Young firms without a proven track record would therefore have lower chances of securing outside capital according to Ang (1992). He further proposes that a higher reserve of liquidity enable these firms to avoid liquidation of assets under unfortunate events. The reason according to Ang is that private firms are associated with higher earnings variability. A higher liquidity reserve in private firms could be seen as a hedge against temporal shortfalls in firm generated cashflows or other liquidity shocks which would make the firm unable to pay its creditors. A higher sensitivity between cash holdings, earnings and dividends for private firms are also documented empirically by Brav (2009) when comparing public and private firms. His findings suggest that private firms` horde cash in good times and adjust dividends more closely to yearly results.

Biggeli & Sànches-Vidal (2011) also find that smaller privately firms hold significantly higher cash balances than public firms. They report that smaller private firms who have higher debt on average, holds lower levels of cash and working capital. Implying that debt is favoured when cash and other liquid assets are constrained. Relating to dividends the authors note that privately hold firms which pays dividends, on average have larger cash holdings compared to the those who don't. Then if small private firms are more reliant on internal finance and bank loans in their capital structure, we would expect that firms that can´t raise enough cash or increase their leverage will cut dividends when experiencing liquidity shocks.

As seen, there are many reasons for the importance of higher liquidity needs These studies seem to capture many of the liquidity issues raised from opponents by the wealth tax but does not explain how personal wealth taxes affects the liquidity base of owners which could make them withdraw funds from their companies.

One of the most extensive data driven Norwegian studies is done by Thoresen et al. (2020) Drawing on the results in the first part of their analysis, they link tax records of households with their firms' financials. They create different measures of marginal wealth taxes enforced on these individuals due to their company ownership. By sorting these entrepreneurs, they find that 99 percent of owners receives a marginal wealth tax that constitutes under 2,5% of their respective firms' earnings. For the 99^{th} to $99{,}9^{th}$ percentile the median is found to be 2,7%.

When comparing the marginal wealth tax ratio to personal income, they find a median of 7%. They also find that older low revenue-generating firms is the ones facing the highest marginal wealth tax to revenues. This suggests a low marginal wealth tax burden associated with owning firms for the majority of entrepreneurs in Norway. Low revenue and old age in firms may also be an indication of declined efficiency strengthening the arguments made by Guvernen et al. (2019)

As found by Bjørneby et al. (2020) high liquidity owners were found to increase their liquidity in response to higher wealth taxes while low liquidity owners seemed to reduce the firms' holdings through paid in equity. This is in line with Ang (1992) who suggest that small high risk, high revenue generating firms should hold higher reserves of liquidity. Bjørneby et al. (2020) points to a dominating income effect as the main explanation for owners to increase savings in their firms. They increase savings to pay the future liability of the tax rather than reducing their wealth and increase today's consumption.

On the other hand, Berzins et al. (2022) finds both a higher increase in dividends and income to owners following a liquidity shock at the expense of the firm's performance. Interestingly they also find that dividend is taken more often by owners experiencing the shock and that the negative effects on firms are biggest for the moderately wealthy owners.

While Bach, Bozio, Guillouzouic, & Malgouyres (2020) shows through a difference in difference design that retired entrepreneurs in France where more likely to invest in small businesses when given a wealth tax rebate. Their study showcases how a wealth tax with appropriate rebates was more efficient at stimulating investment into small firms than no wealth tax at all. Suggesting that wealthy individuals' sensitivities to wealth tax also can be used to stimulate government targeted investments.

On the other side, Seim (2017) document significant evasion responses done by individuals around the tax thresholds when researching Swedish administrative data. By using a bunching design, he uncovers significant misreporting of wealth for individuals around the threshold compared to those under the threshold. This was done primally through misreporting of cars which at the time were self-reported and difficult for Swedish tax authorities to control. For our thesis we believe this problem is small as most assets on the tax returns are third party reported, thereby limiting evasion through self-misreporting of wealth and dividends. Assets hold abroad by Norwegians is exchanged by governments Norway have tax agreements with.

But for certain countries this is not the case and can therefore incentives tax evasion as uncovered by multiple tax scandals such as panama papers. Alstadsæter et al. (2019) investigate such tax leaks but find wealth hidden abroad by Norwegians is mostly done by the top wealthiest of individuals. For lower wealth groups the evasion is found to be very small. As our data don't include these individuals, we think such responses don't play a big part for our analysis.

Our thesis difference itself by other studies by using a dataset with panel data that gives us the opportunity to control for heterogenous effects on the household level. The lower bounds in wealth level used should include many of the owners identified by Thoresen et al. (2020) as well as owners whose personal motivations or abilities makes dividend drains derived from wealth tax favorable.

Furthermore, we control for dividends received by owners who holds relatively high stakes in public companies to try to investigate some part of the liquidity induced behavior argued to affect privately owned firms. It is difficult to theorize on which effect wealth tax has on dividends in our sample, if any, and wherever this is considered optimal.

As opponents often use the arguments that wealth tax makes owners increase dividends to pay wealth tax, our goal is to investigate if this statement is true empirically.

5. Tax legislation

The wealth tax is a tax on the taxpayer's net wealth. The wealth tax is regulated in chapter 4 of the act of 26 March 1999 No. 14 relating to the taxation of net wealth and income (taxation act) (PwC, 2021). We will sometimes be referring to a translated version of the legislation. The translation is an unofficial translation, last updated in 2021 and translated by PwC (PwC, 2021).

The wealth tax is primarily directed towards physical individuals but must also be paid by certain legal persons (Zimmer, 2012). Private and public limited corporations are examples of organizations exempt from being liable to pay the wealth tax. Some organizations that are required to pay the wealth tax include savings banks and mutual insurance companies, although thresholds and rates differ from that of physical individuals (Ferdowsi, Furuseth & Gjems-Onstad, 2020)

5.1 Valuation rules and discounts

The main rule is that each asset shall be valued individually (Zimmer, 2012). § 4-1 states that assets shall be valued at sales value January 1st of the tax assessment year, less debt for which the taxpayer is liable (PwC, 2021). However, certain assets are exempt from this rule; certain rights, goodwill and technical knowledge are not valued for tax purposes. Therefore, owners of capital-intensive businesses are typically more likely to pay wealth tax than owners of service-providing businesses that have mainly invested in intangible and human capital (Ferdowsi et al., 2020).

There are differences in valuation rules regarding different assets. Listed shares are valued at market value January 1st in the tax assessment year. Unlisted shares are valued at book value January 1st in the previous year before the tax assessment year (Ferdowsi et al., 2020). Per 2022 listed and unlisted shares receives a 25 percent valuation discount when calculating net wealth (Skatteetaten, 2022). During 2009-2016 no valuation discount was given for ownership in unlisted and listed shares.

Tax value of primary housing is given as a 25 percent of market value of primary house (Skatteetaten, 2022). After the taxation act § 4-19, tax value of debt is normally reduced by the same valuation discount as its associated asset. This is not the case for primary housing,

where tax value of mortgage is valued without reduction (Ferdowsi et al., 2020). From a taxation standpoint, housing is a favorable asset to own because by not reducing tax value of mortgage, one allows for a negative tax value of primary home.

There are many political and social benefits for why the Norwegian government indirectly subsidize primary housing, but the high returns offered by holding property the last decades (Bache & Lekve, 2015) together with the opportunity to consume the benefits associated with owning a house, make it very compelling as a primary vehicle for savings. A liquidity shock as uncovered by (Berzin et. al 2022) may therefore affect owners of privately held businesses with high portions of wealth in housing differently, than owners with less wealth placed in housing.

5.2 Wealth tax in 2022

The wealth tax is redistributive by nature, which means that the purpose of the tax is to redistribute wealth amongst the citizens. The wealth tax is an effective supplement to the income tax because wealth is more unevenly distributed. Therefore, one effect of the wealth tax is that the tax system becomes more progressive (Finansdepartementet, 2021). The current left-side government, led by Jonas Gahr Støre, proposed several changes in the wealth tax in Prop. 1 LS Tillegg 1 (2021–2022). The proposal was approved in the Norwegian parliament (Stortinget) on the same day as the proposal. The proposal continued a trend of increasing the threshold, effectively reducing the number of low -and -middle wealth households having to pay the wealth tax (Finansdepartementet, 2021). The purpose is to target the wealthiest part of the population.

The changes in the wealth tax are regulated in the resolution of taxation of income and wealth for 2022 (Stortingets skattevedtak, 2021). §§ 2-1 and 2-3 states that the collective threshold for taxable wealth for 2022 is NOK 1.700.000 for both the state and municipality. For wealth between NOK 1.7 million and NOK 20 million the rate is 0.25 percent, while the rate increases to 0.4 percent for the part of the wealth that exceeds NOK 20 million. Marginal tax to the municipality is static, § 2-3 states that tax rate to the municipality should not exceed 0.7 percent (Stortingets skattevedtak, 2021). Total marginal wealth tax is therefore 0.95 percent for wealth

between NOK 1.7 million and NOK 20 million, and 1.1 percent for wealth above NOK 20 million.

On contrary to the income tax, spouses are taxed jointly on the wealth as regulated in the taxation act § 2-10 (PwC, 2021). Thresholds for married couples are NOK 3.400.000 and NOK 40.000.000 to the state. For municipalities the threshold is NOK 3.400.000 (Stortingets skattevedtak, 2021, §§ 2-1 and 2-3).

5.3 Development of the wealth tax

The wealth tax is subject to much political disagreement and there have been many changes over the years. It is interesting to see the change in the political landscape during our sample period. From 2005-2013 the Norwegian government was led by Jens Stoltenberg, the leader of the Norwegian labour party (Arbeiderpartiet) at the time (Regjeringen, 2014). From 2009-2013 the wealth tax rate was constant at 1.1 percent, while the threshold increased stepwise from NOK 470.000 to NOK 870.000 (Bjørneby et al., 2020). Although the valuation rebates on secondary homes and business properties were reduced.

During the final three years of our sample, we experienced more tax reliefs. The Solberg-government decreased the tax rate as well as increasing the threshold. From 2013-2016 the threshold increased stepwise from NOK 870.000 to NOK 1.400.000, while the tax rate decreased from 1.1 percent to 0.85 percent (Bjørneby et al., 2020).

	Tax rates and thresholds				Valuation of assets for tax purposes PY: % adjustment of previous year's tax value MV: % of assessed market value				
Year	Tax rate 1 %	Threshold 1	Tax rate 2 %	Threshold 2	Primary home	Leisure home	Secondary home	Business property	Listed and unlisted shares
2005	0.90	151 000	1.10	540 000	PY: 0	PY: 0	PY: 0	PY: 0	MV: 65
2006	0.90	200 000	1.10	540 000	PY: 25	PY: 25	PY: 25	PY: 25	MV: 80
2007	0.90	220 000	1.10	540 000	PY: 10	PY: 10	PY: 10	PY: 10	MV: 85
2008	0.90	350 000	1.10	540 000	PY: 10	PY: 10	PY: 10	PY: 10	MV: 100
2009	1.10	470 000			PY: 10	PY: 10	PY: 10	PY:60/MV:40	MV: 100
2010	1.10	700 000			MV: 25	PY: 10	MV: 40	MV:40	MV: 100
2011	1.10	700 000			MV: 25	PY: 0	MV: 40	MV:40	MV: 100
2012	1.10	750 000			MV: 25	PY:10	MV: 40	MV:40	MV: 100
2013	1.10	870 000			MV: 25	PY: 0	MV: 50	MV: 50	MV: 100
2014	1.00	1 000 000	Removed		MV: 25	PY: 10	MV: 60	MV: 60	MV: 100
2015	0.85	1 200 000			MV: 25	PY: 0	MV: 70	MV: 70	MV: 100
2016	0.85	1 400 000			MV: 25	PY: 0	MV: 80	MV: 80	MV: 100
2017	0.85	1 480 000			MV: 25	PY: 0	MV: 90	MV: 80	MV: 90
2018	0.85	1 480 000			MV: 25	PY: 0	MV: 90	MV: 80	MV: 80
2019	0.85	1 500 000			MV: 25	PY: 0	MV: 90	MV: 75	MV: 75
2020	0.85	1 500 000			MV: 25	PY: 0	MV: 90	MV: 65	MV: 65
2021	0.85	1 500 000			MV: 25	PY:0	MV: 90	MV: 65	MV: 55
2022	0.95	1 700 000	1.10	20 000 000	MV: 25 / MV: 50	PY:0	MV: 95	MV: 75	MV: 75

From Bjørneby, Markussen and Røed (2020). We have outlined the sample period and inserted values from 2021 and 2022 from the Norwegian tax administration (Skatteetaten, 2022)

The table above shows the development in legislation regarding the wealth tax. We see that there are three types of changes in the wealth tax legislation: the tax rate, threshold, and valuation rules (Bjørneby et al., 2020). One can also note the shift in legislation after the new government took office during fall of 2021 where the valuation rebate for shares was reduced, and tax rate was increased. Valuation of primary housing also is affected as homes above NOK 20 million in market value is valued at 50 percent of market value.

5.4 Reform of 2014-2015

We utilize the changes in threshold and tax rate in 2015 for our analysis. The tax rate for 2015 was 0.15 percent to the state and 0.7 percent to the municipality. The threshold for 2015 was NOK 1.200.000. Giving a total marginal tax rate of 0.85 percent for portion of wealth above NOK 1.2 million (Stortingets skattevedtak, 2014, §§ 2-1 & 2-3). Negative effects from the wealth tax were pointed out as reason for the reform. The Solberg-government argued that the wealth tax discouraged personal savings and giving tax relief would also encourage entrepreneurship (Finansdepartementet, 2014).

5.5 Wealth tax info

The wealth tax amounts to about 1 percent of the state's revenue. Therefore, the wealth tax has a limited effect on the state's total revenues. Changes in threshold and valuation rebates seemingly has a limited effect on the state's overall revenues (Ferdowsi et al., 2020). Revenues from the wealth tax is far lower than that of the personal income tax (Zimmer, 2012) . A wealth tax must be seen be seen in relations to other types of taxes on capital holdings. Norway is one of a few countries with an annual wealth tax, but also one of a few countries without an inheritance tax. 24 OECD countries levies a wealth transfer tax (OECD, 2021)

There is some variation in wealth tax rates between municipalities. One example is Bø in Vesterålen. The tax rate to the municipality is here reduced. Such variations in tax rates present possible distortions to the behavioral household finance. The after-tax return for owners living here is lower. Such cases have been documented to create tax motivated mobility in Spain (Agrawal, Foremny , & Martínes-Toledano, 2021).

This could suggest that the amount of dividend extracted from private businesses could be lower in the instances where the owner lives in places where the wealth tax is more favorable. Agrawal et al. (2021) discovers that a decentralization of taxation rules increases the relative population in Madrid by 9 percent. This allows the wealthy population of Spain to reduce their wealth tax payments, by simply moving to Madrid. On the other hand, for big parts of the country housing prices are relatively stable making them relatively less attractive to save in, which could influence both entrepreneurial activity and how households choose to save. It could be interesting to investigate both these forces for whether such geographical variations in tax rates affects the dividend for owners. However, this is outside the scope of this paper.

6. Methodology

6.1 Difference-in-differences

In this section we will explain the rationale behind the chosen methodology. A difference-in-differences (or DID) estimator is used to attempt to explain the causal relationship between changes in the wealth tax and reported paid dividend from shareowners of private businesses.

A DID estimator has many applications, especially when the data originates from a quasi-experiment/natural experiment. Such experiments occur when an exogenous event affects the environment which different groups operate (Wooldridge, 2019). For our analysis the exogenous event that we utilize is change in the threshold for taxable wealth.

A quasi-experiment is different from a true experiment because where a true experiment the control- and treatment groups are randomly and explicitly chosen. A quasi-experiment has groups that naturally arises from the policy change (Wooldridge, 2019). Thus, an important difference between the true experiment, because our groups are not randomly chosen, but are naturally divided because of the policy changes. A typical DID estimation includes four categories: the control group and treatment group before the policy change, and the treatment group before and after the policy change. Therefore, one needs at least two periods of observation from both groups. The intuition behind a DID estimate is rather simple. One measures the difference between a control group and treatment group before a treatment, then measures the difference between the groups after the intervention. In the case of an increase or decrease in differences, there might be an indication of a causal effect of treatment. Still, there are assumptions that has be fulfilled to interpret the coefficients causally.

6.2 Panel data – fixed effects

It can be advantageous that a dataset is organized as panel data. That means one can control for unobserved household specific effects. We use a fixed effect estimation for our DID estimates. Also called the "within estimation", the purpose is to remove all household specific factors that don't vary over time. We assume that some of the unobserved time invariant household specific effects (a_i) are correlated with our independent variable(s). a_i denotes all unobserved factors that are invariant and household specific. Such unobserved effects can for example be gender, race, risk preferences and financial/entrepreneurial abilities. The last two

are especially important for our data as these are determinable components influencing the rate of return differences between households (Fagereng et al., 2020) and thereby influence the dividend received in our sample.

6.3 Dependent variable

We use a dividend as our dependent variable. Dividend related to listed and unlisted securities appears on the tax return and tax settlement as "taxable dividend/value transferred from the share statement (RF-1088)". That means that dividend from unlisted shares is pooled together with dividend from listed shares in our data. The dividend is normally pre-filled in an individual's tax return. When the tax authorities don't have the complete information on the realization of shares and dividend, one must manually correct the information in the share statement (Skatteetaten, 2021a). In our regressions we use a natural log-transformed version of dividend. The reason is that we are interested in a constant percentage effect of independent variables on the dependent variable (Wooldridge, 2019). We are interested in the percentage change in dividend because of the policy change in 2015. We use a natural logarithm transformation because it is often used in applied work (Wooldridge, 2019)

That makes this a regression with a semi-elastic functional form. The regression is a log-level model. That means that 100*coefficient is the semi-elasticity of dividend with respect to the independent variables (Wooldridge, 2019).

6.4 Control variables

There are two reasons for including additional control variables. The most important reason is to remove omitted variable bias (OVB). The idea is that a regression with included controls is more likely to have a causal interpretation. In a shorter regression, with no controls the included variables are more likely to be biased (Angrist & Pischke, 2009). The reason is that omitted variables in the error term are also correlated with independent variables in the regression, making the coefficients biased. If one claims that a regression does not have OVB, one normally assumes causal interpretation, which is the goal of any regression (Angrist & Pischke, 2009) The other reason for including control variables is to increase efficiency. By reducing the variance of the coefficients, we can get more precise estimates, making hypothesis testing reliable.

Our DID regression also includes additional control variables. The way a difference- in-differences model is formulated proposes a useful way to construct Diff-in-Diff estimations and standard errors. Additionally, it is unproblematic to add control variables, such as pre-treatment periods to the regression (Angrist & Pischke, 2009).

Our research question relates to whether the wealth tax affects the liquidity of private businesses. We try to answer that by seeing whether owners of private businesses' dividend are affected by the wealth tax. With our dependent variable being dividend, it poses a problem that the tax authorities pools dividend from unlisted companies with listed companies. That is because changes in reported dividend can originate from listed companies, which is not relevant for this paper. We include a control variable for ownership in listed companies, to control for ownership in listed shares.

We construct a control variable for ownership in listed companies. We use information registered in the Norwegian tax administration's register of shareholders. Here, shares in Norwegian limited companies and shares in foreign companies which are registered on the Oslo stock exchange are registered (Skatteetaten, 2021b). The information is normally pre-filled and provided by companies concerned and the Norwegian central securities depository (VPS) (Skatteetaten, 2021b). The variables are registered in the tax return as "item 150 tax value, Norwegian listed" and "item 140 tax value, Norwegian non-listed". The values are presented as tax value, meaning that it is after the valuation rebate. For our analysis this is of little importance because there was no valuation rebate for listed shares in this period. Meaning that the tax value of listed shares was equal the market value. Shares owned in a savings account (ASK) are also included in this control variable (Skatteetaten, 2021b). unlisted shares are registered as share of ownership of book value the previous year of the tax assessment year.

Then we add together a person's tax value of listed and unlisted shares. We divide the value of listed shares by the value of total shares. Resulting in percentage ownership of listed shares of total shares in a person's portfolio. We then create a constant dummy variable for whether a person has a portfolio consisting of more-than-average percentage of listed shares in their portfolio of total shares during our pre-treatment period. The reason we use percentage and not median is that most individuals only own listed shares and thereby the median is 1. We want to control for majority ownership of listed shares and therefore use percentage of listed

shares in portfolio of shares, which is around 83 percent listed shares. Furthermore, we interact the constructed dummy variable with time dummies.

We present z as a percentage of listed shares of total shares. Shown as

$$z = \frac{Listed\ shares}{Total\ shares}$$

And $D_i = 1$ if $\overline{z}_{i,pre-reform} > \overline{z}_{pre-reform}$. Since D_i does not vary over time and will be omitted in a fixed effect model, we interact D_i with $Year_t$. Finally, we present the control variable for ownership in listed companies as: $D_i * Year_t$. Going forward we will refer to this control variable as "z". We use pre-treatment period as basis for constructing this variable as we don't want households to adjust portfolio composition of shares because of treatment. That would potentially be a bad control.

It is also relevant to control for age. Often older individuals own shares for different reasons than younger people. People often accumulate wealth when working, then wealth peaks at retirement age before using the wealth and possibly passing it on (Adam & Miller, 2020). The reasoning is that younger people are more concerned with reinvesting and growing a company, while older people often own companies primarily to receive dividend payments. The age variable in our sample is given as age rounded to nearest 10 in 2015. We therefore construct an age dummy for each age group and interact those with a dummy variable for each year. We can present the age control like this:

$$D_{i,age2015} * Year_t$$

We also include a variable of year-dummies. The reason is that there might be year specific events that affect the amount of dividend that people extract. We are controlling for unobserved year-specific shocks that affects all individuals/households. Such factors can be increased economic growth specific in certain years, which in turn might affect the dividend payments. Had this variable been excluded we would have been unable to differentiate between the year-specific changes in dividend, not related to policy change from that of the variable of interest, which measures the effect of the policy change.

6.5 Common trend assumption

To interpret our findings causally, we must assume that the trends in the treatment group and control group would be the same had there been no intervention. Furthermore, the policy change is what one assumes cause the change in trend. (Angrist & Pischke, 2009). For our data, that means that paid dividend must follow a common trend before 2015, which is the year of intervention. After which, if the trends deviate in later years, one might have reason for causal interpretation.

There are mainly two ways of testing the common trend assumption. The first way to test is through graphical analysis, the other is through conceptual argument.

One must assume exogeneity of our independent variables. The parallel trend assumption is a form of the exogeneity assumption. When analyzing our treatment variable, we must assume that this is not endogenous. If our treatment variable is endogenous, the parallel trend assumption is always considered violated. This is because the divergence from parallel trend would have happened anyway. Regardless of whether the treatment took place or not (Cunningham, 2022).

6.6 Regression

For our regression we are focusing on the change in threshold for differentiating between treatment group and control group. From the wealth tax change of 2015, we can identify four different groups that are created by the policy change. Those who were below the threshold in 2014 and 2015, thus not paying the wealth tax in either period. Those who were above the threshold in both periods, thus paid the wealth tax in both years. The people who paid wealth tax in 2014, but not in 2015. Lastly those who didn't pay wealth tax in 2014 but were above the threshold in 2015.

We can express the four groups like this:

1. $Netwealth_{2014} < Threshold_{2014}$ and $Netwealth_{2015} < Threshold_{2015}$
2. $Netwealth_{2014} > Threshold_{2014}$ and $Netwealth_{2015} > Threshold_{2015}$
3. $Netwealth_{2014} > Threshold_{2014}$ and $Netwealth_{2015} < Threshold_{2015}$
4. $Netwealth_{2014} < Threshold_{2014}$ and $Netwealth_{2015} > Threshold_{2015}$

Our variable of interest is an interactive variable which measures the effect of the change in wealth tax threshold in 2015. The variable consists of two dummy variables we have called *treatmentgroup* and *after*. The variable *treatmentgroup* will be equal to 1 if an individual is included in our treatment group and the variable *after* which is activated if year>2014. The coefficient then measures the effect the change in threshold has on dividend in 2015 and 2016.

6.6.1 Treatment Group

When defining our treatment group and control group we choose to differentiate between the four categories described in the previous paragraph. For our treatment group it is natural to choose a group of people who is intuitive to believe are mostly affected by the policy change. The policy change of 2015 has two different wealth tax changes. Most notably the threshold increased with NOK 200.000, from NOK 1.000.000 to NOK 1.200.000. additionally, the tax rate was reduced from 1 percent to 0,85 percent, meaning a decrease of 0,15%. This policy change has mainly two distinctive effects. Firstly, less people are subject to the wealth tax and a smaller part of net wealth are taxable. Secondly, a smaller part of taxable net wealth is taxed. Intuitively, fewer people pay less wealth tax because of this reform. Therefore, it is interesting to test for whether less dividend is being paid out as a result. We want our treatment group to identify those who paid the wealth tax up to 2014, but not in 2015. The hypothesis is that those who change from taxpayer to non-taxpayer after the reform, will take out less dividend in later years.

We will define our first treatment group as those whose taxable net wealth is above the 2014 tax threshold, but under the new threshold created 2015 reform. This is an easy specification to implement but it may have some flaws as individuals would be able to jump between groups in the pre and post-reform period. This would especially be a problem if the extreme jumps caused by bad luck or lottery winnings, or large inheritance make people switch group after being identified.

We therefore create a second and more robust treatment identifier which we hope will create a more stable treatment group which will decrease the chance of misspecification. By using an average of the pre-reform wealth, only including those with averages above the threshold value of 2014 and an actual net wealth in 2015 under NOK 1.200.000 we hope to obtain a more stable group.

We can show the two treatment groups as:

Treatment group 1:$Netwealth_{2014} > Threshoold_{2014}$ & $Netwealth_{2015} < Threshold_{2015}$

Treatment group 2 : $\overline{Netwealth}_{prereform} > Threshold_{2014}$ & $Netwealth_{2015} < Threshold_{2015}$

Alternatively, one could have used the group where net wealth was below the threshold in 2014 and above the threshold in 2015. As that group also experience a policy change. However, we want to minimize the inclusion of household that experiences sudden changes in wealth such as lottery winnings etc. We therefore keep to using the treatment group explained before as they are more likely to be affected by the policy change.

6.6.2 Control Groups

The choice of control groups is important, we cannot hope to find a casual interpretation if control groups are affected by the treatment. As discussed, we are mainly interested in threshold induced behaviour, especially for those who change from paying the tax to not paying. Our control group should therefore be households which are not affected at all by either the threshold changes or rate changes in the treatment period. We define our first group as those household which have a taxable wealth below NOK 1.000.000. In year 2014 and taxable wealth in 2015 also under the new threshold of NOK 1.200.000

For our second control group we would like to have a control group closer to our treatment group, yet not affected by the treatment. We believe that many of the households included in the first control group are negative net households. These individuals may not be suitable as a control group, violate common trend assumption as they on average would be more indebted and affected differently from exogenous changes than those in a positive wealth position. Ownership in financial assets is found by Thoresen et al.(2020) to be more corelated with wealth. By only including groups with average net wealth under NOK 1.000.000 in the pre-reform period we stabilize the group and mitigate some of the problems of wealth jumps. Lastly, we exclude those households where the mean net wealth is negative to deal with some

of the problems in mean reversion of wealth and systematically differences in behaviour and holdings.

We can summarize our control groups as follows:

Control Group 1:$Netwealth_{2014} < Threshold_{2014}$ & $Netwealth_{2015} < Threshold_{2015}$

Control Group 2: $\overline{Netwealth}_{prereform} < Threshold_{2014}$ & $Netwealth_{2015} < Threshold_{2015}$

6.6.3 Regression equations

First regression:

Firstly, we use the following treatment group and control group:

Treatment group: $Netwealth_{2014} > Threshold_{2014}$ & $Netwealth_{2015} < Threshold_{2015}$

Control group: $Netwealth_{2014} < Threshold_{2014}$ & $Netwealth_{2015} < Threshold_{2015}$

We can set up the first regression equation as:

$$\log(dividend) = \alpha_i + B_1 Year_t + \delta_1 After_t * Treatmentgroup_i + B_2 z_i * Year_t + B_3 Age2015_i * Year_t + u_{it}$$

Where log(dividend) is the natural logarithmic form of the dependent variable dividend. α_i denotes the household specific, time fixed effects. δ_1 is the coefficient of the interactive variable between *After* and *Treatmentgroup.* Where B_2 now controls for ownership in mostly listed shares in pre-treatment period interacted with time. B_3 controls for age group interacted with time. The error term u_{it} denotes unobserved effects. We use a fixed effect model in our regression and therefore controls for effects that are time-constant and household specific.

Second regression specification:

For the second regression we use the second treatment group and the second control group. We can summarize as:

Treatment group: $\overline{netwealth}_{prereform} > Threshold_{2014}$ & $Netwealth_{2015} < Threshold_{2015}$

Control group: $\overline{Netwealth}_{pre\ treatment} < Threshold_{2014}$ & $Netwealth_{2015} < Threshold_{2015}$

$$\log(dividend) = \alpha_i + B_1 Year_t + \delta_1 After_t * Treatmentgroup_i + B_2 z_i * Year_t + B_3 Age2015_i * Year_t + u_{it}$$

Interpretation of coefficient estimates are the same as in the first regression.

6.6.4 Event study

To interpret findings causally, one needs to assume a common trend. An event-study plot means to illustrate the cumulative effect a policy change has on the outcome. Furthermore, the policy effect must be estimated referenced to a baseline (Freyaldenhoven, Hansen, Pérez & Shapiro, 2021) We interact the variable $Treatmentgroup_i$ with each year in the sample. We use 2014 as the baseline year as 2015 and 2016 are the years when we expect to see policy effect. Our analysis is dependent on non-significant coefficients in the pre-treatment period, as significant estimates will violate causal interpretation.

7. Data

7.1 Data

The dataset used in this thesis consist of individual tax returns for all tax residents registered in Norway for the period 2009-2016. All individuals are made anonymous and given a random personal identification number. As the data are in longitudinal form it has several advantages for our analysis compared to cross sectional data. Most importantly it gives us the opportunity observe the same observational unit over time and thereby controlling for unobservable fixed effects (Pischke & Angrist, 2009) such as individual preferences, motivation and abilities which will be important to control for in our analysis.

The data contains extensive individual information on earnings, wealth, ownership, debt, dividends, and individual characteristics of interests such as age, marital status and sex. We were granted access to this data by NOCET which in turn have made the tedious job of collecting and organizing the data from the Norwegian tax authorities which we greatly appreciate. Due to the danger of individual identification which could be possible for the wealthiest individuals, NOCET have eliminated observations for individuals with earnings or wealth above NOK 2 million and NOK 5 million respectively. We will discuss how this may impact our analysis in a later chapter. The dataset links married couples by assigning each observational unit with a corresponding partner identification number if the individual is married. This is identifier will be important as it allows us to correct for differences in wealth valuations rules between married couples and singles.

7.2 Cleansing

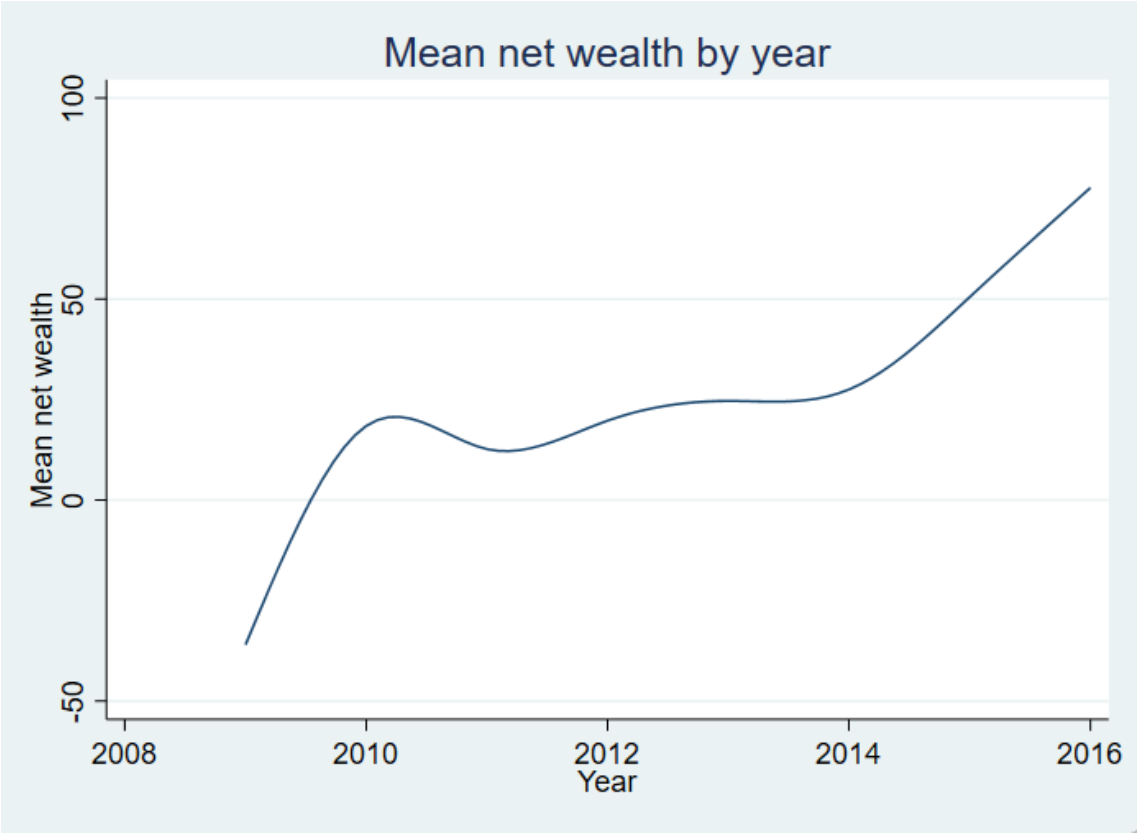
Our dataset contains observations from 2009 to 2016. There are 31.804.386 observations of individuals distributed over 8 years. The data is unbalanced, where the number of observed individuals vary from each year. The number of observed individuals vary from 3.753.351 to 4.058.867, with the most observed individuals in 2016. The reason that an individual is not reported in each year can be due to death, emigration etc. Out of all observations 2.008.928 are reported with a spouse. The number of married individuals seem low, a reason for the low reported number of marriages can be the cut-off of wealthy and high-earning individuals in the dataset.

We start balancing our data by combining married individuals. We add together all tax-return values and divide by two. That way we report married individuals as one observation, with the average tax-return values reported. There are some inconsistencies in reporting regarding marriages, where one individual is reported married, whereas the spouse is reported as unmarried. We only combine individuals where both spouses in a marriage are reported married. We are left with 865.551 observation of combined spouses in our sample. That means that total observations of individuals who are reported married are 1.731.102. Age is calculated as an average between spouses. Since age is rounded to the nearest 10 in original dataset, we do the same for spousal age.

We are interested in observing the same individuals before and after the wealth tax policy change of 2014-15. Therefore, we only include those individuals who have reported data in all 8 years of the sample period. Additionally, we exclude married couples who have not remained married during the entire sample period. Reasons for not being reported married for all 8 years can be divorce, death etc. Finally, we end up with a balanced dataset of 23.612.296 observations, consisting of 2.951.537 households observed for 8 years. 408.816 households consist of married couples who have remained married for the entire sample period.

8. Descriptive statistics

Below we are presenting statistics from the sample we are using for our analysis. The purpose is to give a summary of the data we are using in our regression analysis later in the paper.

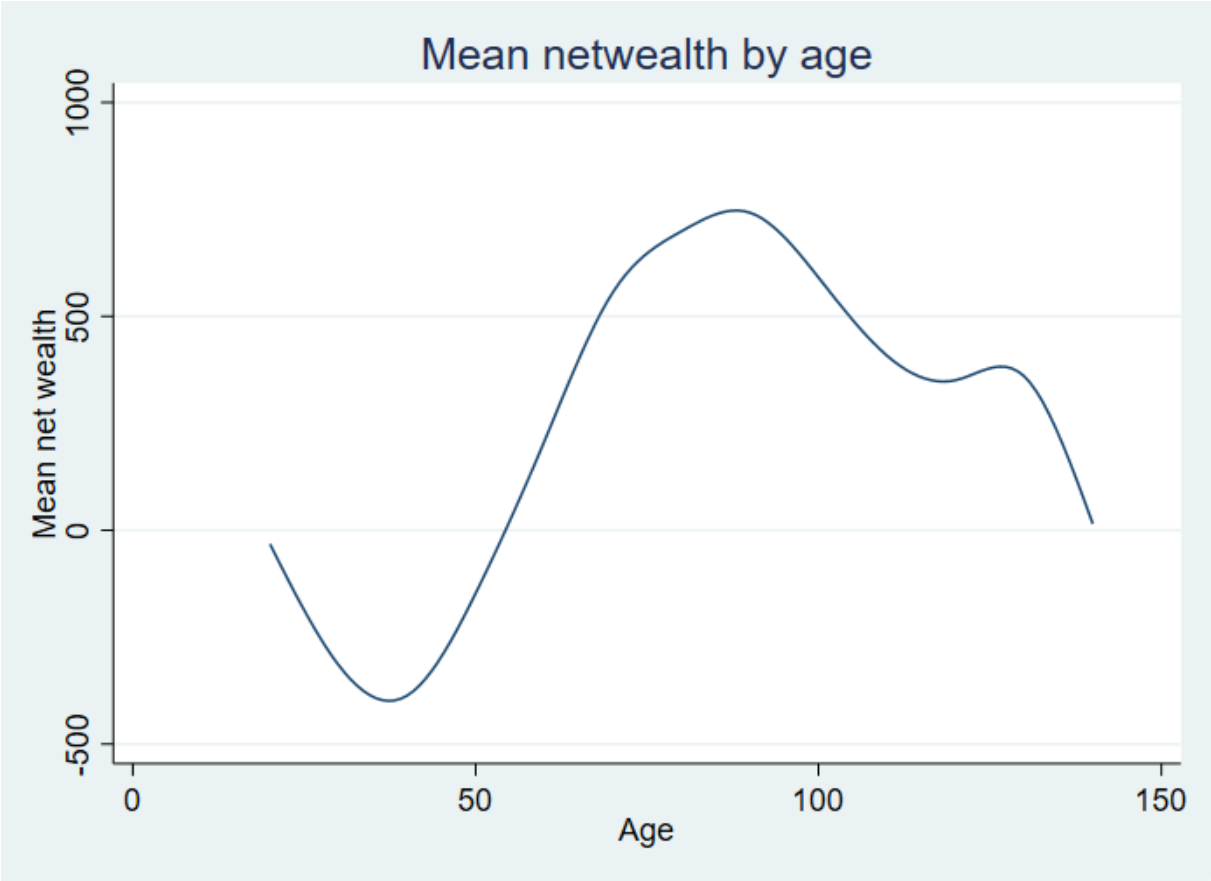


Graph 1: Development of mean net wealth 2009-2016. Net wealth is reported in 1000's.

Graph 1 shows the development of mean net wealth during our sample period. The graph is based on the raw data of every individual in our sample, meaning before we have added together spouses. 2009 is the year with the lowest average net wealth, and the only year where there was a negative net wealth on average in our sample. We can also observe that net wealth has increased on average every year, except for 2011, where average net wealth decreased from 2010. In 2016 the average net wealth was NOK 77.000. That is a substantial increase from the original NOK -36.000 in 2009. That shows that on an average level, individual wealth increases amongst Norwegians. However, changes in valuation rules also affects net wealth. In 2009 the threshold for wealth tax was NOK 470.000, while in 2016 it was NOK 1.400.000. The threshold for the wealth tax has increased, as same for average net wealth. Based on these numbers we can easily observe that the average Norwegian is not close to being eligible for paying the wealth tax.

From the graph the average Norwegian is becoming wealthier, however the standard deviation is also increases during our sample period. Except for 2014, when the standard deviation was at an all-time high, the standard deviation has consistently increased throughout our sample period. In 2009 the standard deviation was NOK 950.000, while in 2016 the standard deviation was NOK 1.200.000. This suggests that even though Norwegians are getting wealthier, wealth inequality also becomes more prominent.

SSB reported that average net wealth increased from 2010-2016. Additionally, that wealth inequality increases at a much faster rate than income inequality. In 2016 the top 0,1 wealthiest individuals owned 21 percent of private wealth in Norway (SSB, 2018). Since such a small part of the population controls a relatively large part of collective wealth, removing the top-end distribution of wealthy individuals understates means and standard deviations from realistic numbers.



Graph 2: Relationship between age group and net wealth. Mean net wealth reported in 1000's. The graph based on all individuals in the data set.

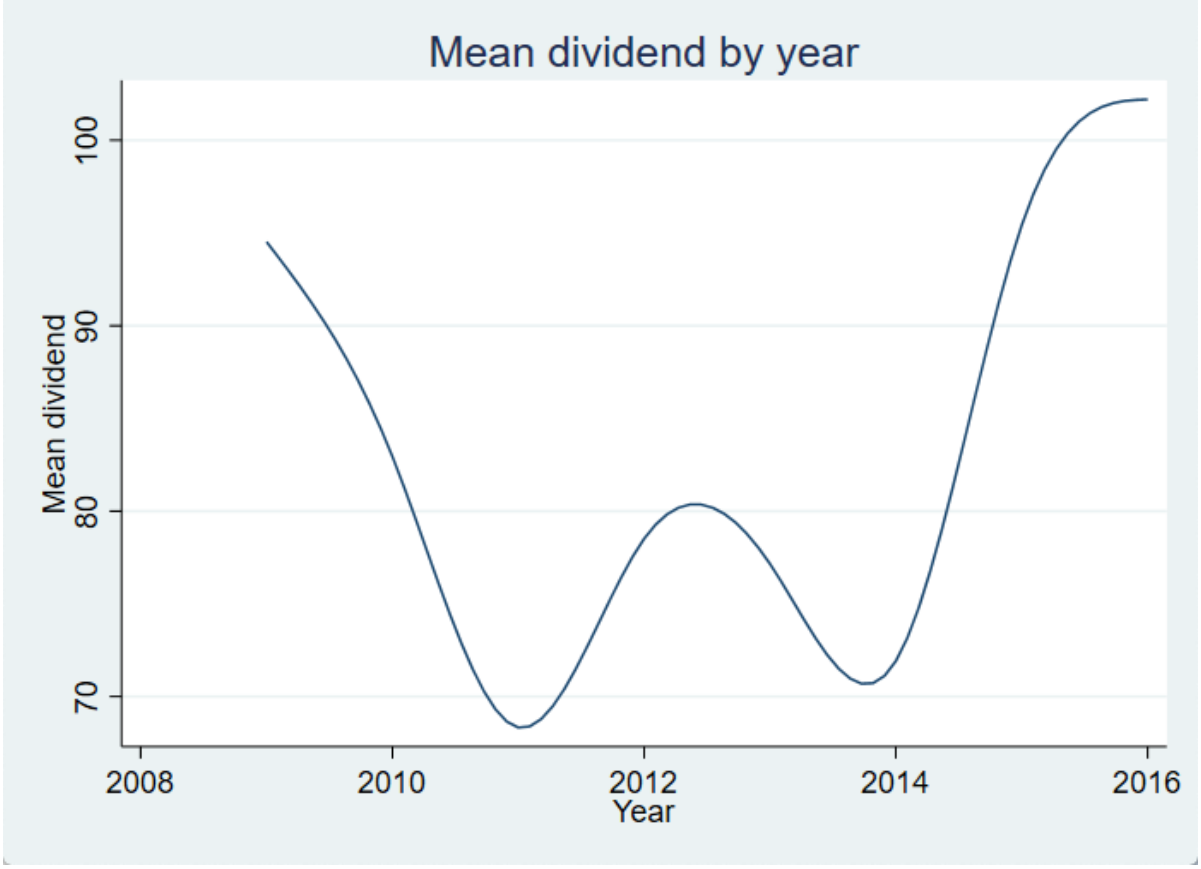
Graph 2 illustrates the relationship between age and net wealth. Age is reported in our sample as age rounded to nearest 10 in 2015. Meaning that in our sample age is a static variable and does not show real age by year. Still, it is interesting to see how wealth is distributed among age groups. Net wealth of individuals increases with age. That makes sense from an economic standpoint as older people has had more time to accumulate wealth than younger people. Also, older individuals have more likely received inheritance (SSB, 2018). One can see that negative net wealth is more prominent for younger individuals, this is likely an effect of loans and mortgage that individuals make at a young age. Such as student loans and home mortgage. Primary housing has historically been valued at a favourable rate, 25 percent of market value since 2010. While mortgage has been valued at full value, resulting in negative net wealth. Primary house is for most individuals the most valuable asset. As individuals get older, they pay off their debt resulting in higher net wealth. As we see in the graph, average net wealth becomes positive after the age of 50. This distribution of wealth is consistent with SSB's findings. It is reported that nearly every third individual over the age of 65 paid the wealth tax

in 2015. Reportedly, 48 percent of individuals paying the wealth tax were above 65 years old (Berge & Melby, 2015).

Graph 3: Number of households paying the wealth tax. Married couples have been combined.

From graph 3 one can see the total number of households that were eligible to pay the wealth tax during the sample period. The households that include married couples, have been combined since Norwegian legislation allows for married couples to combine wealth at a doubled threshold (Skatteetaten, 2022). Naturally, had the wealthiest of the distribution been included, the graph would show more households above the threshold.

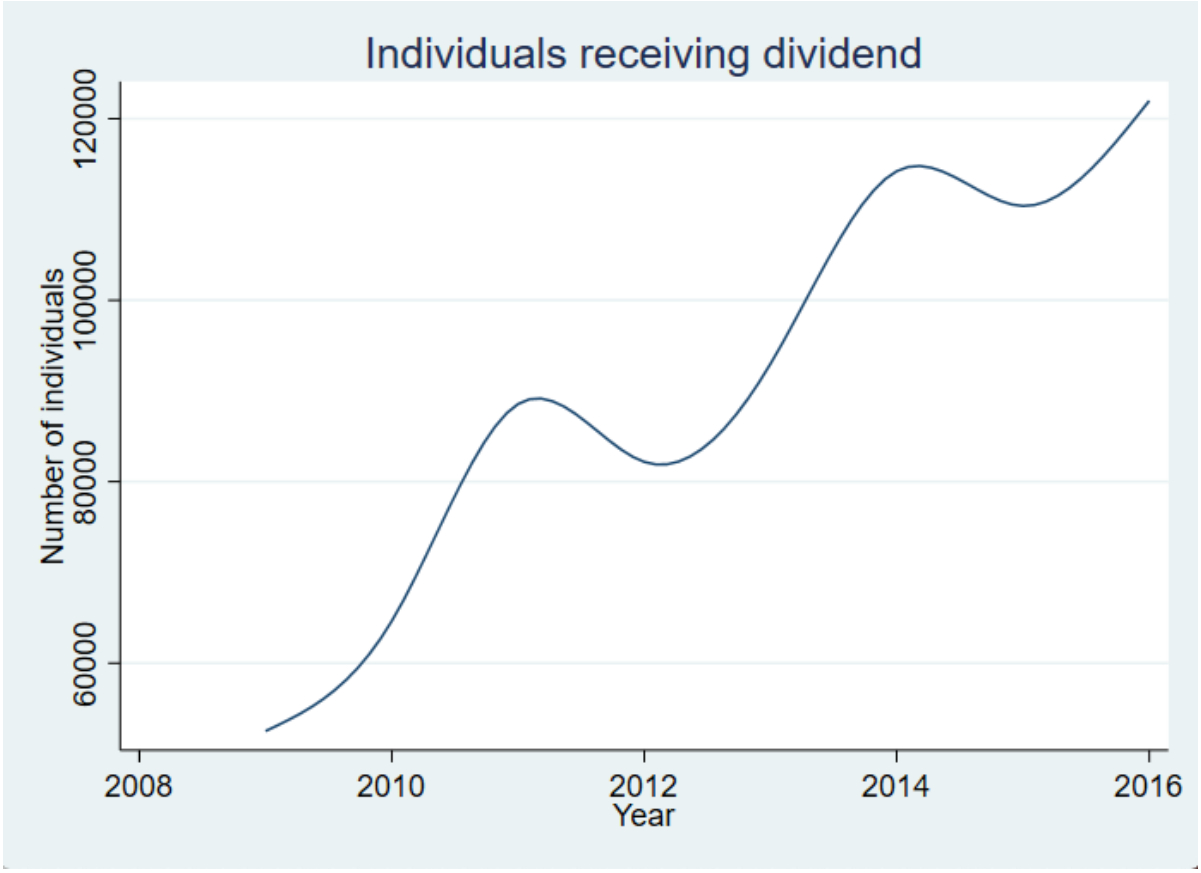
There has been a sharp decline in number of households paying wealth tax. In 2009 more than 650 000 of the households paid the wealth tax, while in 2016 about 400 000 households paid the wealth tax. This might seem counterintuitive with regards to the increasing trend in net wealth. However, change in legislation focuses more on taxing a smaller amount of people, by increasing the threshold. The threshold has increased from NOK 470.000 in 2009 to NOK 1.400.000 in 2016. The legislator's focus has been to focus the wealth tax on the richest part of the population.



Graph 4: mean dividend per year. Average dividend is calculated based on individuals with reported dividend. Dividend reported in 1000's.

Graph 4 illustrates development in reported dividend from 2009-2016. We see that there is a lot of variation between years. The mean values are calculated based on individuals that have reported dividend payment in a given year, above 0. Dividend is pooled between dividend from listed and unlisted shares. in 2009 average dividend was NOK 95.000 with a standard deviation of NOK 205.000. 2011 was the year with lowest average dividend payments, averaging NOK 68.000. Additionally, a standard deviation of NOK 144.000. The highest average dividend payment year was 2016, from a seemingly upwards trend since 2014. The value was then NOK 102.000 in average dividend, with a standard deviation of NOK 267.000. From the graph the mean dividend payments seems rather arbitrary, with no clear trend. The difference between 2016 and 2009 suggests an increase of 7%, which is not substantial. Contrarywise, the percentage increase from 2011 to 2016 was 50%. Interestingly, the standard deviation increases proportionally with mean values, with 2016 having the highest standard deviation and 2011 having the lowest standard deviation. Meaning that in years with high

average is likely also caused by some individuals receiving high dividends, not just collective growth.

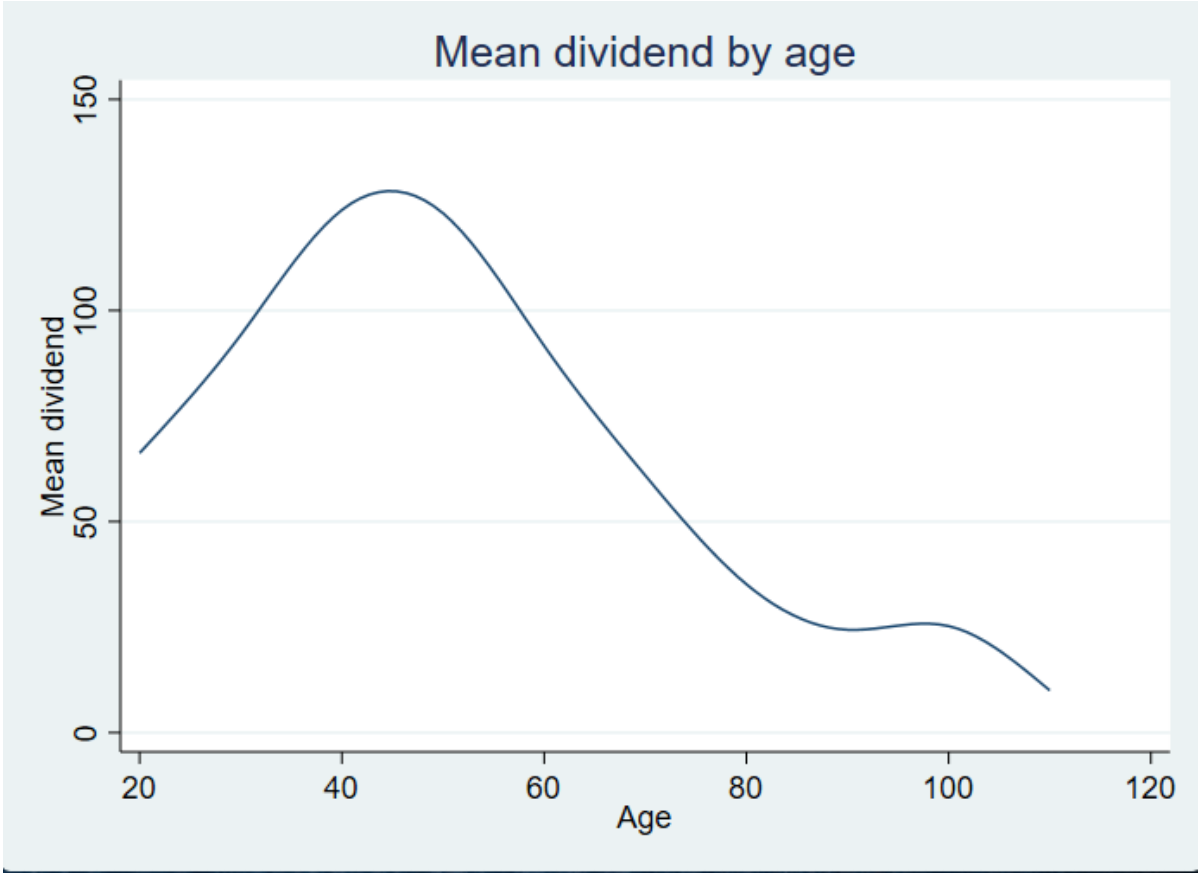


Graph 5: total amount of people receiving dividend per year. The graph includes all observations.

Graph 5 illustrates the total amount of people who has received dividend from 2009-2016. 2009 was when the fewest amount of people received dividend, amounting to 52 527 individuals. We see an upwards trend of individuals receiving dividend. In 2016 121 982 individuals received dividend, which constitutes a 132% increase in individuals receiving dividend for our sample period. 2016 was the year most people received dividend and average dividend received was highest. However, in 2012 number of individuals who received dividend was 82 180, a reduction from 2011. While average dividend received increased that year, compared to 2011.

One should note that number of dividend recipients differ from real number reported by Statistics Norway (SSB). From 2014-2016 more than 340 000 individuals received dividend each year as reported by SSB (SSB, 2022). One reason as to why numbers differ is that we

don't have access to individuals with the highest wealth or income. Secondly, in our dataset values are reported in 10 000's, with 1 as the lowest value. Dividend recipients of low dividend value might not be included in our dataset as reported dividend is too low. That might be advantageous if mean reversion poses as a problem.



Graph 6: mean dividend distributed by age. Age is reported as age in 2015 rounded to the nearest 10. Dividend reported in 1000's. Averages based on reports of received dividend.

Graph 6 shows the distribution of average dividend received by different age groups. The graph contains all reports of dividend in 2015. The graph shows that people in the age group 45-54 are the people that receive most dividend in 2015. Bottom of the distribution is age group 20. We also see a sharp decline in dividend from age 50 to 90. The distribution is also consistent with findings SSB has made for 2014-2016, where they report that most people in their 50's receive dividend and owns shares. SSB also reports that men own more shares and more than twice as many men receive dividend than women (SSB, 2022). As gender is a constant variable within individuals, we control for that with a fixed effect model, so that will not affect our analysis.

8.1 Table of all households

Year	Gross wealth	Debt	Net Wealth	Income	Dividend	Listed shares/Total shares
2009	463	489	-26	229	91	87,99 %
2010	541	512	29	237	80	88,07 %
2011	565	542	24	248	66	87,07 %
2012	604	573	31	258	76	86,26 %
2013	640	603	36	267	74	85,74 %
2014	672	633	39	274	69	85,05 %
2015	726	663	63	281	92	84,88 %
2016	811	721	90	-	99	58,36 %

Table 1: information of all households. Married couples have been combined. Includes 30 938 835 observations. Values in 1000's

Descriptive statistics on all households are presented in table 1. Compared to graph 1 average net wealth where households have been combined is higher than net wealth of all individuals. Gross wealth is not included in our dataset and is calculated as net wealth plus debt. Listed shares divided by total shares is relatively stable, averaging between 84,88 percent and 88,07 percent. Percentage of listed shares to total shares in 2016 is low compared to previous years, this is probably due to lack of reporting in our dataset, where listed shares aren't registered yet. Furthermore, we don't have data on income in 2016. Average received dividend varies between NOK 99.000 and NOK 66.000 and follows the same development as those reported by all individuals.

8.2 Balanced data

Year	Gross wealth	Debt	Net Wealth	Income	Dividend	Listed shares/Total shares
2009	481	511	-30	239	95	88,01 %
2010	580	546	34	252	82	88,06 %
2011	622	585	36	267	67	87,03 %
2012	682	628	55	282	77	86,24 %
2013	740	668	72	295	75	85,70 %
2014	794	706	89	306	69	84,96 %
2015	868	737	131	317	92	84,73 %
2016	945	770	175	-	98	59,18 %

Table 2: balanced data

Table 2 shows descriptive data on balanced dataset. There is not much difference in average received dividend compared to all households. However, net wealth is reportedly higher after balancing the dataset.

8.2.1 Regression specification 1

Year	Gross wealth	Debt	Net Wealth	Income	Dividend	Listed shares/Total shares
2009	865	351	514	288	103	86,53 %
2010	1036	351	685	300	94	86,59 %
2011	1108	347	761	316	73	85,52 %
2012	1218	336	882	332	94	84,85 %
2013	1336	310	1026	347	88	84,04 %
2014	1511	225	1286	361	95	82,88 %
2015	1279	482	797	347	91	84,47 %
2016	1384	470	913	-	98	62,53 %

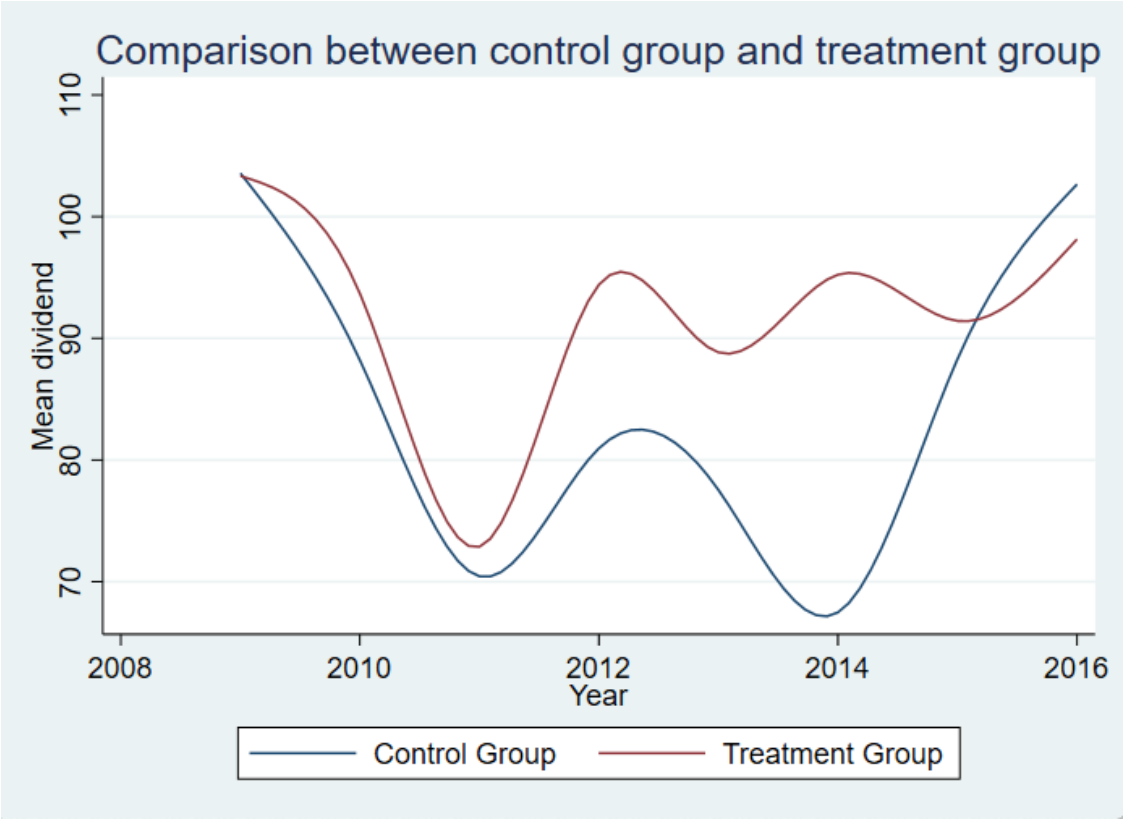
Table 3: Treatment group (1)

Year	Gross wealth	Debt	Net Wealth	Income	Dividend	Listed shares/Total shares
2009	340	545	-205	220	104	88,39 %
2010	411	587	-176	233	88	88,46 %
2011	442	635	-193	248	70	87,36 %
2012	486	687	-201	262	81	86,45 %
2013	522	739	-217	275	78	85,86 %
2014	552	792	-240	286	67	85,15 %
2015	607	828	-222	298	88	84,78 %
2016	682	861	-179	-	103	55,06 %

Table 4: Control group (1)

By construction, there is a shift in average net wealth in year 2015 and 2016. We have restricted net the treatment group to those who pay the wealth tax in 2014 and not in 2015. Average net wealth in 2014 was NOK 1.286.000, while the threshold was NOK 1 million. In 2015 average net wealth was NOK 797.000, well below the threshold. There was an increase in net wealth for 2016, but still well below the threshold. Compared to all households in balanced dataset, gross wealth is higher, and households are less leveraged. The difference in income is less substantial than that of wealth. The treatment group consists of 90 773 households, observed for 8 years. There are 36 015 total observations of dividend in the treatment group. Averages are reported as average of reported dividend in each year. There is a lot of variation of dividend payments in this group, dividend payments range from NOK 5.000 to NOK 40.000.000. The standard deviation is NOK 300.000.

Control group 1 consist of households which are not liable to the wealth tax in both years. By excluding the wealthiest taxpayers, the average net wealth becomes negative for the entire sample period. On average households are more leveraged than the treatment group and have less gross wealth. Control group 1 also has consistently more investment in listed shares than the treatment group. Control group 1 consists of 2 449 301 households. Number of total dividend payments is 292 063. Amount of dividend ranges from NOK 5.000 to 27.888.000, and the standard deviation is NOK 200.000. Lower standard deviation compared to the treatment group suggests that there is less variation between dividend payments in the control group



Graph 7: comparison of received dividend.

From graphical analysis one can see that there are deviations in trend before and after treatment, when comparing treatment group and control group as feared.

8.2.2 Regression specification 2

Year	Gross wealth	Debt	Net Wealth	Income	Dividend	Listed shares/Total shares
2009	1382	220	1161	317	120	78,70 %
2010	1557	211	1346	325	104	79,08 %
2011	1590	213	1379	337	85	78,75 %
2012	1623	230	1393	345	96	78,73 %
2013	1620	269	1351	351	89	78,82 %
2014	1500	343	1157	350	83	78,67 %
2015	1281	528	752	335	87	79,64 %
2016	1387	490	896	-	96	61,54 %

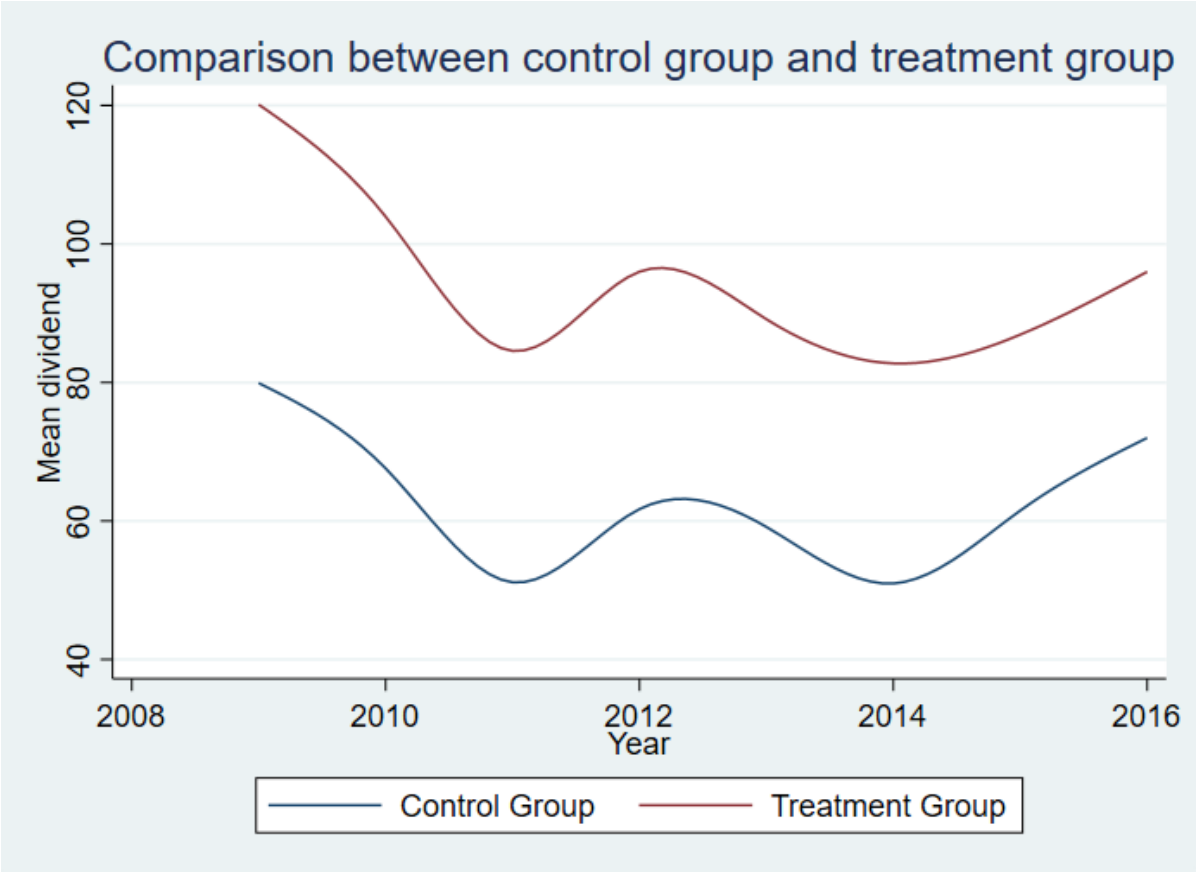
Table 5: Treatment group (2)

Year	Gross wealth	Debt	Net Wealth	Income	Dividend	Listed shares/Total shares
2009	372	179	194	210	80	89,03 %
2010	439	177	262	219	68	89,08 %
2011	468	179	290	232	51	88,44 %
2012	509	183	327	243	62	87,83 %
2013	548	189	356	253	59	86,90 %
2014	577	197	380	261	51	86,79 %
2015	613	208	405	266	62	86,49 %
2016	687	216	471	-	72	60,15 %

Table 6: Control group (2)

From the tables one can see the treatment group and control group in the second regression. Firstly, from the treatment group we can see that net wealth is consistently higher among the treatment group in the second regression specification compared to the first regression specification. In 2014 average household net wealth was NOK 1.157.000, lower than the treatment group in the first regression specification. Average net wealth in 2015 was also lower than the treatment group used in the first regression. The treatment group in regression 2 consists of 45 934 households. There are 27 485 observations of dividend. Dividend payments ranges from NOK 5.000 to NOK 8.830.000. Standard deviation among dividends is NOK 190.000

The control group used in regression specification 2 is now richer, as we have excluded the lower end distribution of wealth, by excluding the households with negative average net wealth. Compared to treatment group has more listed shares out of total shares. Control group is consistently more leveraged as well. There are less differences in taxable income. The control group consists of 1 200 902 households. There are 132 573 reports of dividend payments, that range from NOK 5.000 to NOK 7.770.000. Standard deviation among dividends is NOK 145.000.



Graph 8: comparison of received dividend.

By analyzing the trends one can see that there is now a much more common trend between the treatment group and control in regression 2. There is, however, not clearly a shift in post-treatment period.

9. Results

In this chapter we will present the results from our two DID specifications together with a discussion of the validity of our model specifications. We use a common trend analysis to determine the validity of our estimations.

9.1 First specification results

	(1) Main regression	(2) Only age	(3) Only z	(4) no controls	(5) Div/total shares
$T_i * after_t$	-0.0221*	-0.0217*	-0.0549***	-0.0595***	0.0047
	(-2.23)	(-2.18)	(-5.60)	(-6.09)	(0.99)
Observations	289056	289056	289064	289064	4032084
Household fixed Effects	yes	yes	yes	yes	yes
Year fixed Effects	yes	yes	yes	yes	yes
Robust standard	yes	yes	yes	yes	yes
age2015	yes	yes	no	no	yes
Control Z	yes	no	yes	no	yes

Table 7: the table consist of regression specification (1) Our variable of interest $Treatmentgroup_i * after_t$ is the aggregated treatment effect based on observation for the years 2015 and 2016. We have clustered standard errors on the household level and controlled for both time and household fixed effects. Covariates for age development is included as 2015age interacted with each year. Age for couples is the average age between them. The "z" controls for individuals with more than average share of listed shares.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the first regression specification the treatment group includes households that fall below the threshold in 2015, while the control group include households that consistently below the threshold in 2014 and 2015. The variable $Treatmentgroup_i * After_t$ constitutes our variable of interest. The interpretation of $Treatmentgroup_i * After_t$ is the effect of the treated households in year 2015 and 2016. Due to the transformation of the dependent variable dividend, only observations with reported dividend are included. The regression includes 289 056 observations.

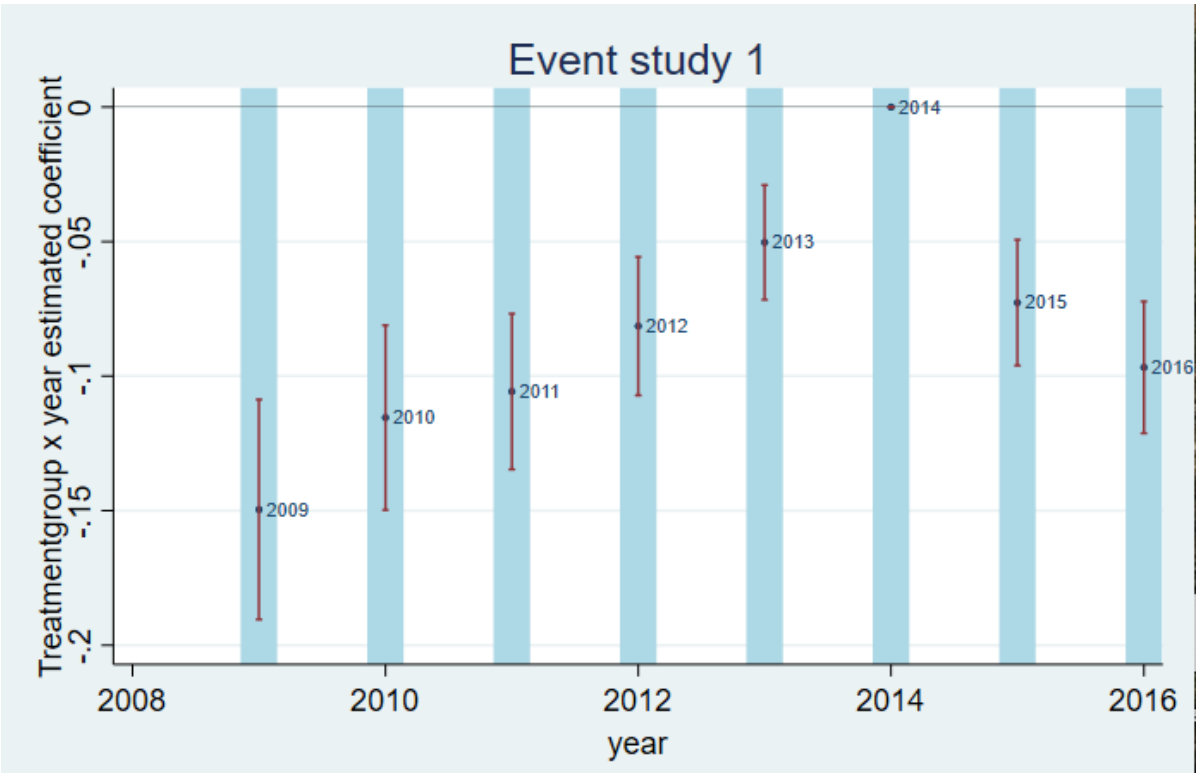
Semi-elastic regression models are interpreted by $\%\Delta y = (100B_1)\Delta x$ (Wooldridge, 2019, p.39). Where y is the dependent variable and x is an independent variable. $Treatmentgroup_i * After_t = 1$ when a household is part of the treatment group in period t>2014. Our main finding in regression specification 1 is based on the interpretation of $Treatmentgroup_i * After_t$. The coefficient shows -0.0221, which translates to the treatment total effect of falling below the threshold in 2015 is 2.21% decrease in dividend payments compared to control group, including control for ownership in listed shares.

The coefficient for $Treatmentgroup_i * After_t$ has a negative sign, which is consistent with our hypothesis that when households no longer must pay the wealth tax, the amount of dividend that is taken out of private businesses will decrease. We see that our estimation is significant at the 5 percent level, with a t-value of -2.23.

Comparably, when running the regression without control variables (4) we get a treatment effect of 5.95 percent. However, then we don't control for age or ownership in listed shares. From (2) we see that age has a relatively large effect on $Treatmentgroup_i * After_t$ compared to result in (4). That is intuitive as seen in the descriptive statistics as some age intervals on average receives more dividend. Controlling for only ownership in listed shares (3) has surprisingly a small effect on dividend.

Robust standard errors are included. We cluster the standard errors at the household level as we assume heterogeneity at the household level. We use robust standard errors to avoid misjudgement of precision (Angrist & Pischke, 2009). Meaning that using robust standard errors affects standard deviation and t-value, not the coefficient estimates.

9.1.1 Event study of first specification



Event study 1: plot of event study for specification 1 regression (1) The figure shows $Treatmentgroup_i * year_t$ with year 2014 as the base year. Each year is interacted with $Treatmentgroup_i$ showing coefficients and confidence intervals within 95% limits.

A main concern when utilization a difference in difference strategy for the identification of the assumed effect of wealth tax on dividends is the assumption of common trend between the treatment group and control group in the pre-treatment period. If parallel trends can´t be established in the pre period, then our DID regression cannot be interpreted in a causal way. In other words, the difference between the treatment group and control group needs to be constant over time, before treatment (Cunningham, 2022).

From event study 1, one can see significant estimates in all pre-treatment years. Seemingly invalidating our results in regression 1. The pattern of coefficients is possibly consistent with mean reversion (Weber, 2014) possibly in the lower end of wealth distribution. Nevertheless, event study 1 shows deviation from common trend in pre-treatment period, therefore we can't interpret findings causally in terms of wealth tax change and dividend payments.

Our treatment variable $Treatmentgroup_i$ is the likely reason behind the deviation of common trend. Households with sudden shifts in wealth can cause wrongful placement in

treatment group and control group. Lottery winnings etc. can cause sudden changes in wealth, which gives little comparable treatment group and control group. We try to deal with this problem in regression 2 by only including the households with a mean net wealth over the threshold in 2014, who don't pay wealth tax in 2015 as our treatment group.

9.2 Second Specification results

	(1) Main regression	(2) Only age	(3) Only z	(4) no controls	(5) Div/total shares
$T_i * after_t$	-0.0781***	-0.0771***	-0.103***	-0.102***	0.0111
	(-6.19)	(-6.09)	(-8.29)	(-8.21)	(1.90)
Observations	143200	143200	143208	143208	2061135
Household fixed Effects	yes	yes	yes	yes	yes
Year fixed Effects	yes	yes	yes	yes	yes
Robust standard	yes	yes	yes	yes	yes
age2015	yes	yes	no	no	yes
Control Z	yes	no	yes	no	yes

Table 8: the table consist of regression specification (2) Our variable of interest $Treatmentgroup_i * after_t$ is the aggregated treatment effect based on observation for the years 2015 and 2016. We have clustered standard errors on the household level and controlled for both time and household fixed effects. Covariates for age development is included as 2015age interacted with each year. Age for couples is the average age between them. The "z" controls for individuals with more than average share of listed shares.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the second regression we have changed the treatment group to those with average net wealth in pre-treatment period above the threshold in 2014 and not paying wealth tax in 2015. The control group are those whose average pre-treatment net wealth is below the threshold in 2014 and not in a wealth tax position in 2015. We have also removed the households with an average net wealth below 0 during the sample period. The cutoff is inspired by method by Weber (2014) who tries a $ 10.000 cutoff to avoid mean reversion in the lower end of the distribution, Gruber and Saez (2002) has a similar approach to avoid mean reversion. Our intuition is that if development in dividend payments seem to also follow development in wealth, utilizing a mean net wealth is better suited for comparison. This is also supported by Thoresen et al. (2020) which finds that ownership in shares highly associated with wealth levels.

The intuition is to mitigate the effect of transitionary shocks to wealth in 2014/2015. By using average net wealth in the pre-treatment, we are utilizing households that on average would be in a wealth tax position in 2014. We are also restricting the treatment group to those who are not in a wealth tax position in 2015, thus experiencing treatment. A potential downside is not all those who has an average net wealth above NOK 1 million, has an actual net wealth above 1 million in 2014. Still, from the data we see that most of the treatment group has an actual net wealth above the threshold in 2014, around 75 percent.

The estimated coefficient now shows -0,078 with a t-value of -6,19. Interpretation of interaction variable between is that going from an average net wealth above the threshold in 2014, to not being in a wealth tax position in 2015 and having a high relative allocation in private shares is associated with a 7,8 percent of decrease in dividend relative to the control group. It is reassuring to see that the coefficient shows the same coefficient sign as the estimation of the first regression specification. We do see an increased effect the reform of 2014/15 has on dividend payments. The findings seemingly substantiate the findings of Berzins et al. (2022), that dividend payments for private owners are affected by the wealth tax.

On the other hand, divided by total shares shows non-significant estimates. A possible explanation is that number of reported dividends is low in our data set. Among the treatment group and control group there are around 4 million observations of households with ownership of shares (over 8 years), while only around 305 thousand observations of dividend above 0. Meaning div/total shares will be 0 for most observations. Interestingly the estimator now has non-significant as a result.

There is a big difference in estimation when controlling for age. This has been the case for all regressions that we have presented and is also intuitively right, after observing the distribution of dividend in the descriptive statistics. Not controlling for ownership in listed shares gives a marginal decrease in estimations, in terms of absolute value.

9.2.1 Event study of second specification

Event study 2: plot of event study for specification regression (2) The figure shows $Treatmentgroup_i * year_t$ with year 2014 as the base year. Each year is interacted with $treatmentgroup_i$ showing coefficients and confidence intervals within 95% limits.

The estimates in regression 2 is also dependent on the common trend assumption. The estimates from the pre-treatment period in the event study are more promising than the event study in regression specification 1. We can see that there are non-significant estimates in all years prior to treatment, contrary to event study of regression specification 1, where there were significant estimates in pre-treatment years.

Even though estimates are non-significant in pre-treatment period, estimates aren't accurately estimated to zero. Still, we argue the validity of our model by stating that it is rare to see perfect estimates in event studies, and there are many factors determining dividends. By using an average to determine net wealth in 2014 we mitigate the problems of violated common trend that distorted analysis in regression specification 1. The estimation is still less precise because some households don't experience treatment in 2015.

The estimations shown in regression specification 2 present our main findings for this thesis.

9.2.2 Summary of findings

After graphical analysis of interaction term between treated households and control group, our initial analysis showed clear violation of common trend in pre-treatment period. We therefore based wealth in 2014 on average wealth in pre-reform years to exclude households from analysis with sudden changes in wealth. While also restricting to households not above the threshold in 2015. Final finding is that falling below the threshold constitutes a 7,8 percent decrease in received dividends relative to the control group.

10. Discussion

Interpreting estimates causally depends on ruling out effects not associated with the wealth tax reform of 2014-2015. Endogenous effects on dividend can make causal interpretation impossible. One potential pitfall of our analysis is changes in tax rules on dividend implemented in 2016. In 2016 a dividend tax and adjustment factor were implemented, in effect making it more expensive to receive dividends. The result was that households increased dividends in 2015 to escape the newly introduced tax rule (SSB, 2021). One could argue that household's dividend payments in our analysis are primarily affected by the new dividend tax rules, rather than the shift in wealth tax position. As seen in the descriptive statistics for specification (2), households receive more dividends than those in the control group on average. However, a big shift in dividend payments and recipients was not present in our data. But from the same tables we observed a notable and time persisting difference in the treatment and control groups holdings of unlisted shares. The treatment holds a higher percent of their stocks in unlisted shares. Possibly making their total dividends less affected by public firm's dividends decisions related to the new dividend policy.

The reason why our data does not show the same effect in dividends as SSB reports (SSB, 2021) is likely caused by the cut-off by wealthy households in our sample. Our sample does not include the top of the distribution of individuals by net wealth and income. The people with the most incentive to take out dividends before the dividend tax change are not included in our analysis. As the wealthiest people in the sample has a net wealth of NOK 5.000.000 it is limited how much the household must pay in actual wealth tax. In 2016; with a threshold of NOK 1.400.000 and a wealth tax of less than 1 percent the wealth tax payable is not substantial. It might be necessary for a sample of the wealthiest individuals to correctly estimate the effect the wealth tax has on dividend payments from unlisted firms.

A causal interpretation between wealth tax and dividend payments will have several consequences. By increasing thresholds, less people become subject to the wealth tax. A cause and effect by paying wealth tax and increased dividend payments, will intuitively lead to less tax revenue for the Norwegian government. Our analysis indicates that there is a such a relationship between dividend payments and wealth tax liability. By extent, by increasing threshold the government misses out of both wealth tax revenue and dividend tax revenue. Ferdowsi et al. (2020) points out the low revenues from the wealth tax. However, for households who potentially take out dividend from private businesses, the government misses

out on extra tax revenue by increasing thresholds. Especially under the new tax regulation per 2016. Taxing less efficient owners could as argued by Guvenen et al. (2019) increase efficiency of capital and increase the total welfare for most of the population. On the other hand, the highest productive owners would increase their relative share of wealth compared to the rest of the populations (Guvenen et al., 2019). Increasing inequalities is one of the main concerns for the government and would therefore not be desirable from other social perspectives.

One could argue that the decrease in dividend payments stems from decrease in wealth rather than removal of wealth tax liability in regression specification 2. However, we argue that by using an average net wealth to determine in 2014, we mitigate some of the effect of sudden shift in wealth by some households. Furthermore, as seen in chapter 6: descriptive statistics, the treatment group in regression specification (2), no longer experiences a negative shift in average dividend payments. The decrease in dividend payments is now relative to the control group.

11. Comparison to other studies

Our finding that the wealth tax affects dividend payments are supporting and contradicting previous literature. Berzins et al. (2022) finds that higher wealth tax payments at the personal household level of a controlling shareholder are associated with higher payments from the firm to the household. This is in line with our finding that a household who falls below the threshold of the wealth tax is associated with less dividend payments. Berzins et al. (2022) utilizes a more extensive dataset, where they use tax-return data and match it with private limited liability firm. Contrary to our paper, they use data from the period 2000-2010, whereas we have used data from 2009-2016.

There are also several papers that directly or indirectly contradicts our findings. Bjørneby et al. (2020) are also able to utilize a more extensive dataset. They use combined data on individual households, accounting information on limited liability firms in Norway, information on owners and employee data and salaries. Their finding is that there are little negative effects on firm level because of a wealth tax. They report that reduction in liquid assets in firms where the owner has low liquidity does not match with a higher salary or dividend payment to owners (Bjørneby et al., 2020). They also report on a positive significant association between wealth tax payment by owner and employment level, where they argue that the income effect is the explanation (Bjørneby et al., 2020). This is contradictive to our analysis, where we find a small positive relationship between dividend payments and wealth tax liability. It seems also counterintuitive in our analysis that wealth tax liability would have positive effect on employment, when increased dividend from private businesses would drain a firm of liquid assets.

Fagereng et al. (2020) present evidence of persistently different returns across households and wealth levels. If the ability to generate returns are heterogenous, entrepreneurs with high abilities in their start of their carrier where financial constraints are bigger, and firms cashflows abilities lower, then decreased wealth taxation relief through thresholds could be optimal as it should have relatively low effect revenues and incentives on the top of the wealth distribution. On the other hand, this would also create efficiency loses as owners of passive small and cash rich firms or assets are less incentivised to change their dividend behaviour. This illustrates the problems faced by governments when deciding the optimal policy for thresholds as both effects must be considered at the same time.

Bjørneby et al. (2020) also uses salary as a variable to measure effect. Given the scope of our analysis we have not been able to account for salary as a means for owners to extract liquid assets from private businesses. This also presents a potential pitfall of our analysis, as there are primarily two ways controlling shareowners can take out funds of firms; salary and dividend. Many owners also own business assets which offer sizable tax rebates.

Existing papers on wealth tax effects has also pointed out the advantages of owning unlisted shares in terms of net wealth. Given the low valuation compared to listed shares. Therefore, it is not given whether negative effects of dividend payments because of wealth tax liability, outweigh the positive aspects of owning shares in a non-listed firm, from a tax perspective. Sandvik (2015) argues for the positive effects of owning shares in private non-listed shares and argues that the favorable valuation rules can cause too much investing in smaller non-listed firms, due to the tax incentives created. Bach et al. (2020) also finds higher investments into small companies done by retired entrepreneurs with large wealth which were offered wealth tax deductibility for such investment by the French government. This highlights the efficiency of using wealth tax and rebates by governments to stimulate investments in different sectors.

12. Robustness testing

Basis for robustness testing is main findings from regression specification 2.

	(1)	(2)	(3)	(4)
	No wealth cutoff	Net wealth>500k	Mean income>200k	Mean dividend>10k
$T_i * after_t$	-0.0948***	-0.0703***	-0.0792***	-0.144***
	(-7.59)	(-5.34)	(-5.80)	(-7.59)
Observations	288952	81428	123124	86123
Household fixed Effects	yes	yes	yes	yes
Year fixed Effects	yes	yes	yes	yes
Robust standard	yes	yes	yes	yes
age2015	yes	yes	yes	yes
Z	yes	yes	yes	yes

Table 9: Our variable of interest $Treatmentgroup_i * after_t$ is the aggregated treatment effect based on observation for the years 2015 and 2016. We have clustered standard errors on the household level and controlled for both time and household fixed effects. Covariates for age development is included as 2015age interacted with each year. Age for couples is the average age between them. The "z" controls for individuals with more than average share of listed shares.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Regression (1) and (2) in the robustness testing shows the regressions with different wealth cutoffs, based on average net wealth. The intuition is to see whether we get different results when using different wealth groups. As we can see from regression (1) and (2) we get similar estimates as in regression specification 2. We do, however, get larger estimates when utilizing households without a cutoff.

Regression (3) shows the regressions when we excluded households with less than NOK 200.000 in taxable income on average in the sample period. The intuition is that since business owners has two primarily two ways of extracting funds out of businesses. From the table we see that we get an estimated coefficient of -0,079. This is very similar to our main finding in regression (2) where the estimated coefficient was -0,0781.

Regression (4) shows the estimations when only include households with average dividend payments above NOK 10.000. The method is based on Weber (2014) who uses different income cut-offs to see whether her estimates was robust to changes regarding cut-offs in the dependent variable. Unlike us, Weber (2014) is estimating the elasticity of taxable income and is using a cut-off to deal with mean reversion at the lower end of the distribution. When we remove households with low dividend payments a large portion of reported dividends are not included. Number of observations in regression is now 86 123. Compared to main findings described in regression specification 2, we now get larger estimates. The estimated coefficient is now -0,144. That indicates that differences between the treatment group and control group becomes greater in the treatment period when excluding the bottom-distribution. Our main findings may have underestimated effects.

13. Limitations

Due to privacy reasons, the wealthiest individuals have been left out of our dataset. Anyone with more than NOK 2.000.000 in reported taxable income, and/or reported net wealth above NOK 5.000.000 are not included in our dataset. If we had access to the whole population, we could run analysis for individuals in the higher wealth distribution where financial assets as part of wealth and income generation is much bigger (Thoresen et al., 2020). Wealth tax changes could therefore have much larger effect on this group's dividends decisions as their relative income from labour would be lower. For most people in our analysis labour income is the primary income source, making it more likely that liquidity issues created by the wealth tax influence this source of income.

In cleansing of our data, we removed couples which did not stay together for the whole period. This was done to mitigate sudden jumps in wealth as couples could change the wealth tax position due to marriage or divorce. By doing this we lose many observations. Furthermore, we also drop single individuals who due to whatever reason don't have data for the whole period. Some of these individuals may leave the country due wealth tax reasons. Our analysis would not account for such behaviour. Bunching around the threshold as uncovered by (Seim, 2017) could create problems for our identification strategy. But as most assets are third party reported and the biggest assets are hold in primary residents for our group, we believe individuals have few options to misreport wealth.

Our control variable for ownership in listed shares should control for owners with the main part of their stock portfolio in listed shares. For our main specification (2) this constitutes around 78% for the treated group and 86% for the control group in 2014. Meaning that most of the portfolio still is in public firms. A big issue is that these owners then don't have a large influence over the dividend decisions for a large part of their stocks even when we control for ownership in listed shares, meaning that for our results there would be difficult to distinguish the effects of not paying wealth tax from changes in public firm's dividend decisions. This should also apply for private firms the households do not have a majority share in.

We control for age which would hopefully catch some of the different risk preferences as individuals ages. Furthermore, fixed effects on the household level should also control for individuals inherent risk preference and dividend preference. But we cannot rule out changes

in portfolio composition due to the wealth tax, especially in listed stocks as a reason for changed dividend behaviour between groups.

We try to mitigate effect from jumps in net wealth affecting dividend payments in regression specification (2). Although we cannot say with certainty that some of the effect from decreased dividend payments in post-treatment period stems from wealth loss. Dividend can however, develop to a large extent independently of wealth.

14. Conclusion

The purpose of this thesis was to investigate whether there is a connection between wealth tax liability and dividend payments from private businesses. We used the change in tax legislation in 2014/15 as basis for our research and focused on the group of households that went from above the threshold to below the threshold following the change in tax regulation. Initial findings suggested a decrease in dividends following the tax reform, but estimation evidently failed when observing trend in years before reform. We then based wealth on average net wealth to overcome the estimation problems in initial testing. Final findings indicate that shifting from tax position to non-tax position is associated with 7.81 percent decrease in dividends relative to households consistently below the thresholds.

Other contributions to the field have had access to a broader set of data including company financials, making it easier to quantify outflows and inflows between owners and their businesses while controlling for a broader range of determinants. Our findings further substantiate the findings of Berzin et al. (2022) and contradict the findings of Bjørneby et al. (2020).

Working on this project proved difficult as many fields within finance is relevant, especially corporate finance and household finance.

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