Tax Incentives and the Choice of Organisational Form of Small Businesses. Identification Through a Differentiated Payroll Tax Schedule

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Non-Technical Summary

Understanding the relationship between taxation and the choice of organisational form by small business owners is important when considering the possible effects of tax policies. Tax-motivated organisational choices may diminish tax revenues, generate distortions, and represent a source of uncertainty when evaluating the responses to tax reforms. The paper presents empirical evidence on the link between taxation and the choice of organisational form by small business owners. The analysis is conducted using detailed administrative data that allow identifying the universe of Norwegian small business owners, and the legal form of the firms for the period 2004-2011.

The empirical strategy exploits the 2006 tax reform, which resulted in geographically differentiated tax incentives for incorporation, due to its interplay with the pre-existing system of geographically differentiated payroll tax rates. Since 1992 the Norwegian income tax system combines a low flat tax on all capital income with a progressive tax on labour, transfer and self-employment income. To reduce the possibilities of income shifting between tax bases, the 2006 reform introduced a tax on distributed dividends, that were instead tax exempt prior to the reform. At the same time, the reform decreased the surtaxes applicable to labour income. The top marginal tax rates for the self-employed and owners of incorporated firms were almost equalised, and the tax advantage of incorporating a firm was considerably reduced.

Taxation for owners of small incorporated firms may differ depending on the payroll tax zone, and on the type of compensation received, wages instead of dividends. Income from self-employment is taxed more uniformly across Norwegian regions, as the payroll tax is not applicable to this type of income. Up to 2006, payroll taxes played only a minor role in influencing the choice of organisational form: the large difference in average tax rates between the self-employed and small incorporated firms was caused by the tax exemption for dividends. It was optimal, for owners of small incorporated firms, not to receive any wages, even if the applicable payroll tax rate was low. The 2006 reform magnified the importance of payroll taxes in the choice of organisational form. The tax advantage of dividends over income from self-employment disappeared, but, dependent on the payroll tax zone, the after-tax return of small incorporated firms could still be higher if a large percentage of net profits were distributed to the owner in the form of wages instead of dividends. A difference-in-difference empirical strategy is employed in this paper, and the main results of the analysis indicate that a decrease by 1 percentage point in payroll taxation increases the share of incorporated business owners by approximately 0.0033, which represents a 1 percent of the average incorporation rate. An important lesson to be drawn from the current analysis is the need to carefully consider, when planning a new tax reform, all possible interactions with pre-existing regulations. Taxes that were previously not relevant in a specific context or decision-making, may gain salience because of changes to other tax rules.

Previous studies have found evidence of tax induced organisational shifts. However, the lack of appropriate data that can identify the owners of small incorporated firms, and the limited use of clear exogenous variation in the treatment, cast some doubts on the interpretability of the results. The novelty of this paper is twofold. First, the availability of individual level administrative data allows me to provide a comprehensive description of the universe of Norwegian small business owners over the period 2004-2011. Second, the opportunity to exploit the 2006 reform together with the system of geographically differentiated payroll tax rates, represents a possibility to identify the effect of tax incentives on the small business owners' choice of organisational form. Therefore, the present paper aims at providing new evidence on the causal relation between tax incentives and the choice of organisational form.

Tax Incentives and the Choice of Organisational Form of Small Businesses. Identification Through a Differentiated Payroll Tax Schedule.[*]

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Abstract

The Norwegian dual income tax system gave incentives for business owners to incorporate and take advantage of the lower tax on capital income. The tax reform of 2006, which was designed to eliminate these incentives, is used to discuss effects of taxation on the choice of organisational form. The interplay between the tax reform and the pre-existing system of geographically differentiated payroll tax rates generates heterogeneity in the tax treatment, which is exploited in a difference-in-differences empirical strategy. Estimation results based on a large administrative dataset suggest that organisational choice is influenced by taxes: a 1 percentage point reduction in the payroll tax results in 1 percent increase in incorporation rate.

JEL codes: H25; L22
Keywords: Business taxation; Organisational form; Small businesses.

1   Introduction

Given that a considerable number of economic activities can be almost in-
differently carried out either by a self-employed individual or by a small
company with as single owner/employee, differences between taxation of
personal vs. corporate income, and of labour vs. business income are
expected to affect the choice of organisational form. Tax motivated organi-
sational choices diminish tax revenues, may generate economic distortions,
and challenge the legitimacy and fairness of tax systems. Existing empiri-
cal evidence suggests that tax systems significantly influence the choice of
organisational form of small businesses.[1] However, the lack of appropriate
data to identify owners of incorporated firms challenges the interpretability
of most findings.

The present paper aims at contributing to this literature by providing
evidence on the effect of tax incentives on incorporation using data from
Norway for the period $2004-2011$. Contrary to most of the existing studies,
the present paper uses detailed administrative data, which allows to identify
the complete universe of small business owners, including their organisa-
tional form. The analysis exploits the interaction between the Norwegian
tax reform of 2006 and the pre-existing regional differences in payroll taxes,
to identify the effect of taxes on organisational form. A system of region-
ally differentiated payroll tax rates was in place in Norway throughout the
period of analysis.[2] However, I argue that the payroll tax has become
binding, in the decision of organisational form, only from 2006 onward.

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[1] See for example Gordon and MacKie-Mason (1994), Mackie-Mason and Gordon (1997),
Goolsbee (1998), Goolsbee (2004), and Liu (2014) for the U.S. , Romanov (2006) for
Israel, Edmark and Gordon (2013) for Sweden, and Thoresen and Alstadsæter (2010)
for Norway. See the next section for a detailed review of the literature.

[2] The Norwegian system of regionally differentiated tax rates was established in the 1975
and it has represented one of the most important policies aimed at supporting activities
in peripheral areas facing depopulation and economic hardship. During the period of
analysis, the rate varied, depending on the region, from a minimum of 0 percent to a
maximum of 14.1 percent of gross wage payment.

Thus, the interplay between the tax reform of 2006 and the geographically differentiated payroll tax schedule is the key identifying relationship.

The Norwegian tax reform of 2006 emerged as an instrument to prevent tax payers from transforming labour income into capital income for tax reasons. In fact, under the Norwegian "dual income tax", corporate profits and other capital incomes are taxed at a flat 28 percent rate, whereas a progressive tax schedule is applicable to labour income. Until 2006, corporate profits were tax-exempted when distributed, as dividends, to individual shareholders. By contrast, the so called "split model" dictated rules to divide business income from self-employment and closely-held corporations into capital and labour income.[3] As a result, the top marginal tax rate for the self-employed and owners of closely-held corporations was 58.2 percent in 2004, whereas owners of a widely-held corporation faced a 28 percent flat rate. For small business owners, the tax incentives to move out of the "split model" and being classified as widely-held corporation were high. There is indeed substantial evidence of organisational shifts during the period prior to the reform, see Thoresen and Alstadsæter (2010). To prevent this problem, the 2006 tax reform was designed to equalise marginal tax rates, and, to this end, introduced a tax on dividends, and lowered the surtaxes rates applying to labour income.

Importantly, changes in tax incentives to incorporate, caused by the 2006 reform, varied with respect to geographical areas, as a result of the regionally differentiated payroll tax schedule. Taxation for owners of small incorporated firm may differ depending on the payroll tax zone, as owners of small incorporated firms have the choice to pay themselves via wages or dividends. Income from self-employment is instead taxed more uniformly

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[3] Closely-held firms were defined as those corporations where at least two thirds of the shares were owned by individuals working in the firm for no less than 300 hours per year (active owners). Members of the same family counted as one unique owner for the purpose of the above definition.

across Norwegian regions, as the payroll tax is not applicable to this type of income. Up to 2006, payroll taxes played only a minor role in influencing the choice of organisational form: the large difference in marginal tax rates was driven by the tax exemption for dividends. It was optimal, for owners of small incorporated firms, not to receive any wages, even if the applicable payroll tax rate was low. The 2006 reform magnified the relevance of payroll taxes in the choice of organisational form. The tax advantage of dividends over income from self-employment disappeared, but, dependent on the payroll tax zone, the after-tax return of small incorporated firms could still be higher than in the alternative (self-employment) if a large percentage of net profits were distributed to the owner in the form of wages.

In this paper, I exploit the reform-induced variation in tax incentives from incorporation across both time and space, to study their effects on the choice of organisational form, using a difference-in-differences empirical design. I compare the choice of organisational forms by small business owners located in different areas of the country before and after the 2006 reform. Results from the preferred specification indicate that a 1 percentage point decrease in payroll taxation increased the probability of incorporation by 0.33 percentage points over a period of 6 years, which represents a 1 percent of average incorporation rate in the sample. An important lesson to be drawn from the current analysis is the need, when planning a new tax reform, to carefully consider all possible interactions with pre-existing regulations. Taxes that were previously not relevant in a specific context or decision-making process, may gain salience and have distortive effects once changes to other tax rules are implemented.

The rest of the paper is organised as follows. The next section briefly discusses the existing literature on taxation, shifting behaviours and organisational choice. Most of the previous empirical literature focuses on the U.S. experience, but there is also a growing body of evidence from other

countries. Section 3 describes the Norwegian tax system both before and after the 2006 reform and how the regionally differentiated payroll taxation became relevant for the choice of organisational form after the 2006 reform. Section 4 describes the data, and in particular how I am able to identify the population of Norwegian small business owners for the period 2004−2011. Section 5 explains my strategy to identify the effect of tax incentives on organisational choice. Section 6 presents the main results, whereas Section 7 shows results of a number robustness checks. Section 8 concludes.

2   Literature review

The present paper relates to the academic literature on the effect of tax incentives on the choice of organisational form by small business owners. Most of the existing empirical evidence relies on U.S. data, and I will review it first. Recent studies that focus on the Scandinavian countries will also be described, as the similarities of the income tax systems make this literature relevant when analysing the Norwegian case. Current empirical evidence of tax motivated organisational and income shifts for Norway will be discussed at the end of this section.

Evidence from the U.S. Early empirical evidence was based on national level time-series data on investment or asset allocation. This literature finds a small effect of the difference of tax treatment between corporate and non-corporate firms on the incorporation rate, see Gordon and MacKie-Mason (1994), Mackie-Mason and Gordon (1997) and Goolsbee (1998). More recently, Goolsbee (2004), using 1992 retail trade sector census data, studies the impact of taxation on overall corporate share, exploiting the variation of taxes across U.S. states. He finds that the differences in taxation between corporate and personal income tax are negatively related to the the share of incorporated businesses. One percentage point surge in

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the corporate income tax rate was found to decrease the corporate share of firms by 0.025, which is about 4 percent of the average incorporation rate. However, the analysis is based only on one year of data and does not tackle the endogeneity of taxation at the state level.[4] Liu (2014) tries to overcome the endogeneity by using panel data on firm activity at the state-organisational form level for 1909, 1914, and 1919. Controlling for state and time fixed effects, other non-tax factors that may influence the incorporation decision, and using an instrumental variable approach, the author finds that a 1 percentage point increase in the corporate tax rate reduces the corporate share of economic activities by 0.02-0.03.[5]

The present work is also related to the literature on tax-induced income shifting, which can be described as tax planning techniques involving income transfers from a higher to a lower taxed tax base, without necessarily changing the organisational form. See theoretical discussion, review of early literature, and empirical evidence in Gordon and Slemrod (2000). In a recent paper, DeBacker et al. (2016) have studied the effects of a tax reform in Kansas, USA, which excluded certain forms of business income from individual taxation, on the economic activity and income shifting behaviour of small businesses. They use administrative tax return data for the period from 2010 to 2014, and employ a difference-in-differences approach, in which small entrepreneurs in neighbouring states serve as control group. Their findings suggest that the main response to the tax reform came in the form of income shifting activities between wage and business income. However, they do not investigate the effects of the reform on incorporation rate, because of lack of information in the data.

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[4] For instance, lobbying for a lower corporate taxation at the state level, may be more successful in states where the share of incorporated firms is larger.

[5] The author can not observe the corporate share of firms or owners, but proxies it by the corporate share of economic activities, measured as corporate share of establishments, employment, and production. Depending on the chosen outcome variable, the estimated coefficients imply, a reduction of 3.4 to 10 percent of the average corporate share in the sample.

Evidence from Sweden and Finland "Dual income tax" systems proliferated throughout the Nordic countries during the 1990s. These systems combine a low proportional tax rate on corporate/capital income, with a progressive tax rates on personal/labour incomes. Hence, they constitute an ideal laboratory to study how tax incentives induce income shifting or affect the choice of organisational form of the firm. It is therefore not surprising that considerable amount of research on this topic has been carried out for the Nordic countries.[6]

Most studies focus on income shifting among the self-employed or company owners separately, instead of investigating tax induced organisational shifts from one group to the other. For example, Alstadsæter and Jacob (2016) and Pirttilä and Selin (2011) provide evidence of tax induced income shifting among owners of closely-held corporations in Sweden, and self-employed individuals in Finland, respectively. Further, Edmark and Gordon (2013) present evidence on the impact of the Swedish tax system on the incorporation rate among business owners, and find that an increase by one percentage point in the corporate tax rate reduces the fraction of firms that incorporate by 1 percent. Although they use detailed administrative data, the authors do not have access to ownership data, and must therefore rely on indirect information and assumptions to identify small incorporated business owners. This limitation, coupled with the use of a simple regression approach on pooled cross sectional data, undermines somewhat the interpretabilty of the findings.

Evidence from Norway Several studies have employed Norwegian

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[6] Empirical evidence from other countries include: Romanov (2006), who uses VAT reports to investigate how corporate activity increased after two Israeli tax reforms that lead to a surge in the marginal taxation for labour and self-employment income; de Mooij and Nicodème (2008), who consider a panel of firms for 17 European countries and find that the tax gap between personal and corporate tax rates is positively correlated with the degree of incorporation; Da Rin, Di Giacomo and Sembenelli (2011) who exploit country-industry level panel data for 17 European countries, and find that corporate taxation is negatively related to entry rates in the corporate sector.

data, but predominately to study tax induced income manoeuvring within the corporate sector. Fjærli and Lund (2001) are the first to use matched owner-firm data to study how taxes affect the mix of wage and dividend as compensation. They combine personal and corporate tax returns for 225 single owners corporations and find some evidence of income shifting. Also Alstadsæter and Fjærli (2009), Alstadsæter, Kopczuk and Telle (2014) and Alstadsæter and Wangen (2010) study income shifting. The first two studies provide strong evidence of the anticipation effects of the 2006 reform, with an increase of dividend payout prior to 2006 and sharp drop in the following years.[7] Alstadsæter and Wangen (2010) instead look at shifts between closely-held and widely-held organisational forms, and find clear tax effects.

Finally, Thoresen and Alstadsæter (2010) investigate the effect of organisational shifts on small business owners' disposable income over the period 1993-2003. They use similar data to what is used in the present paper, and control for the endogeneity of the organisational shift using an instrumental variable approach. In the first stage regression of the instrumental variable approach, the authors find clear evidence of tax motivated organisational shifts from self-employment to widely-held firms. However, they lack information on corporate ownership for the period before 2004 because the relevant register (the *Shareholders Register*) was established in that year. If an individual is self-employed during the period from 1993 to 1995 and then recorded as owner of a corporation in 2004, they consider him to having changed organisational form during the second period of analysis, from 1996 to 2003.

Overall, previous studies have found consistent evidence of tax induced shift behaviour by owners of small firms. However, the lack of appropriate data to link companies to their individual owners and to their employ-

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[7] see next section for details on the 2006 tax reform.

ees,[8] and limited use of clear exogenous variation in the treatment, implies that credibility may be questioned. The novelties of the present analysis, compared to the previous research are two. First, the availability of individual level administrative data allows me to provide a comprehensive description of the universe of Norwegian small business owners over the period 2004−2011. Second, the opportunity to exploit the 2006 reform together with spatial variation in payroll tax represents a possibility to credibly identify the effect of tax incentives on the entrepreneurs' choice of organisational form.[9] Therefore, the present paper aims at providing new evidence on the relationship.

3 Institutional background: business taxation in Norway

3.1 Period 1992-2006

Since 1992 the Norwegian tax system can be identified as a dual income tax system, see Sørensen (2005). The schedule was modified through the tax reform of 2006 - the reform which is used in the present analysis to identify tax effects on organisational shifts. A dual income tax system is characterised by a flat and low tax rate on capital income in combination with a progressive tax on labour income. The Achilles heel of the dual income tax system is the taxation of small businesses (Sørensen, 1994). In the following I shall explain how they were taxed after the reform in 1992, and how the tax reform of 2006 changed schedules and incentives.

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[8] Thoresen and Alstadsæter (2010) use the *Shareholders Register* but in an early phase.

[9] The use of geographical variations in payroll taxation have been subject of several studies, mainly aimed at evaluating the effects on employment. See Saez, Schoefer and Seim (2017) for a recent survey of the literature, and Dale-Olsen (2018) for a study on the effects of the Norwegian payroll tax increases during the period 2001−2011 on workers' hourly wages and unemployment rates.

Throughout the period up to the 2006 reform, there was a large difference between the top marginal tax rates on capital and labour incomes. To reduce possibilities of shifting between tax bases, business income generated by self-employed individuals and closely-held corporations was subject to the "split model", that established strict rules for dividing the generated profits into capital income, taxed at a flat 28 percent tax rate, and labour income, to which social insurance contribution and a progressive surtax were also applicable. More specifically, the value of invested capital was first multiplied by a fixed rate of return, set by the government, in order to establish an imputed return to capital, taxed at the flat rate. The imputed labour income was taxed as wage income.[10] Importantly, this income was not subject to the employers' social insurance contributions on the imputed labour income.

For widely-held corporations, the profits were subject to the flat corporate tax rate of 28 percent. The active owners could then decide to pay themselves through dividends or wages: distributed dividends were tax-exempt, as taxpayers receiving dividends were given full credit for taxes paid at the corporate level, whereas wages would be subject to regular wage taxation and payroll tax.

The top marginal tax rate for self-employed individuals and owners of closely-held corporations was 51.7 percent in 1992. Owners of widely-held firms could instead take advantage of the low tax on dividends, at 28 percent. The top marginal tax rate for owners of widely-held corporation remained stable at 28 percent whereas top marginal tax rate for business owners under the "split model" rose to 58.2 percent by 2004, see Figure 1. Hence, the tax incentives to move out of the "split model" into a widely-held corporation were high, and Thoresen and Alstadsæter (2010) show a

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[10] The self-employed paid a higher social insurance contribution than employees, e.g., in 2004, 10.7 percent vs. 7.8 percent.

steady stream of switches into the widely-held organisational form.

3.2   The 2006 reform

The deficiencies of small business taxation received considerable attention in the years after the 1992 reform. In particular, it raised issues concerning the legitimacy and the fairness of the tax schedule.[11] Thus, the 2006 tax reform was introduced to minimise opportunities of tax avoidance, making the organisational choice less dependent on the tax schedule. In order to achieve this goal, the reform was designed to equalise marginal tax rates, letting the highest marginal tax on wage income (including both social security contributions and labour income taxation) be close to the marginal tax on dividends.

In practice, the reform introduced the following main modifications:

- The distinction between widely-held and closely-held corporations was removed.

- A new tax on distributed dividends, exceeding an allowance, was introduced. This allowance is calculated as the cost of the share multiplied by a risk-free rate of return, that should represent the after-tax return on a risk-free investment. In this way, the top marginal tax on income from dividends rose to 48.2 percent.[12]

- The top marginal tax rate on labour income decreased: the two surtax rates were reduced from 12 percent to 9 percent and from 15.5 percent to 12 percent. The highest marginal tax on wage income (excluding

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[11] See for instance the recommendations (in Norwegian) by the Ministry of Finance included in the Report to the Parliament No. 29 (2003-2004)(Norwegian Ministry of Finance, 2004), or the Norwegian tax reform committee proposal, as reported in Sørensen (2005).

[12] Both the corporate tax rate and the tax rate on distributed dividends were set at 28 percent. As such, the top marginal tax is $48.2\% = [0.28 - ((1 - 0.28) \times 0.28)] \times 100$.

employers' social security contribution) was thereby reduced to 47.8 percent.

Figure 1: Top marginal tax rate of self-employment income and dividends, 2004, and 2006
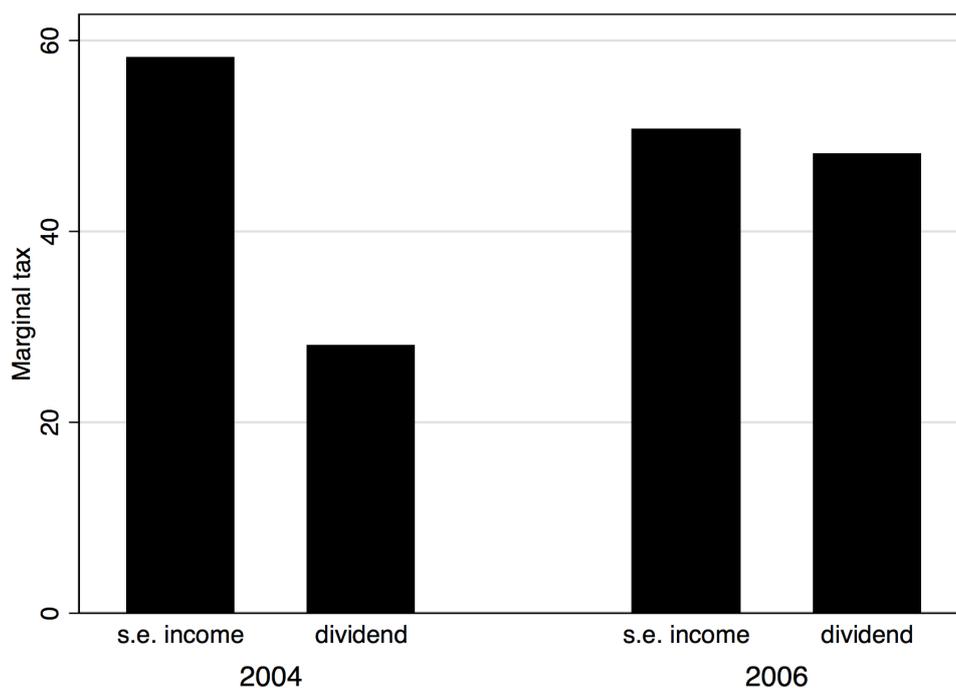
Notes: Figure 1 shows the difference between the top marginal tax on self-employment income and dividends (including the corporate tax) for 2004 and 2006. *Source*: Author's Calculation.

As shown in Figure 1, the reform resulted in a substantial reduction in the difference between the top marginal tax rate on wage and dividends. The effective taxation of the self-employed did not change much because of the reform. In particular, the imputed capital income is still subject to the 28 percent rate, and labour income is progressively taxed in a similar way as wage income. National insurance contribution and surtax are calculated on the imputed labour income so that the top marginal tax rate was 50.7 percent in 2006.[13] The reform led to significant changes to the effective tax-

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[13] Self-employed individuals pay higher national insurance contribution than wage earn-

ation of active owners of corporations: after the reform, taxation depends on the way active owners decide to pay themselves, as they can choose any combination of wages and dividends.

3.3 The geographically differentiated payroll tax system

The other key element in the empirical strategy of the present study, in addition to the 2006 tax reform, is the differentiated payroll tax schedule, which means that the reform affects taxpayers dissimilarly. Employers in Norway pay social security contributions on gross salaries of their employees. Since 1975, the contribution rates have been geographically differentiated according to the home address of the firms' workers in order to compensate disadvantaged areas of the country.[14] Employers with employees located in Zone 1 (where 80 percent of the total population resides) are subject to the highest contribution rate, set at 14.1 percent, whereas those located in Zone 5 (the northernmost and least populated region) do not pay any payroll tax.[15]

The payroll schedule of Norway is controversial, and has been changed during the period I use for the empirical investigation. The geographically differentiated system remained unchanged until 2002, when the EFTA court ruled that it was in breach of the European Economic Area (EEA) regu-

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ers (10.7 percent and 7.8 percent in 2006), which results in the difference in top marginal tax (47.8 percent vs. 50.7 percent).

[14] Since 2007 the contribution rates are geographically differentiated according to the location of the plant.

[15] Until 2004 Zone 1 included Sør-Trøndelag and the southern coast and major cities in the west of Norway and the rate was set to 14.1 per cent. Zone 2 was constituted of the rest of Southern Norway with the exception of Northern Oppland and Hedmark and the rate was set to 10.6 per cent. Zone 3 was Northern Oppland, Hedmark and southern Sør-Trøndelag and the rate was set to 4 per cent. northern Nord-Trøndelag, Nordland and Troms except Nord-Troms with a rate of 5.1 per cent were in Zone 4, and finally Zone 5 included the far northern regions of Nord-Troms and Finnmark and the rate was set to 0 per cent. Some changes to the zones were introduced in 2007, as explained in the text.

lations regarding state-aid rules, and that it would have to be phased out from most areas over the period 2004-2007. During the transitional period, payroll tax rates increased gradually in zones 3 and 4, and by 2007 were supposed to converge to the level of Zone 1. Firms in Zone 2 were subject to the same rate as in Zone 1 already in 2004. However, some compensatory measures were introduced to uphold employment in the affected areas. These measures took the form of *de minimis* aid of up to 100,000 EUR over three years to private sector firms. In practice, Norway was allowed to keep the geographically differentiated rates as long as the total support to a firm did not exceed 33,333 EUR per year. The government believed that this compensatory scheme was able to compensate firms smaller than 11 employees in Zone 3 and 4, and smaller than 21 employees in Zone 2 (The Standing Committee on Finance and Economic Affairs, 2004).

In 2007 the EFTA court allowed again payroll taxes to differ across regions, with some modifications compared to the 2003 system. First, the zones increased from 5 to 7 (see Figure 2). Second, the assignment of individuals to tax zones was now based on the location of the firm, and not on the workers' residence. Nevertheless, cross-regional differences in payroll taxation were kept relatively stable over the period 2004−2011. The compensation schemes targeted to small businesses in the transitional period were in effect similar to the schedules in other time period. Thus, I can safely assume that cross-regional differences in payroll taxation remained always in place throughout the period 2004−2011 for what concern owners of small businesses, which are the object of study of the present paper.

Figure 2: Zones for the social security contribution 2007-13

Zone V (0 %)

Zone IVa Bodø and Tromsø (7,9 %)

Zone IV (5,1 %)

Zone III (6,4 %)

Zone II (10,6 %)

Zone Ia (10,6 %   until de minimis limit, then 14,1 %)

Zone I (14,1 %)
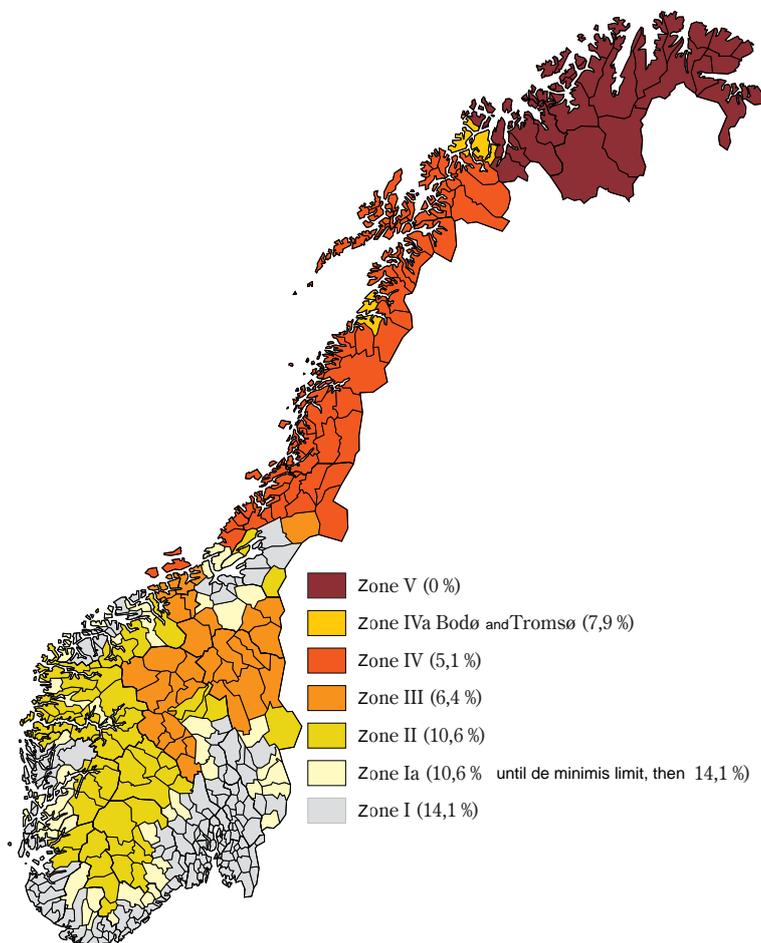
Source: Statistics Norway.

3.4   Small businesses, pay-roll tax and incorporation incentives

The 2006 tax reform, in combination with the differentiated payroll sched-
ule, offers a possibility to study how tax incentives affect the choice of
organisational form by small business owners. The reform abolished the

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distinction between closely and widely-held corporations, as the "split" model was terminated. More importantly, the introduction of the dividend tax above a standard rate of return reduced the incentives to incorporate, but to different degrees in different geographical areas. Recall that owners of corporations may get paid in terms of wage and/or dividends. As the former type of income is also subject to social security contributions (payroll tax), whose rate depends on the geographical location of the employee (of the firm plant from 2007), tax incentives to incorporate were weaker after the 2006 reform, but, importantly, the changed incentives are non-uniform across payroll zones.

I illustrate with a simple example how the tax incentives to incorporate varied both across time and space, with the introduction of the 2006 tax reform. Let us consider an individual that is either: a) active owner of a small (widely-held) incorporated firm; or : b) self-employed, both before and after the 2006 reform.[16] For simplicity I consider the case of a pre-tax profit equal to 500,000 NOK, which is the unique source of income for the individual, and on which only the standard income tax allowances and deductions apply.[17] Furthermore, I assume that there is no capital invested in the business activity.[18]

The upper panel of figure 3 describes the taxation of business incomes in 2004 and plots the average tax rate for a) an active owner of a small

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[16] To keep the example simple, I do not consider owners of closely-held corporations, as their taxation was very similar to what applied to the self-employed.

[17] According to exchange rates for 2005: 1 EUR = 8.01 Norwegian kroner (NOK), and 1 USD = 6.46 NOK. The average reported business income in the self-employed sample is equal to 480,000 NOK in 2005.

[18] Information about assets in the firm is important for tax purposes. The majority of self-employed individuals in the sample either does not report imputed capital income, or it is a small fraction of the reported business income. The basis for the deduction of the risk-free return on invested capital, relevant in the distributed dividend taxation, is the share's acquisition value. I do not have information about the nominal value of the shares for owners of incorporated businesses. For simplicity, I assume that only the minimum of 30,000 NOK is paid for establishing the company. This is used, together with the interest rate set by the government, which for the year 2006 was 2.1 percent, to calculate the deduction for risk-free return.

(widely-held) corporation, and for b) a self-employed owner of a small firm, as a function of the percentage of wage income. It follows that, for the self-employed, the tax rate is constant at 38.4 percent, not dependent on the geographical location and on the percentage paid as wage income. On the contrary, the average tax rate for the owner of an incorporated firm depends on the payroll region and on the share of income paid via dividends relative to wage. The individual is better off by receiving most payments only as tax-free dividends, taxed at 28 percent.[19] Overall, incorporation entails substantial tax advantages, driven by the difference between taxation on labour income and corporate income. Importantly, given the ambition of the present paper, regional heterogeneity in payroll taxation has only little effect on the average tax, 0.9 percentage points at the minimum.[20]

The lower panel plots a similar graph for the first post-reform year, 2006. For the self-employed individual, the average tax rate is again constant across regions, and is equal to 35.5 percent. For owners of incorporated firms the average tax rate varies across geographical areas, and depends on how large the share of income paid via wage is. Most importantly, in the post-2006 scenario, tax incentives to incorporate are different in different zones over a large interval of wage shares. Individuals in areas with low payroll taxation (3, 4 and 5) can decrease their tax bill below what is paid in self-employment. This is not the case for individuals in other zones, who instead attain the lowest possible tax bill by being self-employed.

The example shows how the 2006 tax reform has increased the significance of the regionally differentiated payroll tax for the choice of organisational form by small business owners. Of course, there are still sev-

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[19] However, at the minimum, that ranges between 26.4 percent in Zone 1 to 25.7 percent in region 5, the wage payment is around 10 percent of the net income generated by the business, because of the standard deduction and minimum allowances.

[20] Special tax rules apply to taxpayers resident in Zone 5. In 2004 (2006) the first surtax was 9.5 (7) percent instead of 13,5 (9), and the capital income rate was 24.5 percent instead of 28 percent. But the special rules also apply in 2006, so the graph does not reflect these rules.

Figure 3: Taxation for self-employed individual and owner of corporation, 2004 and 2006
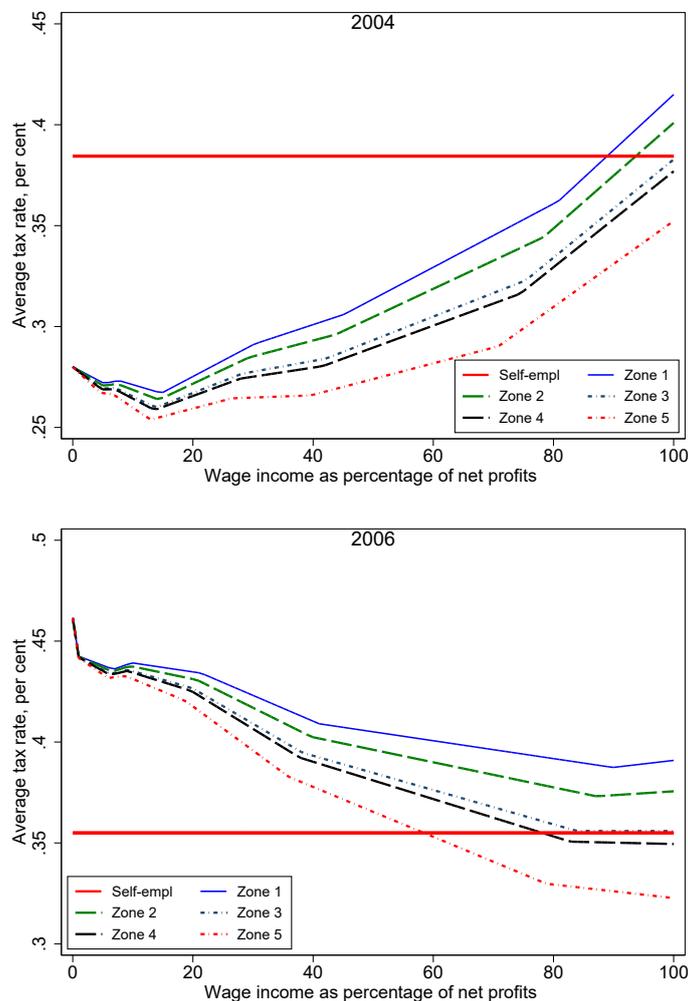
Notes: The upper panel shows the average taxation for an small business owners with net profit equal to 500000 NOK in 2004, with no invested capital in the firm. The horizontal solid line represents the average tax in case he is self-employed. The other lines represent average taxation for the same business owner as active owner in a widely-held corporation, dependent on the payroll tax zone. The lower panel present the same analysis for the year 2006.

eral non-tax factors that can affect the choice of organisational form, and it is reasonable to expect that large firms will be incorporated anyway.[21]

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[21] Limited liability of shareholder, potentially unlimited life, and flexibility in equity or debt financing are characteristics of the corporations that are relevant for large firms (Edmark and Gordon, 2013).

Furthermore, also among owners of small businesses there are other considerations that may play an important role when deciding whether to incorporate, and how to extract income from the company.[22] Nevertheless, the differentiated payroll tax regime is expected to have affected the organisational form decision after the 2006 reform. In the next sections I probe deeper into the identification of this effect, and to what extent it is generalizable for tax induced choices of organisational form.

4   Description of the administrative datasets

The present study has benefited from the access to several administrative data-sets. Information on annual income, education, municipality of residence and other socio-demographic characteristics for the period 2004−2011, is obtained from the *Statistics on Persons and Families*, see Statistics Norway (2005) for documentation on this data source. The data contain information retrieved from all income tax returns obtained from the National Tax Administration, together with detailed information on other socio-demographic characteristics like age, gender, education, citizenship and municipality of residence. The self-employed can straight forwardly be identified as they report positive or negative business income.

A major challenge in this type of work is to identify the individuals who have chosen to incorporate, i.e., being a major shareholder in combination of being employed in the same firm. In order to link companies and their active owner(s) I exploit information from in the *Register of Shareholders* and the *End of the Year Certificate Register*. The first register links every Norwegian corporation to its shareholders; and includes the number of shares owned by each shareholder. The *End of the Year Certificate*

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[22] For instance, active owners of corporations may prefer to receive substantial wages, as earnings are the basis for future pensions payments (Fjærli and Lund, 2001).

Register register links each employee to his employer(s), and records the annual earnings. With this information I can connect each company to its owner(s) and employees, and thereby identify the population of active owners. See Statistics Norway (2009, 2017) for documentation of the registers and related statistics.

The data is restricted to include only individuals for whom the business represents the main occupation, measured as the main income generating activity. To this end I follow the strategy proposed by Berglann et al. (2011), with some modifications.[23] First, the definition of the self-employed is based on reporting net profit as the main source of income. Second, the individual is an active owner of a corporation if she/he owns at least 35 percent of the shares and if the annual income from the same company (earnings plus dividends) is the main source of the income.[24] I further restrict my sample to Norwegian citizens, aged 25 to 60. I also exclude businesses involved in the following sectors: agriculture, forestry or fisheries.[25] If more than one person in the same household is defined to be a business owner, only the person with the highest income from the firm is included in the sample, in order to avoid including the same family activity twice.[26]

After sample restrictions, the dataset consists of more than 270,000 individuals and approximately 1 million year observations across the period

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[23] They have extra information on those, within a corporation, having managerial roles.

[24] The ownership share restriction is aimed at excluding workers with participation in the firm but without any managerial role or control over the business decisions. In the Appendix section A.1 I present robustness checks with several different corporate ownership threshold (10, 20, 30, 40 and 50 percent). The results are qualitatively robust to the choice of the threshold. Note that in the pre-reform period the group of active owners of the incorporated firms includes both owners of closely-held and widely-held corporation, because the data does not allow to distinguish between the two organisational form.

[25] Norway maintains high support for these sectors through different measures such as administered prices, import quotas and the geographical distribution of these businesses activity is possibly correlated with the the regionally differentiated payroll tax.

[26] We can not rule out that members of the same family work in the same family business, and own shares in it.

Table 1: Summary statistics, by organisational form

	Incorporated	Unincorporated	Total
Zone 1	0.79	0.80	0.80
	(0.41)	(0.40)	(0.40)
Zone 2	0.09	0.10	0.09
	(0.28)	(0.29)	(0.29)
Zone 3	0.02	0.03	0.02
	(0.14)	(0.16)	(0.15)
Zone 4	0.09	0.07	0.07
	(0.28)	(0.25)	(0.26)
Zone 5	0.02	0.01	0.02
	(0.14)	(0.12)	(0.13)
Age	45.74	44.59	44.96
	(8.47)	(9.36)	(9.10)
Male	0.79	0.64	0.69
	(0.40)	(0.48)	(0.46)
High School drop-out	0.14	0.21	0.19
	(0.35)	(0.41)	(0.39)
High School graduates	0.57	0.49	0.52
	(0.49)	(0.50)	(0.50)
University	0.29	0.30	0.29
	(0.45)	(0.46)	(0.46)
Number of obs.	335779	713454	

Notes: Mean and standard deviation in parenthesis. Final sample, after restrictions described in section 4 are applied to the initial data. Zone 2 was split in 2007 and part of it became Zone 1a. The municipalities of Bodø and Tromsø, in Zone 4 until 2006, formed a Zone 4a since 2007. The "Zone" is assigned to the business owner based on the municipality of residence.

2004−2011. On average individuals are in the sample for four years. Table 1 reports individual summary statistics split by the dependent variable, organisational form. There are around 335,000 incorporated and 713,000 unincorporated observations. We see somewhat higher concentration of self-employed individuals in the western and southern regions of the country (Zone 1 and Zone 2). Zone 1 accounts for 80 percent of the observations in the sample, which is near the share of the Norwegian population. The two groups are relatively similar, but we observe somewhat lower education levels among the self-employed.

Table 2 presents summary statistics with respect to the zone of residency of the owner. The main differences between zones are the average

education (business owners in Zone 1 are more educated and somewhat younger than in other zones) and the rate of incorporation. The average rate of incorporation across the period of analysis is 32 percent, but is higher in Zone 4 and Zone 5 (around 40 percent).

Some potential limitations in the data are discussed in the Appendix, Section A.2. In particular, I do not observe the municipality where each firm is located, which is the relevant information to determine the payroll zone, and in turn the payroll tax rate since 2007. Instead, I rely on the municipality of residence of each owner to assign the payroll tax.

Table 2: Summary statistics by zone of residence.

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Age	44.75	45.74	45.70	45.80	45.82
	(9.13)	(9.01)	(8.88)	(8.86)	(8.92)
Male	0.69	0.69	0.70	0.71	0.71
	(0.46)	(0.46)	(0.46)	(0.45)	(0.45)
High School drop out	0.18	0.21	0.19	0.21	0.27
	(0.39)	(0.41)	(0.40)	(0.41)	(0.44)
High School graduate	0.50	0.61	0.63	0.54	0.52
	(0.50)	(0.49)	(0.48)	(0.50)	(0.50)
University	0.32	0.18	0.17	0.24	0.21
	(0.47)	(0.38)	(0.38)	(0.43)	(0.41))
Incorporated ($I_{ist} = 1$)	0.32	0.30	0.27	0.38	0.41
	(0.47)	(0.46)	(0.44)	(0.48)	(0.49)
Number of obs.	834894	97491	24352	75811	16685

Notes: Mean and standard deviation in parenthesis. Final sample, after the sample restrictions described in section 4. The zone is assigned based on the municipality of residence of the business owner.

5 Identification strategy

The interaction between the tax reform of 2006 and the differentiated payroll tax schedule is used to identify tax effects on small businesses organi-

sational form. If tax incentives matter, the share of incorporated business owners is expected to have increased relatively more in zones with lower payroll tax, following the 2006 reform, see Figure 3. As explained previously, the Norwegian payroll tax system with geographically differentiated tax rates has remained relatively stable, at least for small business owners, throughout the period of analysis. In order to test this hypothesis, I define the following variables: I_{ist}, the outcome variable, is equal to 1 if the small business owner i in zone s and year t is the (co-)owner of an incorporated firm and 0 if the business owner is self-employed; PR_s is the payroll tax rate in zone s (defined in deviations from the payroll tax in Zone 1, which is 14.1 percent):

$$PR_s = \begin{cases} 0 & \text{for observations in Zone 1,} \\ 0.141 - 0.106 = 0.035 & \text{for observations in Zone 2,} \\ 0.141 - 0.064 = 0.077 & \text{for observations in Zone 3} \\ 0.141 - 0.051 = 0.090 & \text{for observations in Zone 4,} \\ 0.141 - 0.079 = 0.062 & \text{for observations in Zone 4a,} \\ 0.141 & \text{for observations in Zone 5;}\ [27] \end{cases}$$

X_{ist} is a vector of individual level characteristics; λ_t and γ_s are, respectively, year and Zone fixed effects, and D_t is a binary variable that takes the values of one for observations in 2006 or after, and 0 otherwise.

[27] Zone 4a was created in 2007 and consisted of the main cities included in Zone 4. Before 2007, the PR_s for Zone 4a is equal to PR_s for Zone 4. Furthermore, in 2007 some municipalities in Zone 2 became Zone 1a, as reported in Figure 2. Payroll tax is paid in Zone 1a at the same rate as Zone 2 (10.6 percent) until the difference between the employer's social security contribution paid at this rate and what the amount paid would have been at a rate of 14.1 percent equals the *de minimis amount*. The Zone 1 rate (14.1 percent) is then applied to any contribution base in excess. In 2007, the threshold amount was NOK 530,000 per company. For the purposes of this paper, we can safely consider those municipalities as Zone 2 even after 2007

The baseline difference-in-differences model is

$$I_{ist} = \gamma_s + \lambda_t + \delta\left(PR_s \times D_t\right) + X'_{ist}\beta + \epsilon_{ist}, \tag{1}$$

and is estimated by OLS (linear probability model), as all the other subsequent specifications.[28] In this set-up, the coefficient of interest is δ, the coefficient on the interaction between PR_s and D_t. It captures the average effect of one percentage point decrease in payroll tax on the rate of incorporation, if the identifying assumption holds. As in any difference-in-differences analysis, the identifying assumption is the so called parallel trend assumption. In this case, it states that in the years after 2006, the trends in incorporation across different zones would have remained the same as before, in the counterfactual scenario in which the 2006 tax reform had not been introduced.

Although untestable, I can provide evidence in support of this assumption by showing that in the period before the reform the trend in incorporation rate was indeed parallel across different payroll zones. In order to do so I modify the baseline model by interacting PR_s with a dummy for each year, instead of interacting it with the post-reform dummy D_t as in model 1. The extended model is:

$$I_{ist} = \gamma_s + \lambda_t + \delta_{2004}\left(PR_s \times \lambda_{2004}\right) + \sum_{\tau=2006}^{2011} \delta_\tau\left(PR_s \times \lambda_\tau\right) + X'_{ist}\beta + \epsilon_{ist}, \tag{2}$$

where δ_τ captures the effect of one percentage point decrease in payroll tax on the share of incorporated firms in year τ relative to the last year before the reform, that is 2005 (the omitted category). If the regionally differentiated payroll taxation became relevant in shaping the incorporation

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[28] Alternatively, one could estimate by probit or logit, but that is problematic because non linear models violate the standard parallel trend assumption that identifies the difference-in-differences effect (Lechner, 2011).

decision among small business owners only after the 2006 reform, then $\delta_{2004} = 0$ (Lechner, 2011). The pattern of the δ_τ coefficients for $\tau \geq$ 2006 is also of interest in order to investigate the dynamic evolution of the estimated effects over the post-reform years.

A possible threat to my identification strategy, common to most studies of this type, is the potential presence of other reforms or shocks taking place in 2006, and differentially affecting the payroll zones. Potential candidates for these threats include other modifications of the tax system implemented in the 2006 reform. However, I am not aware of any other region-specific policies or other potential confounding factors, which can be interpreted in such a manner.

6 Main empirical results

Table 3 reports the main results of the analysis: the coefficients δ or δ_t from models 1 or 2, with clustered standard errors reported in parentheses.[29] Column (1) reports results from Model 1 estimated only on years from 2004 to 2006. The coefficient reported is the interaction between the 2006 dummy D_t and PR_s. As expected, the sign is positive and implies that a 1 percentage point decrease in the payroll tax rate (PR_s) increases the probability of incorporation by 0.13 percentage points, which corresponds to a 0.5 percent increase over the average incorporation rate in the estimation period and across all regions. Thus, as this effect materialises in the first post-reform year, it is interpreted as a short-term effect. In column (2) I also control for individual characteristics: age, gender and education

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[29] Reporting clustered standard errors is important to account for serial correlation, see Bertrand, Duflo and Mullainathan (2004). The clusters are the 46 Norwegian labour regions as defined in Bhuller (2009). As a robustness analysis I also estimates the same regressions with standard errors clustered at the level of the 89 economic regions defined by Statistics Norway (2001). These regions represents to 89 travel-to-work areas or common labour markets. As inference with both type of clustered standard errors remain similar, I do not report this additional results.

level. Other regional level variables that have been found to be important determinants of the decision of organisational form, as the unemployment rate (Goolsbee, 2004), are difficult to control for in the present study, as they may be also affected by the differentiated payroll tax regime (Angrist and Pischke, 2009).[30] We see that the point estimate of column (2) is close to the estimate of column (1), and we still see a clearly significant effect.

Table 3: Difference-in-differences estimation results

	(1)	(2)	(3)	(4)	(5)	(6)
$PR_s \times D_t$	0.133***	0.116***	0.229***	0.192***		
	(0.0397)	(0.0378)	(0.0574)	(0.0546)		
$PR_s \times \lambda_{2004}$					-0.0267	-0.0283
					(0.0354)	(0.0359)
$PR_s \times \lambda_{2006}$					0.120***	0.101***
					(0.0377)	(0.0367)
$PR_s \times \lambda_{2007}$					0.118**	0.0947*
					(0.0498)	(0.0515)
$PR_s \times \lambda_{2008}$					0.153**	0.123**
					(0.0593)	(0.0602)
$PR_s \times \lambda_{2009}$					0.203***	0.163**
					(0.0631)	(0.0613)
$PR_s \times \lambda_{2010}$					0.334***	0.278***
					(0.0713)	(0.0651)
$PR_s \times \lambda_{2011}$					0.392***	0.334***
					(0.0876)	(0.0785)
Years	2004-2006	2004-2006	2004-2010	2004-2010	2004-2010	2004-2010
Zones effects	Yes	Yes	Yes	Yes	Yes	Yes
Years effects	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes
N	406235	406235	1049232	1049232	1049232	1049232

Notes: Clustered robust standard errors in parentheses. Stars * / ** / *** denote p-values < 0.10 / 0.05 / 0.01. Columns (1) to (4) are estimates of the model in Equation 1, columns (4) to (5) are estimates of the model in Equation 2. Controls (not reported) are: gender dummy, age, 5 educational level dummies. $PR_s \times$ 2005 is omitted.

Columns (3) to (6) report results from models estimated on the entire available sample period, from 2004 to 2011. Columns (3) and (4) report the estimated δ from Model 1, which here captures the average effect over the entire post-reform period. The point estimate is almost two times larger than estimates of columns (1) and (2), indicating that the effect of the
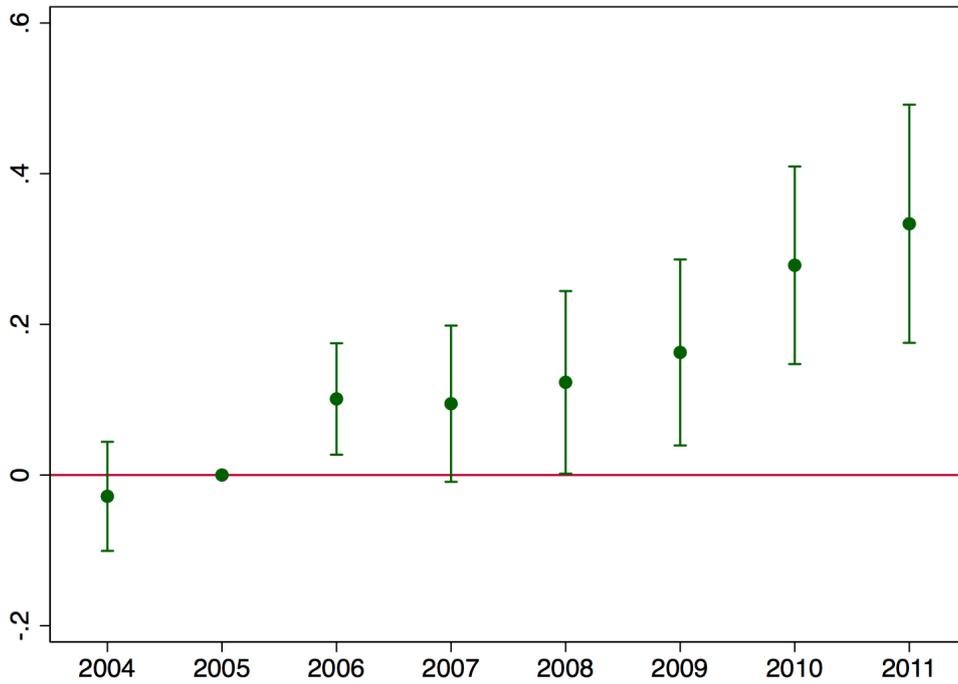
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[30] As previously explained, depopulation and high unemployment rates in peripheral regions in Norway are the main reasons why the payroll regional regime was initiated in the first place.

tax change increases over time. Finally, columns (5) and (6) presents result from Model 2, without and with individual level controls, respectively. This is the most flexible difference-in-differences specification, allowing for leads and lags in the treatment effect.[31] Note that the coefficient δ_t for 2004 is very small and not significantly different from zero. This result suggests that there was a parallel trend in the pre-reform period, which provides support to the key identifying assumption.[32] Furthermore, the Model 2 specification opens up for the examination of the timing of the effects. All coefficients δ_t are positive and significant at least at the 10 percent level $\forall\ t \geq 2006$, and they are larger for later year, see Figure 4, which plots point estimates and 95 percent confidence intervals of the coefficients in column (6) over time. This pattern suggests that after the initial increase in incorporation that took place in 2006, the reform continued to induce small business owners to incorporate in areas with lower payroll taxation, relative to areas with higher payroll taxation. Thus, this finding is consistent with small business owners adapting to the change in incentives over time, which is probable. The smallest estimates in column (6) implies that a 1 percentage point decrease in payroll taxation increased the probability of owners being incorporated by 0.33 percentage points, close to a 1 percent increase over the average incorporation rate in the estimation period and across all regions.

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[31] A similar specification is used in Autor (2003), where the author studies the contribution of unjust dismissal state regulations in the U.S. to outsourcing employment. However, in his case, the states introduced the policies at different point in times, and the period is longer than the current analysis.

[32] One alternative way to test the assumption of parallel trend is to include zone-specific linear time trends among the controls. However, parametric local trend should only be included in the specification when the pre-treatment period is long enough (Wolfers, 2006; Angrist and Pischke, 2009), which is not the case here.

Figure 4: Points estimates and confidence intervals

7 Robustness tests

In this section I shall further explore to what extent results are sensitive to some of the assumptions of the empirical analysis. First, I exclude from the sample owners of businesses with less than 10 employees. As discussed in Section 3, the tax incentives stemming from regional payroll taxation are weaker for larger firms. Estimating our baseline specification on a sample of large firms is akin to a placebo test, and I expect to find no effect of the reform in this sample. I use the number of employees (excluding the owner(s)) to proxy for firm size.[33] The information on the number of employees comes from an additional data source:the *Register of Business*

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[33] I lack data on alternative measures (e.g., turnover, number of establishment, etc.) that would be more suitable to used as indicators of firm size.

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Enterprises (*Foretaksregisteret* in Norwegian). This register provides information on the legal entity and ownership structure of unincorporated firms (self-employment and partnerships). This additional data source allows me to link individuals who are self-employed (because they report business income in the tax-return) to characteristics of their firm.[34] The overall number of observations for firms with at least 10 employees accounts for around 10 percent of the sample used in the baseline estimation. The results from estimating Equation 2 on the sub-sample of owners of large firms are reported in the first column of Table 4. As expected, the estimated coefficients are small and not significantly different from zero at the 10 percent level; thus, suggesting that the reform did not have any effect on large firms.

The second robustness test restricts the sample by dropping individuals who reside in municipalities which border a zone with a different payroll tax rate. As explained in the data section, the municipality of residence is my proxy for firm location, where the latter is what in reality defines the regional payroll tax rate after 2007. Therefore this test is aimed at dropping individuals who are more likely to be erroneously attributed to a wrong zone. Dropping these observations results in very similar coefficients (column (2) of Table 4) compared to the baseline (column (6) of Table 3).

Next, I also drop from the sample individuals who appear to have moved their municipality of residence from one zone to another. Removing these individuals from the sample implies a further examination of to what extent estimates depend on owners having changed their choice of organisation form, rather than the result of migration patterns induced by the reform. The results from Model 2 estimated on a sample where "movers" and those

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[34] Registration in the *Register of Business Enterprises* was mandatory only for self-employed individuals operating in certain sectors, or if more than 5 workers were employed in the firm. Thus this includes all unincorporated firms with more than 10 employees. Around 60 percent of self-employed observations in the baseline sample are found in the *Register of Business Enterprises*.

living in border municipalities have been excluded, are reported in column (3) of Table 4. We see that the estimates are very close to the estimates of column (2). This is not surprising because the additional sample restriction causes a drop of only 2 percent of the sample used in column (2). We can therefore conclude that the estimated effect is not driven by movers.

Table 4: Robustness tests estimation results.

	(1)	(2)	(3)	(4)
$PR_s \times \lambda_{2004}$	-0.0606	-0.0319	-0.0423	-0.0288
	(0.0495)	(0.0476)	(0.0493)	(0.108)
$PR_s \times \lambda_{2006}$	-0.0316	0.117**	0.114**	0.269***
	(0.0372)	(0.0447)	(0.0508)	(0.0946)
$PR_s \times \lambda_{2007}$	-0.0289	0.152***	0.172***	0.229**
	(0.0366)	(0.0509)	(0.0570)	(0.104)
$PR_s \times \lambda_{2008}$	-0.0278	0.216***	0.224***	0.322**
	(0.0293)	(0.0452)	(0.0447)	(0.121)
$PR_s \times \lambda_{2009}$	-0.00489	0.252***	0.246***	0.300**
	(0.0442)	(0.0524)	(0.0522)	(0.132)
$PR_s \times \lambda_{2010}$	-0.0472	0.308***	0.322***	0.590***
	(0.0475)	(0.0540)	(0.0509)	(0.148)
$PR_s \times \lambda_{2011}$	0.0105	0.402***	0.408***	0.517***
	(0.0442)	(0.0640)	(0.0629)	(0.180)
Years	2004-2010	2004-2010	2004-2010	2004-2010
Zones effects	Yes	Yes	Yes	Yes
Years effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Excluded obs	Employees<10	Borders	Movers+borders	Zones 3-4-5
N	104626	676542	669741	952386

Notes: Clustered robust standard errors in parentheses. Stars * / ** / *** denote p-values < 0.10 / 0.05 / 0.01.

Finally, I restrict the sample to individuals who reside in zones 1 or 2. These two zones together account for 90 percent of the Norwegian population, while the excluded zones are more dissimilar from Zone 1, and are supported by a wide range of regional policies. The coefficients of Model 2 estimated on the sample of owners in zones 1 and 2 are reported in column (4) of Table 4. The estimates are qualitatively similar to the results in the baseline sample, but somewhat larger.

8 Conclusion

The present paper presents evidence of tax motivated organisational choice in Norway. In particular, I exploit the interaction between the 2006 tax reform and the pre-existing Norwegian system of geographical differentiated payroll tax rates. A main advantage of the present analysis, is the access to several sets of administrative data that allow me to identify self-employed individuals, as well as active owners of incorporated firms.

The results show a statistically significant effect of tax incentives on the choice of organisational form. In particular, according to the preferred specification, a one percent drop in the payroll tax increases the corporate share among business owners by 0.1 percentage point after the reform. After six years the estimated effect has tripled, and represents 1 percent of the average incorporation rate over the period and across all regions. The delayed effect may be due to learning effects, or because of different success rate and survival probabilities between incorporated and unincorporated firms. An important lesson to be drawn from the paper is need for more careful analysis of possible interaction with pre-existing regulation, when a new tax reform proposal is discussed.

Compared with the previous literature, the results are of similar magnitude as the ones reported in Edmark and Gordon (2013) for Sweden, but smaller than the estimates reported for the U.S. in Goolsbee (2004) and Liu (2014). The latter two studies find that an increase in the corporate tax rate by one percentage point reduces corporate share of firms by up to 2.5 percentage points and corporate share of economic activities by 2 to 3 percentage points, respectively. Difference in tax systems between the U.S. (where firms are much freer to chose organisational form) and the Nordic countries (where instead the dual income tax system has imposed some restrictions) are likely influencing responsiveness. However, it can not be

ruled out that differences in methods, type of data, industries and time periods considered also have an impact on the results.

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A Appendix

A.1 Different Corporate Ownership Threshold

Table 5 check how main results change if different definitions of owner of incorporated firm varies. In the main analysis a (co)owner of a incorporated firm is included in the sample only if the share they owned was larger than 35 per cent (and other condition about wage and dividends received by the same company were met). The following table replicate column (6) of Table 3 using different thresholds, e.g. in column (1) the threshold is 10 percent. The results are qualitatively robust to the choice of the threshold, even if, with lower thresholds, the estimates are less precise.

Table 5: Difference-in-differences estimation results, alternative definition of ownership

	(1)	(2)	(3)	(4)	(5)
$PR_s \times \lambda_{2004}$	-0.0287	-0.0230	-0.0436	-0.0334	-0.0343
	(0.0351)	(0.0343)	(0.0360)	(0.0343)	(0.0368)
$PR_s \times \lambda_{2006}$	0.0981**	0.0944**	0.0978***	0.0977***	0.0943**
	(0.0379)	(0.0394)	(0.0359)	(0.0357)	(0.0365)
$PR_s \times \lambda_{2007}$	0.0737	0.0731	0.0930*	0.0964*	0.0928*
	(0.0492)	(0.0481)	(0.0467)	(0.0520)	(0.0524)
$PR_s \times \lambda_{2008}$	0.0701	0.0722	0.100*	0.129**	0.127**
	(0.0550)	(0.0561)	(0.0547)	(0.0607)	(0.0613)
$PR_s \times \lambda_{2009}$	0.0958*	0.0920	0.135**	0.162**	0.165**
	(0.0519)	(0.0550)	(0.0566)	(0.0626)	(0.0641)
$PR_s \times \lambda_{2010}$	0.230***	0.222***	0.259***	0.280***	0.277***
	(0.0585)	(0.0649)	(0.0656)	(0.0675)	(0.0700)
$PR_s \times \lambda_{2011}$	0.280***	0.268***	0.303***	0.325***	0.329***
	(0.0692)	(0.0778)	(0.0809)	(0.0808)	(0.0848)
share of ownership	10	20	30	40	50
N	1218740	1164963	1101314	1039427	1006052

Notes: Clustered robust standard errors in parentheses. Stars * / ** / *** denote significance at the 0.10 / 0.05 / 0.01 level.

A.2   Data Limitation

Even if the data used for this project represents the most suitable one for studying income and organisational shifts as it allows to match employees with the owners of the firms and quantify wage and dividend payment (Gordon and Slemrod, 2000), there are nevertheless some issues that could hinder the empirical strategy. In particular, as explained by Berglann et al. (2011), complicate ownership structures, such as pyramids and ownership chains are present in the Data, and accounting for all linkages between different corporations is important to identify the final owners but can be a non-trivial task. For instance, individual A can be employed by firm X, be a major shareholder of firm Y, that in turn owns shares of firm A. At a first look, individual A appears as a employee and would not being included among business owners in my analysis. However, corporate ownerships are also registered in the data, so I am able to disentangle complicate ownership structures, link companies to the their final individual owners, and identify their degree of ownership.

Furthermore, combining data form different administrative registers can lead to some discrepancies. A few firms appears to have employees and paying wages in the *end of the year register* one or two years before the information about ownership structure is available in the *shareholders register*. It is possible to find firms that already pay some wages in year X being instead observed for the first time in the shareholder register in year $X + 1$. In the analysis presented in the text I use information from the *shareholders register* to establish the first year a incorporated firm was established. As a robustness check I instead advance the information about proprietorship of the firm to the year in which it first appears in the *end of the year* register, if it is earlier than in the *shareholders register*. For instance, if an incorporated firm A was observed to pay wages in year 2006

for the first year, but in the *shareholders register* the first year the firm was observed was in 2007, I advance the establishment of the incorporated firm by one year, and keep the ownership structure as reported in 2007. As the results are virtually the same, I do not report them here.

A final problem of the data that could represent a limitation to the present analysis is the lack of information about the municipality of the firm in the *end of the year* register. In the main analysis, I then proxy the municipality of the firm with the person municipality of residence. This approximation could create problems as, from 2007, the payroll regiment was determined by the firm municipality. As a robustness check I exclude from the analysis individuals that live in municipalities that border other zones. The main results are confirmed, as reported in table 4.