Shifts in Organizational Form under a Dual Income Tax System

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Abstract

Evidence of owners of small businesses engaging in tax motivated shifts in organizational form is scarce. The main reason is lack of micro data enabling us to track tax-payers' movements across organizational modes. By exploiting new panel data that combine information from several public registers, we observe Norwegian owners of small businesses and their organizational forms in the period from 1993 to 2003. Under the hypothesis that certain characteristics of the Norwegian dual income tax system encourage shifts into widely held corporations, we observe outcomes for different organizational form choices. We show that owners of small firms that became widely held corporations have higher income growth than those that remained in self-employment or as a closely held corporation.

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1. Introduction

In the literature the prime focus is on labor supply and investment decisions when studying behavioral effects of tax changes, and income growth among certain population groups is usually attributed to real effects induced by altered tax schedules. Similarly, the literature on effects of taxation of owners of small businesses considers entry and exit, assuming that a move into paid employment reflects a change in occupation. However, shifts into paid employment may simply be concealed tax avoidance, indicating that the active owners have chosen another legal organizational form for their firm, and the income growth that follows this move is simply reflecting a shift in their form of compensation. In this paper it is argued that the Norwegian dual income tax encouraged owners of small businesses to organize their activities in a widely held corporation, and we provide empirical evidence of such behavior.

A dual income tax system is characterized by combining a low proportional tax rate on capital income with a progressive tax rate on labor income, and was introduced in the Nordic countries in the early nineties.[1] Other countries have moved in the same direction, in pursuit of more lenient taxation of capital items, see the list in Sørensen (2005, p. 778). As stated by Sørensen (1994), the taxation of small businesses is the Achilles heel of the dual income tax. For medium and high income classes, the wide disparity between marginal tax rates on capital and labor income provides an incentive for income shifting from labor income to capital income in order to minimize tax payments. This necessitates special income-splitting rules for small businesses; see Lindhe et al. (2004) and Alstadsæter (2007) for descriptions of the different solutions chosen in the Nordic countries.

The Norwegian version of a dual income tax system, introduced with the tax reform of 1992, implies that both the self-employed individuals and owners of closely held corporation (i.e., corporation where more than two thirds of the shares are owned by individuals who are active in the daily operation of the business) are subject to splitting of incomes into capital and labor income tax bases, with a progressive surtax schedule in work for labor income. This dual income tax system encourages some owners of small businesses to choose incorporation into a widely held corporation, dependent on firm characteristics, enabling them to reduce their tax bill by paying themselves shareholder income instead of managerial wage. We hypothesize that the wedge between the marginal tax rates on labor income and capital income as well as the mandatory income splitting for self-employed and owners of closely held corporation encourage conversion to widely held corporation.

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[1] The dual income tax was introduced in Sweden in 1991, Norway 1992, and Finland 1993. The idea originated in Denmark, and was implemented in their 1985 tax reform. Later they introduced a hybrid system, mostly due to redistributive concerns; see Sørensen (1994, 1998), Cnossen (2000) and Boadway (2004) for more on the dual income tax.

This is a continous process, not driven by a particular tax change. Rather, it is driven by the incentives inherent in the Norwegian dual income tax system. Whether the firms shift legal form or not, depends on the type of business they are running and on the level of profits they generate. In the present paper we study this empirically by analyzing register-based panel data for the period 1993–2003, i.e., a period of 11 years with the 1992 reform in place. We analyze income gains, organizational shifts and tax system designs, evaluating outcomes and incentives for tax-payers involved in such activities.

Such analyses require data with high informational content. In standard micro data, owners of small businesses who incorporate for tax reasons will appear in the statistics as exits out of self-employment and as entries into paid employment, as they now formally are employees in a corporation. It is therefore crucial to obtain information about ownership of shares. Data retrieved from the newly established Register of Shareholders and other public register allowed us to identify individuals who combine being an employee with being a major shareholder in the same corporation. In the present analysis we link this information to panel data, based on income tax returns for the period 1993–2003.

Contrary for instance to Romanov (2006), we do not rely on specific tax changes to identify the relationship between taxes and organizational shifts. The empirical strategy uses the panel design of data, dividing the time period into three: 1993–1995, 1996–2000 and 2001–2003. Only business owners who are sole proprietors or in a closely held corporation in the first period (1993–1995) are included. We explore the longer middle period for evidence of organizational. This allows us to discuss relations between (predetermined) first period factors and second period shifts. We also want to examine whether shifting resulted in increased income. By comparing the income of "shifters" and "nonshifters" in period 3 (2001–2003) and period 1 (1993–1995), we can assess the effect of organizational shift on income growth. An alternative explanation is that small firms change organizational setup as a step in their life cycle: as firms grow and mature, incorporation is a natural policy.

In this setup, shift and income growth are simultaneous variables. In fact, income growth could also be used as an explanatory variable for shift. Thus, an instrumental variable regression approach, using first period characteristics as instruments for shifts, establishes relationships between the main variables of the issues raised in this study: income growth, organizational shifts and features of the Norwegian dual income tax system. We derive estimates for the effect of shifting on income growth by using a difference-of-difference specification and instrumental variables techniques, and we also compare parameter estimates from this set-up to ordinary least squares estimates. Moreover, relationships between shifting and specific properties of the dual income tax system are discussed separately by estimating a probit model for the shift decision.

We find evidence that owners of small businesses choose a widely held form organization because of the interaction between business characteristics and features of the dual income tax, and that they have experienced a considerable income gain from these shifts. To our knowledge, the present paper is the first to combine information from individual panel data and corporate data to analyze organizational shifts. In general, the empirical evidence of effects taxation on organizational shifts is scarce; some recent exceptions are Gordon and Slemrod (2000), Goolsbee (2004), and Romanov (2006).

It would also be fair to say that (macro data) indications of income shifting activities of the type discussed here was a major reason for reforming the Norwegian 1992 tax system. The new system, which came into force in 2006, has as its main feature a shareholder income tax, above a normal after-tax rate of return; see Sørensen (2005) for further details. This issue is discussed in Section 2 of this paper, where we also go through the literature on taxes and organizational form choices. The rest of the paper is organized as follows: in Section 3 we lay out the incentives for organizational shifts under the dual income tax and provide some illustrative examples to identify conditions which render incorporation into a widely held corporation probable. In Section 4 we probe deeper into the available data and present the methodological approach to identify the effects of the dual income tax system on organizational shifts and the contribution from shifts to income growth. Results are discussed in Section 5, and the summary in Section 6 closes the paper.

2. Background

The issue raised in this paper is important at least for two reasons: Firstly, the Norwegian dual income tax system was recently reformed (mostly) because of anticipation of the type activities discussed in this paper, and, secondly, there is a shortage of empirical evidence on such behavior in the tax literature.

With respect to organizational shifts and the Norwegian tax policy debate, policy-makers decided that the 1992 dual income tax system needed reforming.[2] A new system duly came into force in 2006. Its main feature is a shareholder income tax; see Sørensen (2005) on this. One important reason for increased taxation of income from shares was to make it less attractive to shift organizational form to reduce the tax bill. Shifting was seen to erode the dual income tax system and produce undesirable distributional effects. But it is fair to say that the tax system was changed on basis of what aggregate statistics seemed to indicate, as in Figure 1, and anecdotal evidence, rather than incontestable empirical findings. Figure 1 shows the changing balance between widely held

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[2] We return to a more detailed description of the Norwegian tax reform of 1992 below.

corporations and self-employed (or sole proprietorships) and closely held corporations, in the period 1993–2003.

There are few analyses in the literature of businesses' tax motivated shifts in organizational form. Following Harberger (1962), it was usually assumed that the organizational form preference is determined more by non-tax factors, that it varies little within sectors and that some sectors are predominantly corporate while others are non-corporate. Gravelle and Kotlikoff (1989) showed that the choice of organizational form in fact varies within sectors, and that the share of corporations in different sectors varies over time. Gordon and MacKie-Mason (1994) estimate the size of non-tax costs needed to reconcile the observed fraction of firms choosing the non-corporate form with the fraction that would be forecasted by theory. However, they argue that removing differential tax treatments gives small efficiency gains.

Figure 1. Number of owners of small businesses in various organizational forms, 1993-2003
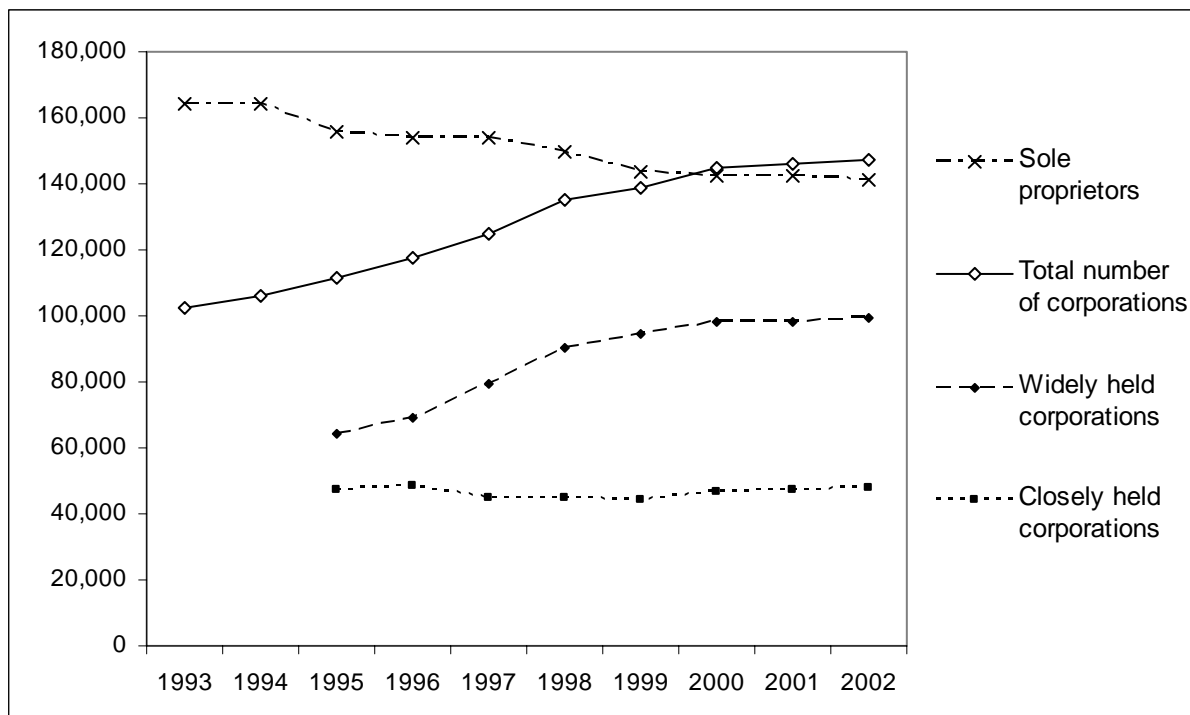
Recently, tax motivation has received increased attention. For instance, Slemrod (1995) and Gordon and Slemrod (2000) emphasize that what might appear at first blush to be real effects of taxes, such as shifts in firms' legal organizational form, may be income shifting between tax bases with the sole purpose of minimizing tax payments for the owners of the firm. Most empirical papers in this literature rely on US firm level data. Under the US tax code, there is a tax incentive for high-income firms to shift out of the corporate form and be taxed instead as a personal entity. This is

particularly prevalent for smaller, owner-operated firms. Ayers et al. (1996) analyze the probability of being corporate given the characteristics of the firm, and MacKie-Mason and Gordon (1997) and Goolsbee (1998) analyze the effects on the corporate share of capital for each sector on aggregate historical data. They all conclude that the choice of organizational form is influenced by tax rate differences. But the reported effects are generally small and it seems that non-tax factors, such as business control, are likely to dominate in the decision. However, Goolsbee (2004) finds relative tax difference between personal and corporate taxation to be an important factor in the firms' choice of organizational form, and Gentry (1994) finds that the choice between limited partnerships and corporations relates to tax and non-tax factors in predicted ways.[3]

There is little empirical work on the effects of a dual income tax system on income shifting between tax bases. Two recent exceptions are Romanov (2006) and Pirttilä and Selin (2006). Romanov explores two recent Israeli tax increases on wage and self-employed income. The number of Israeli corporations increased by 5 percent during this period, and Romanov identifies many of these new corporations as tax shelters for high-income professionals. He concludes that high-income individuals seem to have responded to these tax increases by incorporating in order to receive their income as tax favored dividends instead of wages. Pirttilä and Selin evaluate the effect on taxable income by the Finnish 1993 dual tax reform and its split model of business taxation. They document an increase in taxable capital income of the self-employed individuals after the reform, interpreted as resulting from tax minimizing income shifting to the capital income tax base by the self-employed individuals.

3. The dual income tax and incentives to incorporate

In this section we explore the relationship between the dual income tax system and incentives to shift. We provide an overview of the different elements of the Norwegian version of the dual income tax, and discuss determinants of businesses' choices given these features, leading up to the empirical analyses of sections 4 and 5.

3.1. Description of the Norwegian dual income tax, 1992-2004

The Norwegian version of the dual income involves a flat, "basic" tax rate that applies to business income at firm level, and to capital and labor income at the personal level. This basic tax rate was fixed at 28 percent for the whole period after the introduction of this scheme in 1992. Dividends are

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[3] See also Auerbach (2002) for a general introduction to taxation and corporate behaviour.

tax exempt.[4] In addition, labor income is taxed by a progressive surtax and by a social security tax. In other words, top marginal tax rates for wage incomes are substantially higher than the marginal tax rate on capital income. Post-1992 social security tax has been held at a steady 7.8 percent for wage earners and 10.7 percent for the self-employed. However, the surtax system was changed. In 1992, the top marginal labor income tax rate was 48.8 percent for wage earners; by 2001 it had risen to 55.3 percent, see Table A1 in the Appendix.

For medium and high income classes, wide differences separate the marginal tax rates on capital and labor income, as displayed for different income classes in Table A1 in the Appendix. This increases the incentive to shift income from labor income to capital income and minimize tax payments. These incentives are particularly prevalent for owners of small businesses, who can decide how much to pay themselves in wages and how much of the business income to distribute as tax exempt dividends. Thus, a system for imputing the return to capital and labor in small businesses is required to counteract this kind of income shifting and erosion of the tax base. The Norwegian split model applies to self-employed (or sole proprietorships) and closely held corporations. A corporation is defined as closely held if two thirds or more of the shares is held by active owners, where an owner is characterized as active if he works more than 300 hours annually in the firm, and passive otherwise. Spouses or under-aged children of active owners are not recognized as passive owners. A corporation is defined as widely held if more than one third of the shares is held by passive owners. Employers' social security contributions (the payroll tax) apply to all wage payments made by the corporation, but do not apply to the imputed return to labor under the split model, the calculation of which is described below. The contribution varies from 14.1 percent to zero according to regional zones.

Under the split model, an imputed return to the capital invested in the firm is calculated by multiplying the value of the capital assets by a fixed rate of return on capital, which is set annually by the legislator on the basis of average rate of return on government bonds plus a risk premium. In 1993, this imputation rate was 16 percent, but down by 2001 to 10 percent. The capital assets include physical business capital, acquired goodwill and other intangible assets, business inventories, and credit extended to customers net of debt to the firm's suppliers. The imputed return to capital is taxed at the basic tax rate, which equals the capital income tax rate at the individual level. Business profit net of imputed return to capital is the imputed return to labor, which is taxed as labor income, independent of whether the wages are actually paid to the owner or not. However, when labor income exceeds a given threshold, incomes are taxed by the basic tax rate only; see Table A1 in the Appendix. A salary deduction of a given percentage of the corporation's wage costs applies to the owner's imputed return

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[4] There was a dividend tax of 11 percent from September 2000 to December 2001. Both the introduction and the removal of this tax were anticipated by the agents. For instance, in the data we have available, we observe one business owner who took out NOK148 million in dividends in 2000, 0 in 2001, and NOK871 million in 2002.

to labor above a given threshold. In 1993 this rate was 12 percent, while it already two years later increased to 20 percent and stayed at this level for the rest of the period in question. If imputed labor income is negative, the loss does not offset other income; it can be carried forward and deducted against future imputed labor income in the firm.[5]

In particular, smaller, profitable firms with concentrated ownership have incentives to avoid the split model and become widely held: most of their profit can then be paid as tax exempt dividends. In theory, the split model should prevent firms from becoming widely held for tax purposes, as the required one third of passive owners receive one third of the dividends, which works as an additional "tax" on distributed profits. But if these passive owners are adult children, for instance, the active owner internalizes these dividends in the family. It acquires the nature of a perfectly legal tax free intergenerational transfer. There are other, illegal, ways of avoiding paying dividends to passive owners, such as having pro forma owners who return most of the dividends to the active owner, or having cross ownerships in similar firms.

We conclude this section by emphasizing that this paper discusses tax incentives that affect a particular type of firm: the smaller, profitable firm with concentrated ownership, where the active owner actually manages the firm on a daily basis. It does not apply to larger firms with many owners, and especially not to firms listed on the stock exchange.

3.2. Illustrating economic outcomes conditional on organizational choice

The choice of organizational form is influenced by tax and non-tax factors. The two most important non-tax factors are often assumed to be risk and access to capital, as suggested by Gordon and MacKie-Mason (1994) and Scholes et al. (2002). In case of bankruptcy, the owner of a corporation "only" loses his share of the capital, while the owner of a liable firm is personally responsible for all debt of the firm and might be for years to come. This may be particularly important in a start-up phase. It will also be an important factor for firms in particularly risky industries, as documented by Ayers et al. (1996). Firms with higher risk have incentives to incorporate to avoid the personal liability of the owner.

The corporate form can provide easier access to new capital. Corporations are subject to stricter accounting and revising requirements, which makes monitoring for the outsider easier and can simplify the process of raising new capital either from financial institutions or issuing shares. On the

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[5] If there is more than one active owner in the corporation, the imputed return to labor is divided among the active owners according to their ownership shares. There is nevertheless a cap for the labor income tax liability of an active owner's imputed return to labor, above which all income is treated as dividend income from the corporation. This cap has varied over time, and a separation of liberal and non-liberal occupation has also been introduced, see Table A1 in the Appendix.

other hand, these accounting requirements also mean additional costs, in addition to the transaction cost of changing organizational form.

Other non-tax factors might influence the choice of legal organizational form, such as size, age, preference for control, and transferability of ownership. On the one hand, younger firms may prefer to be incorporated and reduce personal liability in the event of bankruptcy in the start-up phase. On the other, in a life cycle perspective, self-employment might be seen as the most convenient organizational form in the start-up phase for a single entrepreneur, but as the firm grows, both in turnover and in number of employees, and needs to attract more capital, the corporate form becomes more attractive. Owners are more likely to hire managers as firms become larger. But the separation of ownership and management creates potential costs and incentive problems. Some of these costs/risks can be reduced by incorporating. Thus, large firms are expected to incorporate, as noted by Ayers et al. (1996).

Especially for smaller firms with concentrated ownership, the owner's preference for control of the daily operation of the firm can be an important factor in the choice of organizational form. He may in fact be willing to forego potential tax savings or other monetary benefits of shifting legal organizational form in order to remain in control of the firm. This point is emphasized by Alstadsæter and Wangen (2007). Finally, it is easier to transfer ownership under the corporate form.

In order to illustrate the income shifting incentives inherent under the Norwegian dual income tax, we now describe the after-tax income of an active owner who generates a given sales income in his firm under the three different organizational forms of self employed (*s*), closely held (*c*), and widely held (*v*). We simplify by assuming that the labor supply and the firm's capital level are given. We do not consider investment decisions and we also assume no depreciation in the period in question. There is no taxation of wealth.

The active owner chooses the organizational form that maximizes his utility *U*. His utility depends positively on after-tax income *Y* and on the level of control, *h*, that he exerts in the daily operation of the firm. The entrepreneurial individual prefers to be the sole owner of his firm and be in charge of all decisions himself. At the same time, the self-employed individual carries all risk of the business and he is personally responsible for all claims towards the firm. Let the parameter *p* represent the risk of bankruptcy. The individual specific utility function determines how risk averse the individual is, as well as how he values income versus control over his firm. It explains why entrepreneurs who clearly would increase their after-tax income by becoming widely held corporations stay with the split model; they simply value the "entrepreneurial freedom" higher. The utility function is given by

$$(1) \qquad U_j = U\left(Y_j, h_j, p_j\right), \quad j \in \{s, c, v\}.$$

The firm holds real capital K, which is financed through debt. In the case of the self-employed, the debt is private, and the individual is personally responsible for all claims towards the firm. In the case of a corporate organizational form, debt is held in the corporation and the individual is not personally responsible for any claims towards the firm, and he can at most lose his invested share.[6] As there is no depreciation, the cost of capital is the real interest rate, r. In principle, then, the firm's specific real capital can be sold at the end of the period to pay the debt.

The firm generates sales revenue, R, before taxes and expenses. We assume that the price of the good is given at unity, and then total sales revenue depends on production, which depends positively on both the amount of real capital in the firm and on the amount of labor effort. For simplicity, it is assumed that the owner is the only employee in the firm, and that he puts in the same labor effort in all three cases. But the level of fixed capital may vary across different firms, such that profits depend positively on the given amount of real capital in the firm: $R(K)$. This enables a comparison between firms with different capital intensity. Let profits be represented by the function

(2) $\qquad R(K) = X + r_K \cdot K$,

where X is a parameter that represents the basic profit in the firm. The parameter r_k represents the additional revenue generated by having a more capital intensive production.

Income is taxed at the basic proportional tax rate t_b, which applies to corporate income, capital income, and labor income. In addition, labor income is taxed by a progressive surtax, t_l, which depends positively on wages, W, and the taxable imputed return to labor under the split model, I:

(3) $\qquad t_l(W + I)$.

We also include the social security tax for wage earners and self-employed in t_l, suppressing that the fee for wage earners is somewhat lower. The payroll tax or the employer's social security contributions, t_e, applies to all wage payments by the corporation, but not to the imputed return to labor.

The imputed return to labor under the split model is given by profits net of the imputed return to capital, $r_i \cdot K$, where r_i is the imputation rate. In addition, a wage deduction at the rate g of all wage payments applies for the closely held corporation. Negative imputed return to labor cannot be used as a deduction against taxable wage income, but it can be forwarded to deduct against future positive imputed return to labor in the same firm. We only consider one period here, and thus no deductions from previous years exist. Taxable imputed return to labor, I, is positive if the imputed return to labor is positive, and zero if it is negative.

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[6] We simplify by assuming that the legally required amount of capital for founding a corporation is 0.

As a self-employed, the owner is taxed under the split model. Alternatively he can incorporate, which implies a transaction cost of *j*. The owner holds the share *z* of the stocks in the new corporation, and he sells the rest to passive owners. The income from selling shares to passive owners, *S*, depends on his ownership share, and on how close the share price is to the actual value of the firm. The value of the firm is usually set as the risk compensated present value of all future dividend payments to the shareholders. But as we here only consider one period, the value of the firm to passive shareholders is the risk compensated dividend payments in the present period. If the passive owners are close family members, the entrepreneur might prefer to demand a low price on the shares. This is captured by the parameter $0 \leq m \leq 1$, which indicates how close the actual value of the firm is to the sales price of the shares. Sales income from shares can also be set to 0, if the passive owners are, for instance, adult children or grandchildren, such that the corporation then serves as an intergenerational tax free transfer of funds through the payment of dividends. The income from selling shares is then represented by

(4) $S = (1-z) \cdot m \cdot (1-r_p) \cdot D$,

where r_p represents the risk compensation in the sales price of the shares and *D* is dividends. Capital gains taxes at the rate of t_b apply to the income from selling shares. The tax code that the individual faces after incorporation depends on his ownership share. If he holds two thirds of the shares or more, the corporation is defined as closely held and taxed according to the split model. The corporation is defined as widely held, and thus taxed according to corporate tax rules, if he holds less than two thirds of the shares.

There is a direct cost of incorporating in the form of a registration fee. In addition, corporations have stricter accounting requirements and therefore higher accountant costs. Let the costs of incorporating be represented by *j*.

Post-tax income as self-employed

The self-employed individual (denoted by subscript *s*) owns the firm and has full disposal over total sales income. His after-tax income Y_s is given as net of basic income tax sales revenue, net of surtax levied on the taxable imputed return to labor:

(5) $Y_s = (1-t_b) \cdot R(K) - t_l \cdot I_s - (1-t_b) \cdot r \cdot K$,

where *R(K)* is given by Equation (2) and the tax rate on labor income is specified by Equation (3). The self-employed individual receives no wages, and thus the labor income tax rate only depends on the taxable imputed return to labor under the split model, I_s, which can be seen as:

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$$I_s = \begin{cases} R - (r + r_i) \cdot K & \textit{if } R - (r + r_i) \cdot K > 0 \\ 0 & \textit{otherwise} \end{cases}$$

Post-tax income in a closely held corporation

Subscript c denotes the variables when the owner organizes as a closely held corporation. The corporation is taxed according to the split model when the active owner holds two thirds or more of the shares. The active owner receives wage income from the corporation, W_c, as well as his share $z_c <$ two thirds of dividends, D_c. All net of taxes and expenses sales revenue are distributed as dividends from the corporation,

(6) $D_c = (1 - t_b) \cdot \left(R - (1 + t_e) \cdot W_c - r \cdot K \right).$

The active owner's net of taxes income in the closely held corporation is then given by net of taxes wage income from the corporation and dividend receipts,[7] in addition to income from selling shares to the passive owner. Other factors that matter for his total after-tax income are preference for control, h, and transaction costs of incorporation, j. His after-tax total income is then represented by:

(7) $Y_c = (1 - t_b - t_l) \cdot W_c - t_l \cdot I_c + z_c \cdot D_c + (1 - t_b) \cdot S_c - j.$

Labor income taxes apply to the imputed return to labor in the corporation, even if this is not actually received by the individual. The imputed return to labor is calculated from business profits, which is sales revenue net of wage and capital costs,

$$I_c = \begin{cases} R - (1 + t_e + g) - (r + r_i) \cdot K & \textit{if } R - (1 + t_e + g) - (r + r_i) \cdot K > 0 \\ 0 & \textit{otherwise} \end{cases}$$

The wage deduction as a fraction, g, of all wage payments made by the corporation applies in the calculation of the taxable imputed return to labor in the closely held corporation.

Post-tax income in a widely held corporation

Subscript v denotes the variables when the business is organized as a widely held corporation. The active owner holds less than two thirds of the shares, $z_v < 2/3$, and the business is taxed according to corporate tax rules. All net of taxes and expenses sales revenue are distributed as dividends from the corporation,

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[7] We abstract from the short period of dividend taxation and assume that dividends are tax-exempt.

(8) $$D_v = (1 - t_b) \cdot \left(R - (1 + t_e) \cdot W_v - r \cdot K \right).$$

The active owner's after tax income is given by net of taxes wage income, as well as his net of taxes share of dividend income. As in the previous case, he receives income from selling shares to the passive owner,

(9) $$Y_v = (1 - t_b - t_l) \cdot W_v + z_v \cdot D_v + (1 - t_b) \cdot S_v - j.$$

The owner of a small business decides how much wages to pay. Since labor income taxes are progressive, we expect the widely held corporation to pay some wage to the active owner at low marginal labor income tax rates. As the tax rate on labor income increases, it will be optimal to convert more payments into dividends.

The widely held corporation considered here is typically a smaller, often family owned corporation, whose objective it is to maximize the income of the active shareholder. This is in contrast to larger corporations listed on the stock exchange whose goals often are to maximize the stock values of the corporations.

3.3. Some examples of economic outcomes under various conditions

Let us now investigate graphically which is the optimal organizational form under different conditions. To exemplify incentive structures we use the tax code for 1999, as seen in Table 1.[8] For simplification we use the following parameter values in figures 2-4: $z_c = 1$, $z_v = 0.66$, $r_p = 0.05$, $r_K = 0.02$, $m = 1$, and $j = 0$. Remember that profits, $R(K)$, are defined in Equation (2) as basic profits X plus the additional return to increasing capital intensity, $r_K K$.

**Table 1. Tax parameters in 1999**

Basic personal allowance in labor income	NOK34,900 (USD4,930)
Basic income tax rate, tax on capital and corporate income, t_b	28 %
Social security contributions, wage earners, included in t_l	7.8 %
Social security contributions, self-employed, included in t_l	10.7 %
Surtax on labor income above NOK269,100 (USD38,000), t_l	13.5 %
Payroll tax, employer's social security contributions, t_e	14.1 %
Imputation rate for capital income under the split model, r_i	11 %
Wage deduction rate under the split model, g	20 %

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[8] Here and throughout the paper we use the average exchange rate for 2003, 1 USD = 7.08 NOK, to convert into US dollars.

The tax incentives for the self-employed individual to incorporate increase in the size of business income, as clearly seen in Figure 2 and Figure 3. When business income (X) is low, in Figure 2 illustrated by NOK200,000 (USD28,250), most income is taxed as imputed return to capital under the split model. Only very labor intensive firms have positive imputed returns to labor. As the capital intensity in the firm increases, so do the business income and the imputed return to capital, and an increasing share of business income is taxed as imputed return to capital under the split model. This is why it is more advantageous to be taxed under the split model at high capital intensities; all business income is taxed as capital income, without having to share dividends with passive owners as in the widely held corporation. The reason why the closely held corporation organization is preferred over self-employment is that the rate for the social security contributions is 2.9 percentage points higher for the self-employed. By relaxing some of the assumptions above, we would see that positive transaction costs, such a registration fees, would make shifting from self-employment to a corporate form less advantageous, whereas it would not influence conversion from a closely held organization into a widely held firm organization. Increased risk aversion of the individual has the opposite effect. Preferences for control tend to favor self-employment and a closely held firm organization.

Figure 2. After-tax income under different organizational forms. Low business income (NOK200,000) and no wage payments. All figures in NOK (1USD= NOK7.08)

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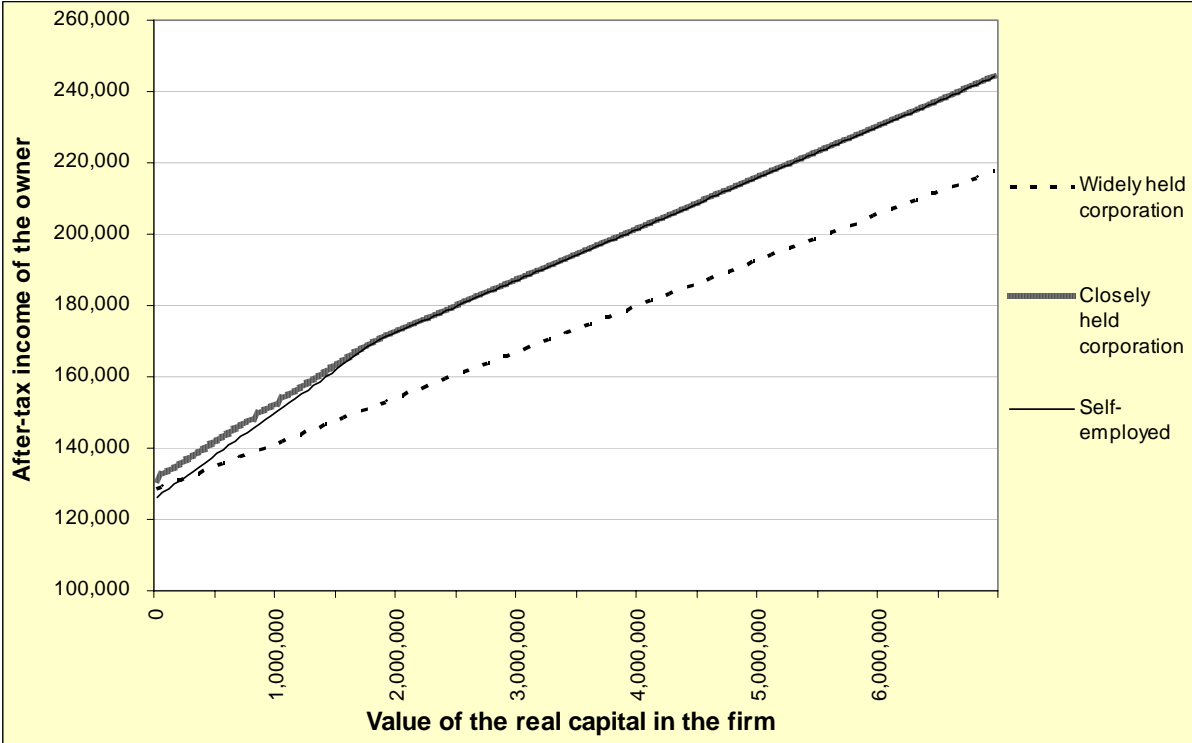
A successful business that generates high business income (*X*), illustrated by NOK3,000,000 (USD423,730) in Figure 3, has great tax minimizing incentives for avoiding the split model and becoming a widely held corporation. For firms with low capital intensities, typically liberal professions as medical doctors and dentists, the after-tax income of the individual organized in a widely held corporation is remarkably higher than that of a self-employment or a closely held firm organization. The reason for this is that at low capital intensities, most business income is taxed as imputed return to labor under the split model. The difference in the top marginal tax rates on labor and capital income is 21.3 percentage points for owners of closely held firms (excluding the payroll tax, as no wages are paid here) and 24.2 percentage points for the self-employed. As the capital intensity of the firm increases, we see that the difference in after-tax income between a widely held firm organization and the two other organizational forms is reduced. The reason is that higher capital intensity of the firm gives higher imputed return to capital, which lowers the share of income taxed as labor income (the imputed return to labor).

As we see in these examples, self-employment is the least favorable organizational form for a successful business that generates high income. If the individual for some reason prefers to have some of the return to his labor effort paid as wages, this would affect the incentives to incorporate. Fjærli and Lund (2001) show that owners of corporations may pay themselves more wages and less dividends than is optimal from a short term tax minimization motive. In a long term perspective it can be optimal to receive more wage payments, which future social security and pension benefits are based upon.

Now, consider a case where the business income (*X*) is moderate, illustrated by NOK1,000,000 (USD141,240) and wage payments (W_C, W_V) are high, illustrated by NOK500,000 (USD70,620), see Figure 4. This gives us a different picture of the preferred organizational form. In terms of post-tax income, the widely held firm organization is only preferable for businesses with relatively low capital intensity, as the imputed return to labor is high for these firms under the split model. For the closely held firm organization, wage payments reduce the imputed return to labor proportionally, but the imputed return to labor is still positive for low capital intensities. As the capital intensity and thus also the business income increases, the imputed return to labor declines, until it reaches zero. Total tax payments are lower for self-employment, as all income is taxed as capital income at 28 percent, while top surtaxes apply to wage receipts of the owner of the closely and widely held corporation.[9] In addition, one third of dividends are paid to passive owners in the widely held corporation, making this the least favorable form for firms with high capital intensities. The more the

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[9] As social security tax applies to imputed return to labor under the split model, this also entitles to future social security benefits. But as we see, for the self-employed, imputed return to labor approaches zero as capital intensities increase, making this a less favorable form for high capital intensities, even though it is the preferred form from a tax minimization view.

active owner prefers to have full control over his firm, the more advantageous is the closely held corporation over the widely held corporation as organizational form, as a positive parameter h shifts this curve upwards.

Figure 3. After-tax income under different organizational forms. High business income (NOK3,000,000) and no wage payments. All figures in NOK (1USD= NOK7.08)
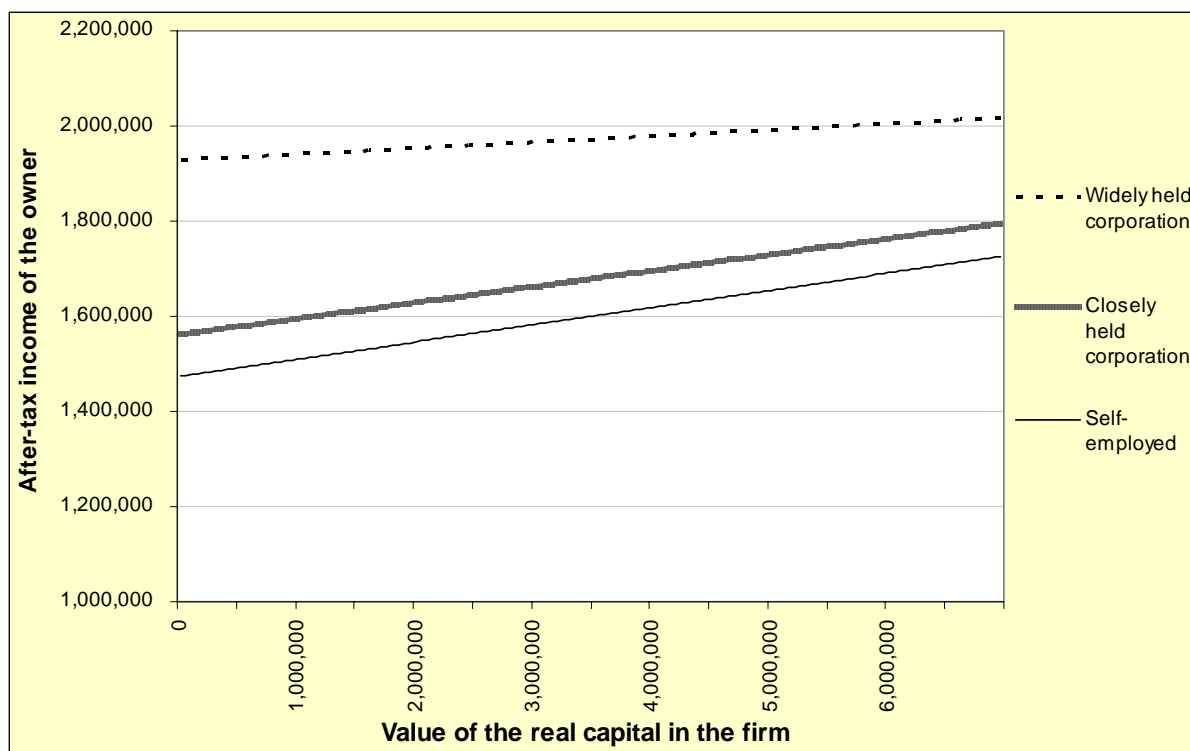
In all these examples we assume that the owner receives the full market price for the 34 percent of the shares in the widely held corporation that he sells to passive owners. If, on the other hand, the passive owners are close family members, he may charge a lower price for the shares, such that $m < 1$. This would apparently shift the line for the after-tax income of the individual in the case of the widely held corporation downwards and increase the relative attractiveness of the other organizational forms. But if the individual does this, he probably internalizes the fact that instead of paying taxes, he distributes dividends tax-exempt to close family members. He then avoids the split model, increases his after-tax income, distributes tax-exempt income to his family, and avoids gift and bequest taxes. This would shift his perceived after-tax income upwards, increasing the relative attractiveness of the widely held corporation as an organizational form.

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Figure 4. **After-tax income under different organizational forms. Moderate business income (NOK1,000,000) and high wage payments (NOK500,000). All figures in NOK (1USD=NOK7.08)**
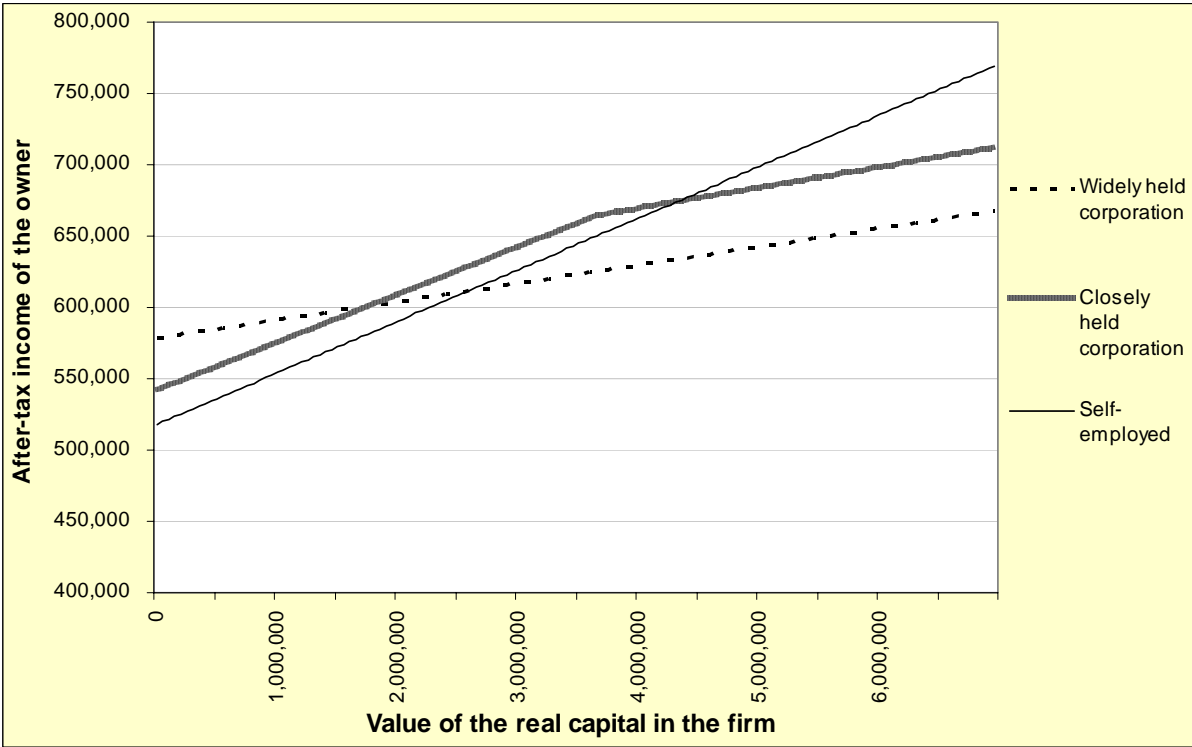
In this section we have discussed organizational form incentives for owners of small firms. In particular we highlight factors likely to encourage adoption of the widely held firm organization. These incentives are particularly strong for businesses with high imputed labor income, such as when the business owner is running a labor intensive type of firm. In the next section we build on these insights to devise an evaluation model that can help us establish how the Norwegian split model affects choice of organizational form and, in turn, owners' after-tax income.

4. Data and empirical strategy

We set out here our empirical strategy for identifying a possible causal relationship between dual income features, organizational shifts and income gains. It should be emphasized that our objective is to assess outcomes and motives for owners of small businesses that have been involved in organizational shifts; the results are not meant to be generalizable to outcomes for a randomly selected business owner.

In order to evaluate the effects of income shifting, we compare individuals that have shifted with those that have not changed their business's organizational form. The first group consists

of self-employed and business owners in closely held corporations who become owners and employees in a widely held corporation. The second group is owners of small businesses who continue to organize their activities through self-employment or through a closely held corporation. A major challenge in such analyses is to obtain information about individual movements across different organizational forms, so let us first focus on the data we have had available for this study.

4.1. Data

One of the primary sources of data for this study was Income statistics on persons and families, see Statistics Norway (2006a). These statistics hold register-based information on the whole population, derived primarily from information retrieved from all income tax returns in the Directorate of Taxes' Register of Personal Tax-Payers. Numerous demographic variables are also included from other sources. We chose 1993 to start the analysis because that was when the register itself was established.

We want to restrict the scope of our analysis to individuals with a connection to workforce, and therefore exclude pensioners and students. In order to do that we restrict our attention to prime aged individuals, i.e., persons aged 25–55 in the period 1993–2003, earning a wage or business income in excess of the Basic Pension Unit of the National Insurance Scheme in every year of the period. In 1993 the Basic Pension Unit was NOK37,033 (USD5,230), whereas it was NOK55,964 (USD7,900) in 2003. After these restrictions, we have a sample of approximately 900,000 individuals, including both wage earners and self-employed.

As the focus here is on tax-payers that shift from self-employment or active ownership in a closely held corporation, we restrict to individuals taxed under the split model of the dual income tax initially in the period under consideration. Many business owners in closely held corporations will have negative imputed wage income under the split model as negative values are carried forward from earlier years (see Section 3). Our results apply only to business owners reporting positive imputed wage income initially in the period under consideration (in 1993, 1994 or 1995).[10] Further, farmers and fishermen are usually defined as self-employed.[11] However, Norwegian primary industries are heavily subsidized and regulated, and we thus exclude this group from the sample. After these restrictions the sample consists of approximately 126,000 individuals. We will return to further sample restrictions shortly.

There are three categories of business owners: self-employed; owners of closely held corporations under the split-model; and owners of widely held corporations. The self-employed are identified by reporting business income from self-employment (positive or negative). Owners of

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[10] In the robustness checks to follow we provide results for other sample restrictions.
[11] See also Parker (2004) on discussions of definitions of firms.

closely held corporations are recognized in that they report imputed labor income under the split model in combination with reporting wage income. Previously, it has not been possible to identify whether a self-employed individual who becomes a wage earner has simply abandoned the business in preference for wage work, or continues his activities in an incorporated firm, as an employee in his own corporation. However, information held in the newly established Register of Shareholders can be combined with data from the End of the Year Certificate Register[12] to yield new opportunities for linking information about persons holding a major shareholder position in the same corporation in which they are employed. Combining information from these two registers holds the promise of identifying active owners in widely held corporations. However, as 2004 is the first year for which data is included in the Register of Shareholders, we need to rely on data from 2004 to establish end-of-period status. As we have a longitudinal perspective in this analysis, we need to make assumptions about status in previous years. This we do relatively simply as follows: we let information on status in 2004 determine status in 2003. If the data suggest that subjects were likely wage earners previous to 2003, we assume that this holds true for the preceding years. If they are identified as self-employed or in a closely held corporation in preceding years, in the business will likely have changed organizational mode in the period.

We describe the empirical strategy and data in more detail in the next section.

4.2. Empirical strategy

There are numerous challenges to identifying the relationship between income tax features, organizational shifts and income gains. One limiting factor is data. The data we have available for this study do not detail income generating activities of business owners. For instance, there are no data on working hours, which restricts interpretative outcomes. It is well known that taxes influence incomes through a number of channels, a leading example being changes in labor supply and pre-tax incomes because of changes in marginal tax rates. Similarly, an organizational move which reduces the tax burden will also most likely influence pre-tax incomes, as many will use the higher income to reduce work burden, corresponding to an income effect. As data do not facilitate a closer identification of such behavior, we have to rely on a less structural approach, focusing on post-tax income resulting from tax reducing organizational shifts and other individual characteristics, without discussing how organizational shifts influence pre-tax incomes.

The fact that variables are simultaneous presents another obstacle. In the case of tax motivated organizational shifts, obviously, organizational shifts and incomes are simultaneously determined. This is a key issue in the identification of causal relationships in the following.

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[12] See Statistics Norway (2006b) and Statistics Norway (2006c) for documentation of the two registers, respectively.

Let us first consider a general outline of the determination of post-tax income. We observe outcomes in terms of post-tax income for each individual (i) at a point in time (t), y_{it}, that is assumed to be explained by a number of time-varying and individual-specific variables, x_{it}, and a variable representing choice of organizational form, OF_{it}. Using the same notation as in Section 3, we allow the organizational form variable to take three values, indexed by j: $j \in \{s, c, v\}$; s symbolize self-employment, c representing closely held firm organization and v denoting widely held firms. The outcome is also influenced by individual specific effects, including a constant, a_i, and time-invariant observable variables, q_i, a time effect, γ_t, and unobserved factors, u_{it},

(9) $$y_{it} = x_{it}\beta + OF_{jit}\eta + (a_i + q_i\lambda) + \gamma_t + u_{it},$$

where β, η and λ are parameters.

We assume that the tax-payers behave according to a longer time horizon than the calendar year when they choose legal organizational form.[13] The behavioral adjustments we discuss here are sluggish in the sense that we cannot expect to see year-specific shifts in organizational form in response to small changes in tax rates. Moreover, in accordance with the exposition in Section 3, we assume that some individuals choose to move out of self-employment or a closely held corporation to establish a widely held corporation because of the dual income tax system itself, and less because of adjustments in schedules over time. This suggests that information about year-specific individual behavior is less useful here. Our fairly long panel covering 1993–2003 means that we exploit information about individuals over a longer time period. One option is to categorize the 11 years of data into two time periods, for instance 1993–1997 and 1999–2003, and see how incomes develop in relation to organizational shifts. The main reason for using three time periods is to allow for a period in which organizational shifts can happen. At this stage, let us assume that the organizational shift variable can be represented by a dummy variable taking the value 1 if the individual has been involved in income shifting activities. If the dummy variable takes value 1 in one of the periods, the effect on post-tax income will depend on whether the organizational shift was undertaken early or late in the period and the effects are in danger of being blurred. Therefore, we have found it advantageous to adopt a tripartite division, $t \in \{1, 2, 3\}$, referring to 1993–1995, 1996–2000 and 2001–2003, respectively, assigning the longer middle period for organizational shifts to happen. By also employing a first differenced version of Equation (9), we can use the first and the last period post-tax income to define Δy_i,

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[13] According to the behavioral hierarchy of Slemrod (1995), avoidance behavior is not as responsive as timing decisions, but less sluggish than real responses.

$$(10) \qquad y_{i3} - y_{i1} = (\gamma_3 - \gamma_1) + (x_{i3} - x_{i1})\beta + q_i\lambda + \delta IS_{i2} + (u_{i3} - u_{i1}),$$

or

$$(11) \qquad \Delta y_i = \alpha + \Delta x_i\beta + q_i\lambda + \delta IS_{i2} + \varepsilon_i.$$

Income growth is explained by a constant, α, differences in time-varying variables, Δx_i, by time-invariant variables, q_i, and most importantly, an index function, IS_{i2}. IS_{i2} takes the value 1 if the following condition is fulfilled: the combination $j = s$ or $j = c$ at $t = 1$ in combination with $j = v$ at $t = 3$; otherwise IS_{i2} takes the value 0.[14] δ is a parameter. The constant, α, will also capture the time effect $(\gamma_3 - \gamma_1)$. The new error term, ε_i, is assumed to be i.i.d. The constant term of the individual effect is eliminated, corresponding to differencing out the individual fixed effect, whereas it is not ruled out that the time-invariant observable variables can have effects on income growth.

Next, as already noted, under the assumption that tax-payers incorporate in order to reduce the tax burden, the increase in post-tax income and the income shifting variable, Δy_i and IS_{i2}, are simultaneous variables. This suggests that tax-payers' behavior can be presented by two equations, where Equation (11) is combined with an equation which describes income shifting as determined by the interrelationship between dual income tax features and characteristics of the business owners. For instance, Section 3 listed several factors likely to influence decisions to go for a widely held firm organization: wide disparity between marginal tax rates on wage income and capital income (applicable to business owners of businesses with low capital intensity resulting in high imputed wage income – business profit net of imputed return to capital); low transaction cost of shifting; the level of control over the business. The index function for the shift is specified as

$$(12) \qquad IS_{i2} = \pi + z_{i1}\eta + q_{i1}\gamma + \upsilon_i.$$

Equation (12) depicts the decision to shift as following from a number of individual specific period 1 characteristics, z_{i1}, whereas q_{i1} symbolizes that other variables from Equation (11) may also enter into the shift equation. η and γ are parameters, π is a constant and υ_i is the (i.i.d.) error term. We notice that this set-up, i.e., using two equations to establish relationships, is identical to an instrumental variable estimation procedure; a feature we will exploit in the following.

We focus on predetermined variables from period 1 as explanatory variables in Equation (12). Imputed wage income under the split model is an obvious variable to explain shifts, as high imputed income means a large difference between marginal tax rates on capital income and wage income: the marginal tax rate for capital income being fixed at 28 percent and the marginal tax rate for

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[14] We are not interested in business owners with $j{=}v$ for $t{=}1$, see on for sample restrictions.

wage income around and above 50 percent, see Table A1 in the Appendix for description of schedules for business income 1993–2003.

Related to the level of wage income, we have also tried to identify business categories where the efforts of the owners are assumed to have particularly strong effect on incomes. For business owners in closely held firms we have used (period 1) information from the Register of Company Accounts, see Statistics Norway (2005), assuming that doctors, lawyers, dentists and architects belong to labor intensive or human capital intensive businesses. Remember that incentives depend on the value of the real capital of the firm, as highlighted in Section 3. We do not have similar information for the self-employed. However, a modification in the tax schedule enforced in 1995 may be helpful in order to establish the capital intensity of the self-employed. Previous to 1995, residual profit above a certain level was taxed as capital income, as is seen in Table A1 in the Appendix. From 1995 this was changed, reflected by the rather complicated schedules from 1995 and onwards in the table. However, the new schedule is not uniform, as it distinguishes between occupations that are less and more human capital intensive, such as dentists, doctors and lawyers, assuming that a larger proportion of their income originates from human capital activities and therefore should be taxed as (imputed) labor income. Since our data are based on registers of income tax returns, and we have access to information that is reported to the tax authorities in order to establish tax payments, we are able to discriminate between self-employed who are in a labor intensive business and others. However, as this information is collected for 1996, a year belonging to the middle period which is allocated for shifts of organizational form in our econometric set-up, there are measurement problems in relation to this variable.

Next, are there any tax rate features that can be used to explain shifts? High levels of marginal tax rates will most likely be captured by the variable representing imputed wage income. Here, we therefore exploit the geographical variation in (effective) marginal tax rates engendered by the payroll tax scheme. The Norwegian payroll tax is differentiated with respect to geography into five zones, determined both with regard to remoteness from urban centers and to less favorable economic conditions for businesses. In 1993, 14.3 percent of gross labor income was charged in zone 1 (covering most of the population), whereas the rate decreases in other zones by degree of remoteness; 10.8, 6.6, and 5.3, ending with a zero tax rate in zone 5. A problem with this explanatory variable is that the payroll tax is paid both by closely held firms and widely held firms, which means that not all business owners are likely to be influenced by these incentives.

As noted in Section 3, it is less costly to transfer a closely held firm organization into a widely held firm than self-employment into a widely held firm, as the costs of incorporation have

already been taken. In accordance with this, we would expect a closely held organization to facilitate shifts as well.

4.3. More detailed descriptions of variables

Before discussing explanations of shifting and the relationship between shifts and income growth more closely, we provide descriptive statistics. As we focus on incomes from market work activities, tax-exempt transfers are deducted from the after-tax income concept. We calculate average post-tax income by aggregating post-tax incomes minus tax-free transfers in period 1 (1993–1995) and in period 3 (2001–2003). For simplicity's sake, we denote this variable as post-tax income in the following.[15]

Regarding sample restrictions, we limit to individuals who are self-employed or active owners in a closely held corporation in 1995, who own more than 20 percent of the shares in the corporation, and whose income of period 3 is less than 50 times larger than income of period 1. We also exclude some business owners with a large increase in business activities, assuming that their shifts into a widely held corporation follows from firm maturity reasons. We do that by using information from the Register of Company Accounts, see Statistics Norway (2005), excluding owners of firms where the number of employees has increased by more than 4 persons from period 1 to period 3.[16] The resulting sample is approximately 105,700 individuals, including approximately 5,800 persons who have shifted organizational status in the period between 1995 and 2001.

In Table 2 we present average measures for a number of variables, highlighting differences between business owners that shifted organizational status in the middle period and business owners still organized as self-employed or in a closely held corporation. Note that all income measures in Table 2 are adjusted to the 2003 level by using measures for average wage growth in the period. The table shows that (yearly) average post-tax income is higher for those that shifted into a widely held corporation, both before and after the shift. However, Table 2 reveals some important information. Firstly, average growth is higher among "shifters" than "non-shifters" – 31 percent and 15 percent. Secondly, dividends constitute a major part of income in Period 3 of business owners involved in shifts: close to 40 percent of income comes from dividends in period 3, and the (absolute) difference in dividends between period 1 and 3 exceeds the difference for post-tax income. This is not the case with the business owners not involved in shifts, even though they also enjoyed significantly higher dividends; the increase in percent is pretty much equal in the two groups. There was an overall

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[15] Note that in the regressions to come, the endogenous variable is defined by taking differences in natural logarithms of the income variables, $\Delta log(y_3/y_1)$, approaching percentage growth in post-tax income.

[16] Note that this can only be done for business owners in closely held corporations in period 1.

increase in dividend receipts among individuals over this period, as documented by Thoresen (2004). One may suspect that period 3 estimates are influenced by the temporary tax on dividends in 2001. However, we assume that lower payments to shareholders in 2001 were counteracted by higher payments in the two following years, all three years belonging to period 3.[17]

We see that the high post-tax income growth among "shifters" is matched by a reduction in gross income minus dividends, see Table 2. Gross income includes all taxable income components, as wage, income from self-employment, taxable pensions, capital income (dividends included), but does not include non-taxable transfers, such as the child benefit. Here, we subtract dividends to examine to what extent the increase in dividends among "shifters" is counteracted by lower income growth for other income components. The results of Table 2 strongly suggest such offsetting behavior: whereas the "non-shifters" experienced growth on 8 percent for gross income (minus dividends), the same income concept for "shifters" decreased by 8 percent.

Imputed labor income from the splitting procedure is also established by aggregating this income measure over the three years of period 1 and then dividing by 3. Note that this variable does not take negative values and therefore is truncated at 0.[18] In Section 3 it was established that high levels of imputed labor income fortify incentives to incorporate, and we see that estimates in Table 2 support this; business owners who established a widely held corporation had high imputed labor income in period 1. Table 2 also reveals that there is a large difference between "shifters" and "non-shifters" regarding period 1 organizational form: approximately 23 percent of the "shifters" were organized in a closely held corporation, whereas the share among the "nonshifters" was much smaller, only 5 percent.

Further, regarding other potential explanators for shift, the share combining a closely held firm organization and belonging to a labor intensive business is larger among "shifters", whereas no such differences can be seen for the combination of self-employment and human capital intensity. Neither do we observe differences between "shifters" and "non-shifters" with respect to the payroll tax. We also note that the share of males and people located in the largest cities is larger among "shifters".

The alternative hypothesis is that shifts in legal organizational form are simply part of the natural life cycle of firms. Under this hypothesis we would expect "incorporators" to be older than the others. This is not borne out, however, by the estimates presented in Table 2, as age levels are rather

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[17] The amounts of dividends received by households from 2000 and onwards is (measured in billion NOK and with the year in parentheses): 29.2 (2000), 13.0 (2001), 42.3 (2002), 55.0 (2003), 62.8 (2004), 99.6 (2005).

[18] It can in fact be negative, but insofar as it doesn't generate tax liability, the information is not required by the tax authorities, who have established the data we use here.

similar. However, remember that sample restrictions were introduced to avoid including business owners involved in organizational shifts for maturity reasons.

Table 2.   Summary statistics: mean and standard deviation in parentheses. All income measures wage adjusted to 2003 and measured in NOK

	Non-shifters	Shifters	All
Yearly average post-tax income, period 1	281,346 (678,640)	364,918 (314,910)	285,898 (664,247)
Yearly average post-tax income, period 3	322,408 (746,592)	478,526 (874,288)	330,913 (754,932)
Yearly average dividends, period 1	13,757 (256,280)	51,456 (234,258)	15,811 (255,272)
Yearly average dividends, period 3	45,084 (665,047)	184,789 (916,369)	52,695 (681,862)
Gross income minus dividends, yearly average, period 1	397,833 (965,106)	498,703 (338,041)	403,328 (873,426)
Gross income minus dividends, yearly average, period 3	428,299 (916,642)	463,432 (306,485)	430,213 (504,145)
Yearly average imputed labor income, period 1	150,490 (306,297)	220,075 (368,205)	154,281 (310,388)
Dummy for closely held corporation, period 1	0.046 (0.209)	0.229 (0.420)	0.056 (0.230)
Payroll tax in %	12.1 (3.6)	12.5 (3.4)	12.2 (3.5)
Dummy for human capital intensive business, closely held corporation, period 1	0.009 (0.093)	0.104 (0.305)	0.014 (0.117)
Dummy for human capital intensive business, self-employment, period 1	0.129 (0.335)	0.104 (0.305)	0.128 (0.334)
Years of education	11.75 (2.47)	11.78 (2.18)	11.75 (2.46)
Dummy for Oslo-area and 4 large cities	0.257 (0.437)	0.299 (0.458)	0.259 (0.438)
Male	0.721 (0.477)	0.846 (0.361)	0.728 (0.445)
Age	39.3 (5.7)	39.3 (5.7)	39.3 (5.7)
Age squared	1576 (444)	1,578 (439)	1,576 (444)
Dummy for children	0.794 (0.404)	0.787 (0.410)	0.794 (0.403)
Married	0.650 (0.478)	0.675 (0.468)	0.651 (0.404)
Number of obs.	99,925	5,757	105,682

5. Results

5.1 The decision to shift organizational form

We now move on to multivariate analyses. The setup in terms of two equations, (11) and (12), is in accordance with an approach where we study explanations to income growth, where we use Equation (12) to form fitted values based on instrumental variables for the shift variable, the latter being simultaneous to income growth. However, explanations of shifts have intrinsic interest. Let us therefore take a closer look at the relationship between shifts and other variables. We do this by estimating a probit model for the probability of shifting into a widely held corporation. In addition to the candidates for instrumental variables, as log of the first-period imputed labor income, the payroll tax, and dummy variables indicating closely held firm organization and labor intensive business, we also include other individual characteristics in the regressions, such as age, parenthood, geographical location, etc.

Results are presented in Table 3. We find strong and clearly significant effects for the level of imputed labor income (under the split model) in period 1 and being organized in closely held corporations in period 1. We see that the payroll tax contributes negatively to the probability of shifting into a widely held corporation. However, as noted above, this variable is problematical as it both influences incentives to shift and to stay in a closely held firm organizational form. Hence we will not employ this variable as an instrument in the following. We do use it however as an explanatory variable for income growth, representing remote geographical location, ranging from 1 to 5.

The dummy variables for human capital intensity have different effects, dependent on whether the agents are organized in closely held corporations or in self-employment; combining a closely held corporation and belonging to a human capital intensive business strongly increases the probability to shifts, whereas human capital intensity within self-employment contributes negatively. However, as described above, this information for the self-employed is collected for 1996, a year belonging to the middle period which is allocated for shifts of organizational form in our econometric set-up, there are serious measurement problems in relation to this variable. Thus, we will not use this variable in the following.

We see that being male increases the probability to shift substantially, and in the estimation of Equation (11) below we address evidence for males, separately.

Table 3. **Probit estimates for shift into widely held firm organization. Standard errors in parentheses**

Variable	Parameter estimate
Log of imputed labor income in period 1	0.071 (0.002)
Closely held corporation in period 1	0.798 (0.020)
Payroll tax	-0.004 (0.002)
Dummy variable for human capital intensive business, closely held corporation	1.450 (0.036)
Dummy variable for human capital intensive business, self-employment	-0.406 (0.026)
Years of education	-0.020 (0.003)
Dummy for Oslo-area and 4 large cities	0.019 (0.016)
Male	0.296 (0.018)
Age	4.0×10^{-4} (0.017)
Age squared	1.0×10^{-4} (2.0×10^{-4})
Dummy for children	-0.065 (0.019)
Married	0.089 (0.018)
Log Likelihood	-19,458
Number of observations	105,682

5.2. Organizational shifts and income growth

We now estimate Equation (11) by instrumental variable techniques, where we utilize Equation (12) in the first stage. In the estimation, we employ the modification of the (*k*-class) limited information maximum likelihood (LIML) suggested by Fuller (1977)[19] and denoted by Fuller-LIML in the following. We also estimate Equation (11) by ordinary least squares (OLS).

Although instrumental variable techniques are usually deemed preferable to OLS when there are simultaneity problems, they are encumbered by serious pitfalls. Discussions, see for instance recent contributions from Staiger and Stock (1997), Hahn and Hausman (2003), and Murray (2006), center on finding instruments for the shift variable which do not suffer from the same type of correlation with the error term of the main equation. This corresponds to finding valid instruments, but instruments must also have sufficient explanatory power, or not being "weak." With respect to validity we rely on a test of overidentifying restrictions, as we have more potential instrumental variables than needed for identification in the first stage regressions. An Anderson-Rubin test, based on Anderson

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[19] We use value 2 for the Fuller constant. We do not find that results are sensitive to this choice.

and Rubin (1949), is used to check validity of instruments.[20] Under the null hypothesis that valid instruments are uncorrelated with the error term of the main equation, the test may compare a just identified equation with an equation with the full set of instruments employed. A small *p*-value leads to rejection of the null hypothesis that all instruments are valid.

As shown by Bound et al. (1995), Staiger and Stock (1997) and Hahn and Hausman (2003), the other problem, weak correlation of instruments to the variable they are intended to replace, may lead to seriously biased estimates even when the samples are large. This is the main reason for applying Fuller's modification of LIML often recommended in such situations (Murray, 2006). It is more robust to the presence of weak instruments than other estimators, such as two-stage least squares (2SLS).

With reference to the theoretical outline given in Section 3 and the results presented in Table 3, we employ three instrumental variables in the first stage: a dummy variable indicating whether the person belonged to a closely held firm in period 1, a dummy variable indicating whether the person belonged to a human capital intensive business, and the level of imputed wage income (under the split model) in period 1. We show results of alternate specifications of the shift equation. Column (2) shows results when all three instruments are used in the first stage. The test estimator for the overidentifying restriction test is large, giving a small *p*-value, which means that the exogeneity of the overidentifying restrictions are rejected. Thus, columns (3)–(5) show results for pair-wise combinations of the three instruments, and columns (6)–(8) show results for exactly identified equations.

In the main equation we argue that income growth is explained by education, age, age squared, urban geographical location (living in the Oslo-area and 4 other large cities), the degree of remoteness (a variable ranging from 1 to 5 with 5 indicating the highest degree of remoteness), the gender of the business owner, having children and being married, in addition to the shift variable.

Results of the main equation are presented in Table 4. First of all we see that results of both the OLS and instrumental variable specifications predict substantial income growth for business owners choosing to shift organizational form, with the instrumental variables specifications exerting a stronger effect than OLS.

The Fuller-LIML estimations show wide variation, depending on which instrument(s) is used in the shift equation, estimates raging from 0.28 to 1.05. However, we see that all estimation results point in the same direction: income gains derived from shifting organizational form are substantial. Note that the results of the Anderson-Rubin overidentification test reject the

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[20] Results are in general not found to be sensitive to this choice for the test estimator. For instance, tests based on Sargan (1958) or Basmann (1960) for 2SLS give very similar results to those presented here.

overidentifying restrictions in most specifications, suggesting that not all instruments are valid. However, the restriction is not rejected for at least one specification; using imputed wage income and a closely held firm organization as instruments.

Table 4. Regressions results: change in log of post-tax income as the dependent variable, 105,682 obs.

Variables	(1) OLS	(2) Fuller-LIML	(3) Fuller-LIML	(4) Fuller-LIML	(5) Fuller-LIML	(6) Fuller-LIML	(7) Fuller-LIML	(8) Fuller-LIML
Shift	0.092 (0.007)	0.680 (0.028)	0.972 (0.038)	0.513 (0.034)	0.613 (0.030)	1.051 (0.065)	0.940 (0.043)	0.288 (0.039)
Years of education	0.009 (0.001)	0.009 (0.001)	0.009 (0.001)	0.009 (0.001)	0.009 (0.001)	0.009 (0.001)	0.009 (0.001)	0.009 (0.001)
Dummy for Oslo-area and 4 large cities	0.034 (0.004)	0.028 (0.004)	0.025 (0.004)	0.029 (0.004)	0.028 (0.004)	0.024 (0.004)	0.025 (0.004)	0.032 (0.004)
Degree of remoteness	-0.017 (0.002)	-0.015 (0.002)	-0.014 (0.002)	-0.015 (0.002)	-0.015 (0.002)	-0.013 (0.002)	-0.014 (0.002)	-0.016 (0.002)
Dummy for male	-0.068 (0.004)	-0.088 (0.004)	-0.099 (0.004)	-0.083 (0.004)	-0.086 (0.004)	-0.102 (0.004)	-0.102 (0.004)	-0.075 (0.004)
Age	-0.036 (0.004)	-0.037 (0.004)	-0.037 (0.004)	-0.036 (0.004)	-0.037 (0.004)	-0.037 (0.004)	-0.037 (0.004)	-0.036 (0.004)
Age squared	3×10^{-4} (5×10^{-5})	3×10^{-4} (5×10^{-5})	3×10^{-4} (5×10^{-5})	3×10^{-4} (5×10^{-5})	3×10^{-4} (5×10^{-5})	3×10^{-4} (5×10^{-5})	3×10^{-4} (5×10^{-5})	3×10^{-4} (5×10^{-5})
Dummy for children	-0.009 (0.004)	-0.007 (0.005)	-0.006 (0.005)	-0.008 (0.005)	-0.007 (0.005)	-0.006 (0.005)	-0.006 (0.005)	-0.008 (0.004)
Married	0.022 (0.004)	0.015 (0.004)	0.012 (0.004)	0.017 (0.004)	0.016 (0.004)	0.011 (0.004)	0.012 (0.004)	0.020 (0.004)
Instruments: IMP = imputed wage income, CHF = closely held corp., HUMC = human capital intensive closely held corp.		IMP CHF HUMC	IMP CHF	IMP HUMC	CHF HUMC	IMP	CHF	HUMC
F value / *R*-square of the first stage		779 / 0.075	513 / 0.046	564 / 0.051	755 / 0.067	229 / 0.019	446 / 0.037	475 / 0.039
p-values for Anderson-Rubin overidentific. test		< 0.001	0.123	< 0.001	< 0.001			

With respect to the other explanators, results are similar across specifications, and independent of the OLS or instrumental variables techniques used: education, living in the Oslo-area and 4 other large cities, and being married contribute positively to income growth, whereas age, being male, having children and living in remote areas mean lower income growth. All these results corroborate previous findings on Norwegian data, see Aarbu and Thoresen (2001) and Thoresen (2004), and are in line with expectations such as the positive effect of education on income growth, and the negative effect of children.

5.3. Robustness checks

Many choices regarding the sample selections and econometric specifications can be questioned. It is therefore useful to assess effects on parameter estimates when there are changes in the empirical approach. Such evidence is presented in Table 5 for a selection of changes and for a selection of instrumental variable specifications (instrumental variables as in columns (2)–(4) in Table 4).

In the first alternative, alternative (i), estimation is carried out for males only. Comparing parameter estimates for the shift variable of Table 4 and Table 5, we see that that results are less influenced by this sample restriction. The second and the third variant, alternative (ii) and alternative (iii), refer to a measurement problem when establishing the sample of small firms. As noted in Section 4, we identify owners of closely held corporations in Period 1 when reporting positive labor income in period 1995. The problem is that the truncation of calculated imputed labor income at 0 means that owners of closely held corporations are only identified when reporting positive imputed labor income, and will be excluded form the sample if they, for instance, have temporary negative imputed labor income.[21] Thus, we present results when the sample is established based on business owners qualifying for the definition in either of the three years of period 1, alternative (ii), and results when they meet the criteria in each year of the period, alternative (iii). Compared to estimation results from Table 4, the general impression is these sample restrictions have had little effect on results.

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[21] The self-employed are also identified by reporting self-employment income.

Table 5. **Robustness checks: parameter estimates for the shift variable for different empirical approaches. All estimations by the Fuller version of limited information maximum likelihood (Fuller-LIML)**

Changes in the empirical approach	Instruments: IMP = imputed wage inc., CHF = closely held corp., HUMC = human capital intens. Closely held corp.	Estimate for the shift variable, standard errors in parentheses	p-values for Anderson-Rubin overidentifying restriction test
(i) Males only (76,905 obs.)	IMP, CHF, HUMC	0.754 (0.030)	<0.001
	IMP, CHF	1.057 (0.040)	0.284
	IMP, HUMC	0.562 (0.037)	<0.001
(ii) Less restrictive definition of period 1 business owners (125,653 obs.)	IMP, CHF, HUMC	0.632 (0.032)	<0.001
	IMP, CHF	1.014 (0.047)	<0.001
	IMP, HUMC	0.452 (0.035)	<0.001
(iii) More restrictive definition of period 1 business owners (78,024 obs.)	IMP, CHF, HUMC	0.790 (0.030)	<0.001
	IMP, CHF	1.286 (0.054)	0.934
	IMP, HUMC	0.578 (0.043)	<0.001
(iv) Only instrumental variables	IMP, CHF, HUMC	0.815 (0.031)	<0.001
	IMP, CHF	1.123 (0.041)	<0.001
	IMP, HUMC	0.686 (0.039)	<0.001

Lastly, we want to check if results are sensitive to the specification of the main equation. We therefore provide estimates when only the (the predicted) shift variable is used as explanatory variable. We see that parameter estimates increase somewhat by this.

To sum up, estimates for the shift variable are sensitive to the empirical approach taken, especially with respect to the choice of instrumental variables. However, estimates according to all specifications examined here corroborate a positive relationship between organizational shift and income growth.

6. Concluding remarks

The main reason for the scarcity of information about tax motivated organizational shifts for owners of small businesses is the lack of micro data that follow them across different organizational forms. In this paper we exploit that a newly established register of shareholders enables us to identify individuals who has shifted the legal form of their business activities into a widely firm corporation; combining being an employee and a major shareholder in the same corporation. Previous indications of movements from self-employment and closely held corporations into widely corporations have been

a major concern of Norwegian dual income tax system and it is fair to say that reform of the system in 2006 was mainly motivated by expectations of people engaging in tax reducing organizational shifts.

Studying the behavior of more than 100,000 small business owner, initially either organized as self-employed or as a closely held corporation, we see that high imputed labor income under the split model, having the business organized in a closely held firm, and belonging to a human capital intensive business within a closely held corporation, increase the probability of moving into widely held corporations, suggesting some of the main predictions from the theoretical outline; agents move to avoid taxes and moves are encouraged by lower cost of shifts.

Moreover, we find that tax-payers who have shifted organizational form have experienced a much larger increase in post-tax income, compared to owners of small businesses who have not shifted. As there are reasons to assume that shifts and incomes are simultaneous variables, standard OLS regressions will give biased estimates. We therefore employ instrumental variable techniques, employing initial levels of imputed wage income, type of business and organization as a closely held corporation as instruments. The study strongly suggests that people have shifted into a widely held corporation for tax reasons, which have given them a substantial growth in post-tax income.

Overall, the empirical evidence presented support the view that owners of small businesses have avoided taxes by finding new organizational forms for their business activities, fortified by key features of the Norwegian dual income tax system in place from 1992 to 2004. Given that the policy-makers reformed the tax system because they anticipated such activities to take place, this study confirms that their suspicions were right.

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Table A1. Marginal tax rates for wage income/business income under the split model for different income levels, 1993–2003

Adjusted gross income (2003)	1993	1995[*]	1997[*]	1999	2001	2003
100,000	30.2/38.7	30.2/38.7	30.2/38.7	29.9/38.7	35.8/38.7	35.8/38.7
200,000	30.2/38.7	30.2/38.7	30.2/38.7	35.8/38.7	29.6/38.7	35.8/38.7
300,000	35.8/38.7	35.8/38.7	35.8/38.7	35.8/38.7	35.8/38.7	35.8/38.7
400,000	49.5/52.4	49.5/52.4	49.5/52.4	49.3/52.4	49.3/52.2	49.3/52.2
500,000	49.5/52.4	49.5/52.4	49.5/52.4	49.3/52.4	49.3/52.2	49.3/52.2
600,000	49.5/52.4	49.5/52.4	49.5/52.4	49.3/52.4	49.3/52.2	49.3/52.2
800,000	49.5	49.5	49.5	49.3	49.3	49.3
1,000,000	49.5	49.5	49.5/28	49.3/28	55.3/28	55.3/28
1,500,000	49.5	49.5/28	49.5/28	49.3/28	55.3/28	55.3/28
2,000,000	49.5/28	49.5/28	49.5/28	49.3/28	55.3/28	55.3/28
3,000,000	49.5/28	49.5/28	49.5/28	49.3/28	55.3/28	55.3/28
4,000,000	49.5/28	49.5/28	49.5/28	49.3/28	55.3/28	55.3/28
5,000,000	49.5/28	49.5	49.5	49.3	55.3	55.3
10,000,000	49.5/28	49.5/28	49.5/28	49.3/28	55.3/28	55.3/28

[*]Special regulations apply for dentists, lawyers and other independent contractors offering services to the general public.

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