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Working paper

The role of privately held firms in income inequality

The role of privately held firms in income inequality*

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Abstract

Business owners of privately held firms have multiple opportunities to decide how much taxable income to take out from their firm and how much to retain within the firm. However, undistributed profits within firms, i.e. retained earnings, are typically invisible in income data, distorting our understanding of the extent of income inequality. A recent strand of research has illustrated the importance of accounting for retained earnings for measuring inequality. In this paper, we study the role of privately held firms in income inequality in Finland, including the role of retained earnings, but also taking a wider perspective on the role of firms. We study the role of close family members as firm owners across the income distribution, including the role of own underage children as owners. In the first part of the paper, we find that firms, firm formation and retained earnings are important for high income individuals. Particularly, we show that there is a divergence between the standard gross income measure and broad income including retained earnings immediately after starting a business. In the second part, we find that the prevalence of underage children as firm owners increases strongly among business owners in the top 0.1% and these children have substantial capital income from a very young age.

Keywords: inequality; taxation; firms; firm owners; family

JEL Codes: D3, H2, H3, M1

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1 Introduction

The Nordic countries are known for their relatively low levels of income inequality with high inter-generational mobility (Corak, 2013), despite a very fast increase in income inequality in the late 1990s (Jäntti et al., 2010). At the same time, compositional inequality between capital and labour income is especially high in these countries (Ranaldi and Milanović, 2022; Iacono and Palagi, 2022). In addition to capital income being concentrated among top income earners, accounting for retained earnings, i.e. corporations' undistributed profits, increases the share of income going to the top income groups. While individual-level data on retained earnings have not been easily available for most countries, some studies have successfully combined owners, ownership shares and firms' balance sheet information. This allows retained earnings to be allocated on top of the personal income that is observed in administrative tax data. These studies show the importance of retained earnings for the top of the income distribution and income inequality measures (Alstadsæter et al., 2016; Fairfield and Jorratt De Luis, 2016; Wolfson et al., 2016; Bruil et al., 2022). For example, Alstadsæter et al. (2016) observe that including retained earnings more than doubles the income share accruing to the richest 0.1% in Norway. Kopczuk and Zwick (2020) also point out that in the US, different types of firm ownership and the differential treatment of individuals' business income have an important effect on our understanding of the level of inequality. This points to the importance of accounting for firms and firm behaviour when thinking about inequality.

In this paper, we focus on the role of privately held firms in inequality among individuals. Compared to owners of publicly listed companies, owners of privately held corporations have more possibilities to affect the decision to retain some of the profits within their firm as well as how much dividends to pay out each financial year. With one or only a few owners, a privately held firm can be more easily used for optimising the owner's personal taxation. Additionally, tax legislation can create incentives to promote this type of behaviour. For example, in the Nordic countries capital and labour income have been taxed separately ever since the countries introduced a dual income tax system in the late 1980s and early 1990s. Since then, labour income has been taxed progressively with rather high top marginal tax rates, and capital income at a considerably lower flat tax rate. For the owners of privately held corporations, a dual income tax system can induce income shifting between the capital and labour income tax bases, change decisions on how much earnings to retain¹ and even create incentives to start up a firm to manage one's wealth. While tax-induced income shifting responses have been widely studied (Pirttilä and Selin, 2011; Harju and Matikka, 2016a; Koivisto, 2023; Alstadsæter et al., 2016), and it is documented that the role of capital income for the top income earners increased after the dual income tax reforms (Jäntti et al., 2010; Iacono and Palagi, 2022), less is known about the extent to which top income earners manage their wealth through firms. Alstadsæter et al. (2014) find suggestive evidence that after a large increase in the taxation of dividend income in Norway, firms started to retain earnings and the use of those earnings supports the view that some owners use their corporations partially to minimise their personal taxation. Romanov

¹While retained earnings can naturally be used for investment and thus promoting the real activity of the firm, they can also be used to minimise dividend taxation and for private consumption. The incentive to retain earnings for tax minimisation in the Finnish context is notable, as dividend taxation is based on the net wealth of the firm: the larger the net wealth, the lower the tax is on distributed dividends (more details in Section 2).

(2006) found that in Israel, a rise in personal income tax rates resulted in high-income individuals establishing companies, amounting to a 5% increase in the corporate sector. This behavioural response to taxation was found only in the top income percentile. Even less is known about using firms for the management of families' wealth.

We study top income inequality in Finland and the role of privately held firms from a broad perspective. Our descriptive analysis includes the potential behavioural margins individuals can use for tax planning through privately held corporations, including the role of retained earnings in corporations. We look at new firms established by individuals where they hold a significant ownership share, and explore their income trajectories before and after establishing the firm using a broad income measure with retained earnings and contrasting that to the traditional income measure observed from tax registers. We also study what types of firms these individuals establish and who the other owners are, in particular how the role of family members as owners varies over the income distribution. Our total population data allow us to look into the prevalence of underage children as owners of privately held firms. We also illustrate the implications of our findings for inequality measurement. A unique feature of our study is that we can add retained earnings through multiple layers of ownership within firms to their owners and we have a rich set of data on the background characteristics of Finnish households.

We find that business income and income within corporations are important sources of income at the very top. Around 40% of individuals in the top 0.1% own a privately held firm with significant ownership. Furthermore, conditional on not owning this type of firm, individuals in the top 0.1% are 4 times more likely to start a firm within 5 years compared to the rest of the top 10%. Immediately upon starting a new firm, individuals start retaining a considerable amount of earnings within the firm, causing measures of gross income and broad income including retained earnings to diverge. Due to this behaviour, the income shares of the top percentiles are clearly different depending on the income definition used. Using gross income (excluding capital gains or retained earnings), the income share of the richest 1% of individuals is approximately 7% across the years, whereas including retained earnings raises this share to 9%. The income share of the top 0.1% almost doubles, from 2% of total income to approximately 4%. We furthermore find that the richest 1% of individuals who start firms are 4 times more likely to include their underage children as owners in the firm compared to new firms established by the bottom 90%. Underage children who are owners of privately held firms have considerably higher capital income flows in their childhood compared to children who are not owners of firms, even among the richest 0.1% of parents.

This study contributes to several strands of literature on income inequality and tax policy. First, we contribute by studying the role of firm ownership within the income distribution. In the Finnish dual income tax system there are incentives to increase the net wealth position of the firm in order to take out more income in the future at a lower tax rate (capital income tax), so looking inside firms is important to grasp the full picture of top end inequality. Our analysis shows that income trajectories including and excluding retained earnings diverge right after establishing a new privately held firm. Second, we contribute by looking at the role of family in firm ownership. In particular, we show that firms owned by individuals at the top of the income distribution more often have underage children as co-owners, and that these children

start accruing a non-negligible amount of capital income at a young age. To our knowledge, we are the first to document privately held firm ownership as a source of income inequality within children, which presumably carries over to adulthood as well. This finding is related to the recent paper by Boserup et al. (2018) on wealth concentration in early childhood in Denmark. Compared to their paper, which focuses on income transfers from relatives, we are able to identify an important additional source of income through ownership of privately held firms. Third, we document the implications of retained earnings for income inequality in Finland. Finland is exceptionally suitable for studying the role of capital and retained earnings, as the administrative data include the majority of capital income sources, and allow us to link firm data to their owners as well as family members to these owners. We exploit total population tax records complemented with total firm data for the years 2006–2018.

The paper proceeds as follows: Section 2 sets the institutional context and describes the important tax policy changes relevant for privately held firm owners. Section 3 describes the data and definitions used in the analysis. Section 4 presents the results on the prevalence of firm ownership in different parts of the income distribution, income dynamics around starting a firm, and the implications for measuring inequality. Section 5 provides the results relating to the role of family and children in firms. We discuss the importance of our findings in Section 6.

2 Background

In this paper we analyse the concentration of capital and the role of firms in Finland in 2006–2018, but it is useful to be aware how dramatically the role of capital income changed in the country in the 1990s and what kind of tax policy changes have taken place. To that end, we first discuss the income trends over the past 30 years. The calculations in this section are performed using the Income Distribution Survey (IDS) for the years 1990–2018, which is a cross-sectional representative sample dataset covering about 5% of Finnish households.² After that, we provide key information on the taxation of capital income and privately held firms in Finland.

The capital markets were liberalised in the late 1980s, and in 1993 Finland adopted a dual income tax model where capital income was taxed at a flat rate of 25% and earnings income at a progressive tax rate. As the highest marginal income tax rate was 63%, this led to a strong preference for capital over earnings for high income individuals and created an incentive to shift income from earnings to capital income. While the income shifting incentives are strongest for self-employed persons who have the freedom to choose how much income to take out as wages and how much as dividends, the dual income tax reform affects high-income individuals more broadly as starting a privately held business is relatively easy³. Dual income tax systems are prone to income shifting between labour to capital income tax bases among the self-employed, while other types of business income tax systems also experience behavioral effects between labour and capital income. To prevent income shifting, the Nordic countries created different

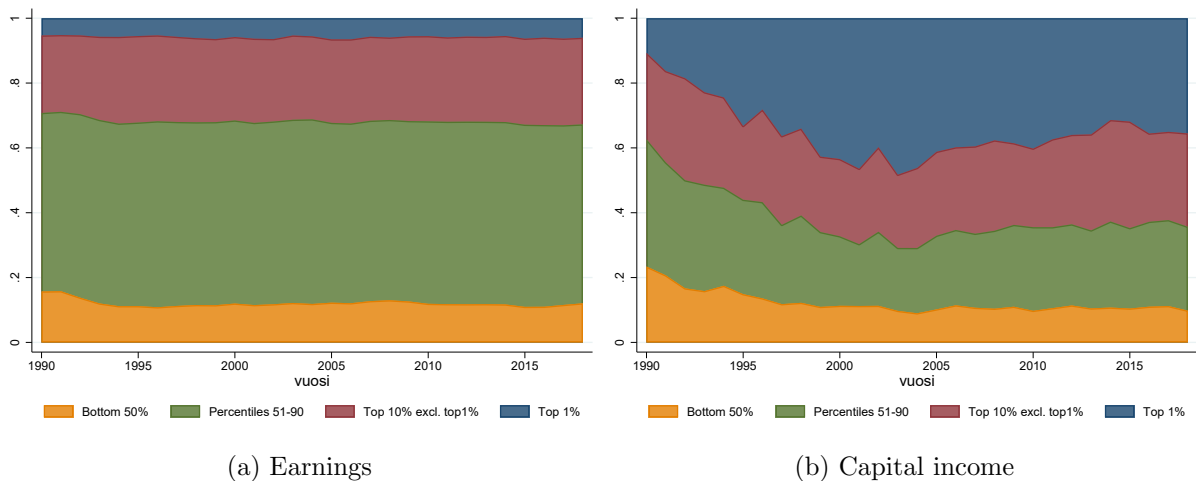
²A similar type of analysis with total population data but for a shorter period, 1995–2020, can be found in Riihelä and Tuomala (2022). Their results are in line with the analysis conducted with the IDS data.

³In Finland, when establishing an incorporated business, a minimum share capital of 2500 euros was required before 2019, whereas after 2019 there has been no any minimum requirement for own equity. Other obligations include registering the firm with the Finnish Patent and Registration Office and to providing annually audited financial statement and balance sheet information.

income splitting rules. Lindhe et al. (2002) evaluate dual income tax systems in the Nordic countries and find that the Finnish system increases the attractiveness of investing in privately held corporations rather than publicly traded corporations because of the tax design (described below).

Coincidentally, in the period of economic growth in 1995-2008, the total amount of capital income among Finnish individuals increased strongly, in particular compared to total earnings growth. Compared to the level in 1995, the total amount of capital income in the population in 2008 was 2.7 times higher, and in 2018 3.4 times higher. In contrast, the total amount of earned income in 2008 was 1.5 times higher than in 1995, and in 2018 1.6 times higher, displaying much more moderate growth. (Source: IDS data, authors' calculations.) At the same time, capital income became concentrated at the very top of the income distribution (Figure 1). Figure 2 illustrates that capital income is very rare for the bottom 90% of the distribution, and even for the top 10% excluding the top 1%, whereas the top 1% received 30% of their gross income from capital in 2018. Riihelä and Tuomala (2022) report that the role of capital income increases throughout the very top, being around 85% of total income in the highest 0.01%.

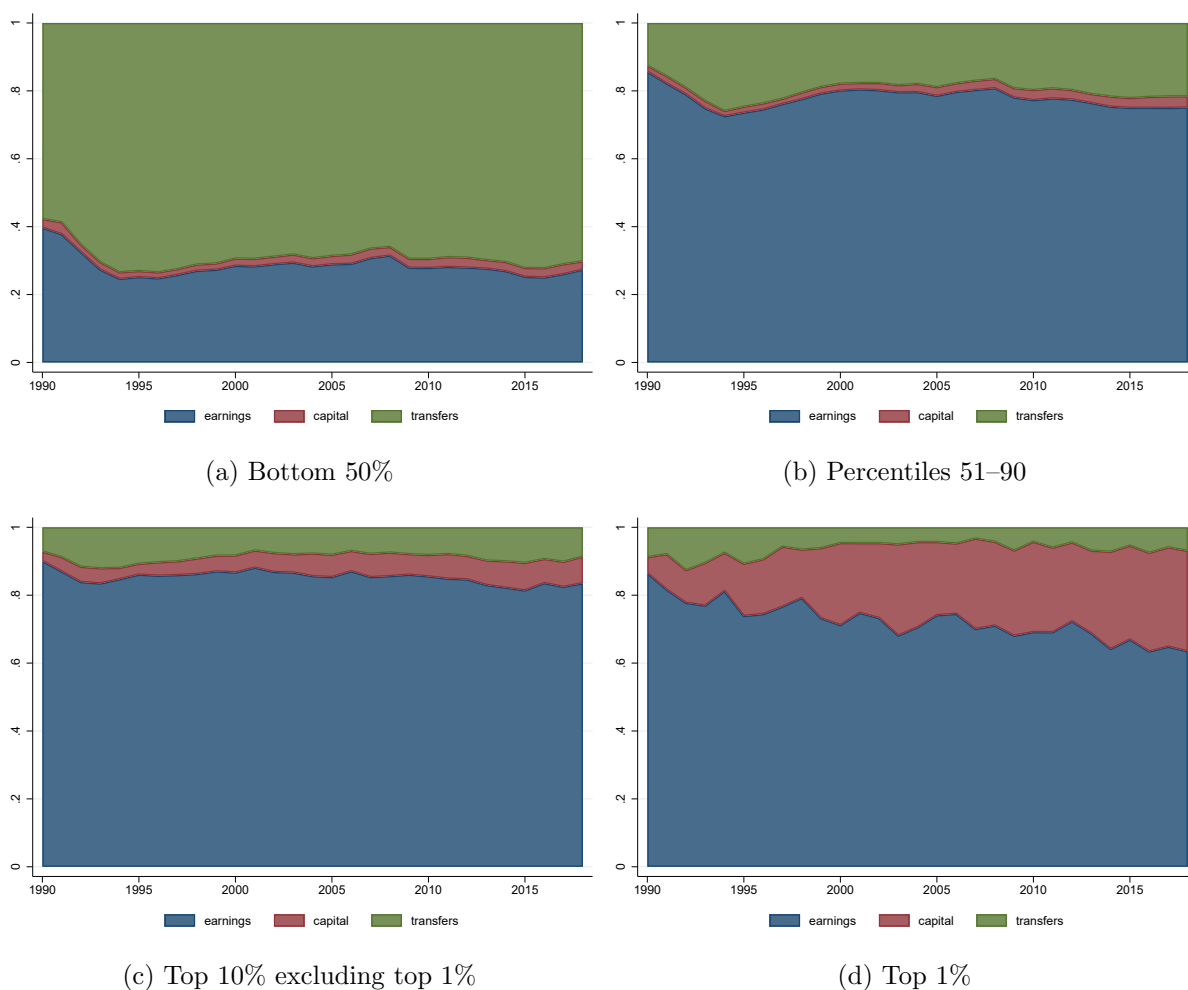
Figure 1: Share of earnings and capital income accruing to different income groups



Note: Figure shows the share of earnings and capital income accruing to different income groups in each year. Income group based on personal gross income excluding capital gains. Authors' calculations using IDS data 1990-2018. Data are representative of the population at least 20 years old in Finland.

The income splitting rules which aim to prevent income shifting in privately held corporations have changed many times after the introduction of the dual income tax system. The amount of dividend tax is dependent on the level of net assets of the firm. Only the amount of distributed dividends that are below a predetermined rate of return on the firm's assets are taxed at the capital tax rate and dividends above the net asset threshold are taxed at the progressive labour tax rates. Before 2005, there was a full imputation system of corporate taxes (*avoir fiscal*) to remove the double taxation of dividends. As the capital income and corporate income tax rates were set equal, this implied that dividends were taxed only once, at the firm level. In 2005, the full imputation system was abolished and was replaced with a monetary threshold under which part of the capital income is deducted in order to reduce the double taxation of firms' profits. The predetermined rate of return has been either 9% or 8% and the monetary threshold has

Figure 2: Composition of income across the income distribution



Note: Figure shows the aggregate value of each income type relative to the total value of gross income in each income group. Income group based on personal gross income excluding capital gains. Authors' calculations using IDS data 1990-2018. Data are representative of the population at least 20 years old in Finland.

varied between 60,000 to 150,000 euros. The overall tax burden for the owners also includes the corporate tax rate, which has been a flat rate of 20% since 2014 (26% 2005–2011, 24.5% 2012–2013). The effective tax rates below the monetary threshold have been around 15 percentage points lower than above the threshold (Koivisto, 2023; Harju and Matikka, 2016a). The capital income tax rate has tightened over time, starting from a nominal rate of 25% in 1993 and being 30% and 34% in 2023; after 2012 there have been two tax brackets, where the threshold for the higher rate has varied in 30,000 to 50,000 euros.

As the incentives to shift income between tax bases is especially strong in Finland, many research papers have explored this behavioural margin. Harju and Matikka (2016a) study the 2005 reform that abolished the full imputation system and changed the income shifting incentives for some business owners. They find that business owners, irrespective of the observed types of firms or owners, are active in income shifting. In a follow-up study, Harju and Matikka (2016b) conclude that income shifting responses account for approximately 2/3 of the overall response within Finnish business owners, while 1/3 of the response consists of real responses

in the firms' economic activity. Using changes in the parameters of dividend taxation in the 2010s as exogenous variation, Koivisto (2023) shows that privately held firms' dividend payments react strongly to dividend taxation, and that firms reacting to taxation also react by retaining earnings, increasing the net asset position of the firm and in particular the financial assets of the firm. Using the kink at the second capital income tax bracket, she finds a taxable elasticity estimate of 0.5, while for the threshold where the progressive labour tax would take place, the elasticity estimate is as high as 3.6. Further, she does not find an impact on investments, suggesting that the response is mainly driven by intra- and intertemporal tax planning⁴. Her evidence suggests that such firm owners could use their firms to store savings.

The ample existing evidence that Finnish business owners use the income shifting opportunities provided by the tax system, combined with the finding that capital income is very concentrated at the top of the income distribution, indicates that it is important to account for privately held firms in order to understand inequality at the top of the income distribution. While we focus here on dual income tax systems and the Finnish experience, the role of firms in inequality is important in other country contexts and tax regimes, as demonstrated by Kopczuk and Zwick (2020).

Finland also has gift and inheritance taxation. Under current regulation, the recipient needs to pay gift tax if the total value of transfers from the same donor over 3 years exceeds 5,000 euros. The gift tax is progressive, but the tax rates are lower for gifts between close family members. For children and spouses the highest marginal tax rate on gifts is 17%. Over time there has been some modest variation in the marginal tax rates and thresholds. If a gift includes the transfer of an active business to a child ('generational transfer'), partial gift tax relief can be granted. Similarly as in gift taxation, inheritance taxation also has a progressive schedule with lower rates for bequests to close family members, but the threshold for taxable wealth is higher than for gifts (currently 20,000 euros).

3 Data and definitions

We employ administrative data from Statistics Finland covering the full population residing in Finland for the years 2006 to 2018. The different datasets make it possible to link together information about incomes (individual and household level), background characteristics, firm ownership, and financial statements of firms. We describe each dataset in detail next.

Individual income and background characteristics. The register data contain comprehensive information on wages and salaries, self-employment income (income from agriculture and forestry, copyright fees, and for limited partnerships, for example, income from business activity), capital income (dividends, rental income, realised capital gains and other sources of capital income) and current transfers received and paid. Most of the income data are collected by the tax administration and are mostly third-party reported. While our measure of capital income is quite comprehensive, it lacks information on incomes taxed at source, such as interest income.

⁴Intratemporal here refers to shifting between capital and labour income tax bases, while intertemporal refers to increasing retained earnings, as this enables owners to build up their firms' net wealth and consequently pay less taxes on dividends in the future.

Our preferred income concept is total gross income (sum of wages, salaries, self-employment income, capital income, transfers received). When calculating income distribution statistics we focus on individuals over 20 years old and we do not restrict ages at the upper end. We define all incomes at the individual level. This avoids mixing income developments with changes in household formation and composition. This is also consistent with the tax system, as Finland has individual-based taxation.

Our data include a rich set of background variables collected from various administrative registers. The data include unique individual and household identifiers, allowing linkages across datasets. With total population data, we can use these identifiers to link spouses as well as link biological children to their parents.

Throughout the paper, we rank individuals and households based on gross income excluding realised capital gains (unless otherwise indicated). That is, when we analyse the role of retained earnings, we are dividing individuals by their income position before retained earnings have been accounted for. Income rank and top income shares are defined for all individuals aged 20 and above.

Firms' financial statements. The firm financial statements dataset provides information on profit and loss accounts and balance sheet information at the firm level. These data also contain background characteristics of the firms, such as their industry. These data can be linked with the firms' owners using the unique firm identifiers.

Firm ownership. To identify owners of incorporated privately held businesses, we employ the ownership database, which is available from 2006 onwards. This dataset provides information on both individual and firm owners. The data cover all limited liability companies with at most 10 owners. If the firm has over 10 owners, the data cover those owners who own at least 10% of the company shares as well as owners who have received a shareholder loan. We loop the layers of ownership and find the ultimate individual owner. Using the firm financial statements data, we can calculate the amount of profit retained in the firm after dividends are paid, and using an individual's ownership share, allocate each owner their share of retained earnings, following the methodology in Alstadsæter et al. (2016). We include net retained earnings in our gross income variable discussed above to form a measure of broad income. Note that net retained earnings can also be negative if the firm is making a loss.

Our analysis focuses on what we call 'significant owners' of privately held firms. We define a significant owner of a privately held business as a person who owns at least 40% of the firm's shares. With this level of ownership, an individual has important command of the company, but the definition is not as restrictive as majority ownership, which might rule out for example certain family firms. On average, 85% of the privately held limited liability companies in our data have a significant owner. Each firm is characterised by their main owner's income (based on gross income before accounting for retained earnings), where main owner is defined in the first place as the owner with the highest ownership share. If the ownership shares are equal, the main owner is the owner with the highest income ranking.

New business owners are defined as individuals for whom we do not observe a significant ownership in the year before the new firm is established, conditional on the firm ID not appearing in the data in any years preceding this event. This means we can identify the first new owners

Table 1: Descriptive statistics of firm data, annual averages.

	# of firms	# owners in firm	age of main owner	share with female main owner
All firms	113,223	2.3	48	25%
Firms with a significant owner	96,114	1.8	49	25%
New firms with a significant owner	8,170	1.8	43	25%

Note: Table shows annual averages over 2006–2018. Significant ownership is defined as at least one owner having at least 40% ownership. New firm is defined as not existing in the data in any previous years and is conditional on having a new significant owner (i.e. owner not having significant ownership in any other business the previous year.) New firms defined for years 2007–2018.

from 2007 onward.

Table 1 provides descriptive information on the firm data we use. Our data contain on average 113,000 limited liability firms annually, which compared to Statistics Finland’s information on the total firm stock covers around 85% of all limited liability firms during our observation period. The category of firms with significant owners covers the majority of firms in the data (on average 96,000 firms annually). For individuals who do not previously own a significant share of a firm (but can own smaller shares of other companies), on average 8,000 new firms with significant ownership are established each year.

4 Results: Firms and retained earnings at the top

We start by looking at firm ownership across the income distribution. We also study the probability of starting a firm across different parts of the income distribution, and the income trajectories before and after the start of the firm, taking earnings retained in firms into account as well. We then illustrate the implications of these findings for measuring inequality.

4.1 Prevalence of firm ownership at the top

We first show how concentrated the ownership of privately held firms is at the top of the income distribution. Figure 3a shows that a minor share of the bottom 90% have significant ownership in a firm, and even among percentiles 91-99, only around 10% have significant ownership in a firm. By contrast, around 30% of the richest 1% are significant owners in a firm.⁵ Over time there has been a steady increase in the share of significant owners within the top 1%, while for the top 0.1% the increase is concentrated in 2006-2010.

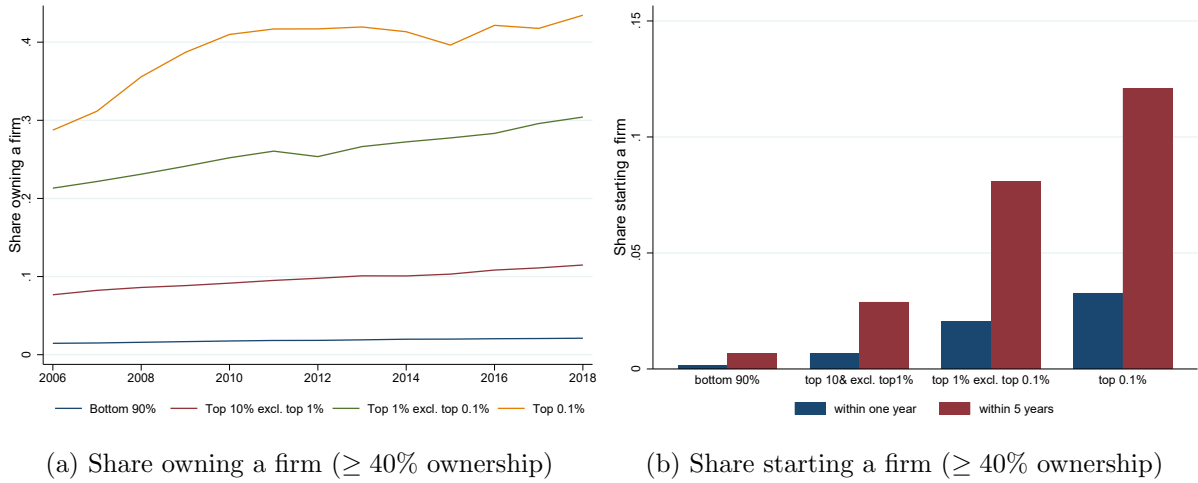
Naturally, owning a firm is a source of income, causing successful entrepreneurs to rise to the top percentiles in the first place. But we also see that for individuals who are not yet significant owners of a firm, the probability of starting such a firm in the coming years is much higher for high-income individuals (Figure 3b). That is, they have already risen to the top without owning a significant share in a firm, but they are much more likely to start a new firm than other individuals. The study population consists on average 4.1 million individuals annually and, for

⁵Naturally, as these income groups are of different sizes, the majority (53%) of firms with a significant owner have a main owner who is from the bottom 90%. 7% of firms with a significant owner have a main owner from the top 1%.

the top 0.1%, conditional on not already having majority ownership, the number of individuals is on average 2300 yearly.

Our observation is also in line with the findings of Harju et al. (2023), who study selection into entrepreneurship. They also compare long-term income differentials between wage-earners and those who become entrepreneurs, as well as firm outcomes. They find that the relative personal return on entrepreneurship is not higher for those who were already rich before starting a firm compared to entrepreneurs in the rest of the income distribution. High-income entrepreneurs' firm outcomes are nevertheless somewhat better than lower-income entrepreneurs' outcomes. Compared to their analysis, our interest lies in particular in firms where high-income individuals have a significant ownership share, as such firms are more likely to be relevant for the management of personal wealth.

Figure 3: Firm owners and firm formation by income groups



Note: Owning a firm is defined as having at least 40% ownership. New firm formation is defined as firm not existing in the data in any previous years and is conditional on the owner not having significant ownership in any other business the previous year. New firms defined for years 2007–2018 and pooled.

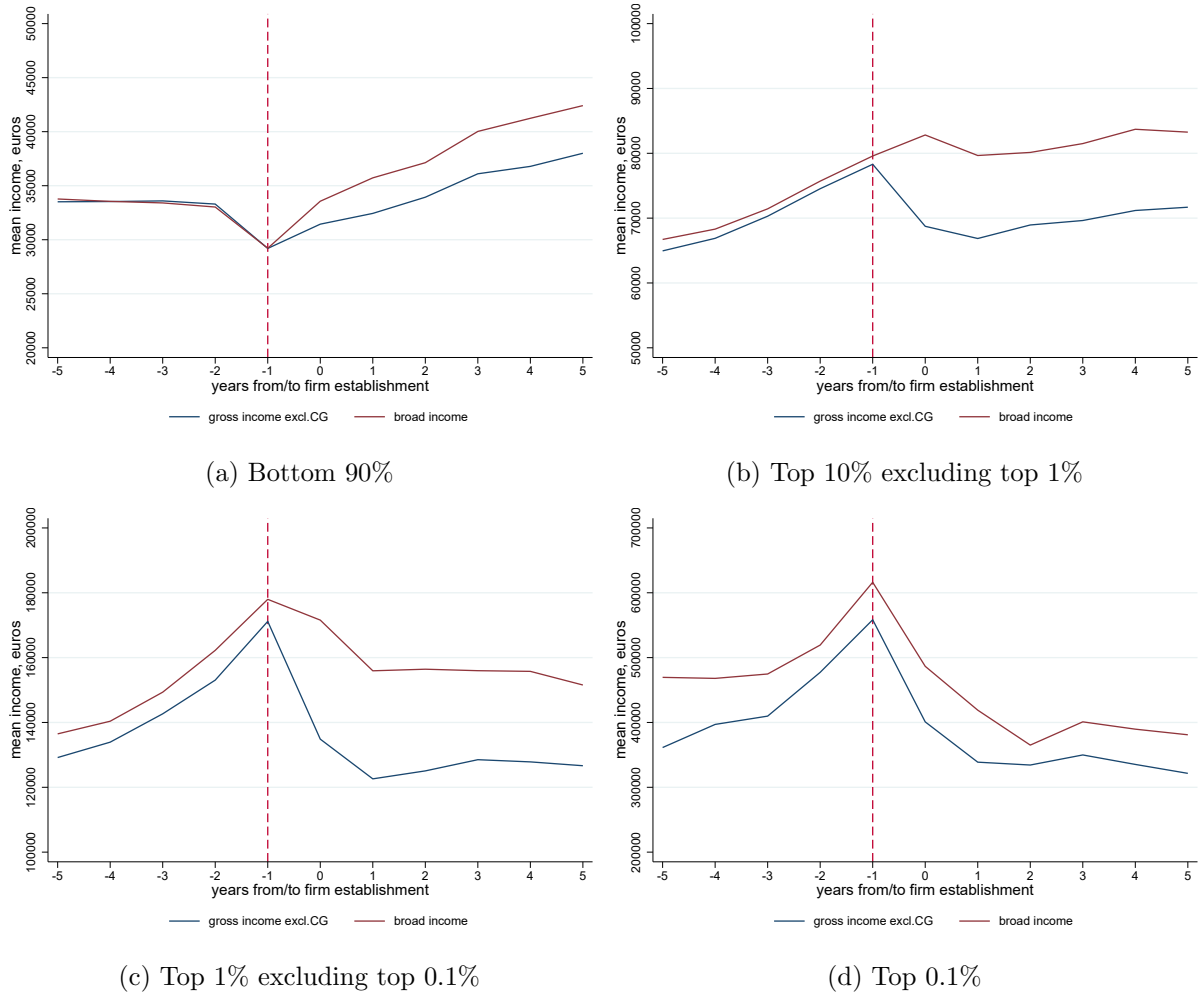
4.2 Income development after establishment of a firm

We next study what happens to individual income after the formation of a firm where the individual has a significant ownership. The population in each sub-figure in Figure 4 is such that individuals are in a given income group, and do not own a firm in year $t-1$, and they start a new firm in year 0. We follow both their gross income as well as the broad income measure which includes earnings retained within firms.⁶ The first measure is typically observed from statistics and used for defining income inequality. We immediately observe that this standard income measure differs considerably from that of the second, broad income measure. The difference between the two lines that emerges immediately in year 0 indicates that retained earnings form an important source of income, which is not observed in standard measures. The income trends

⁶Note that even though these firm founders do not have significant ownership in the years before, they may have smaller ownership shares in other firms, so that retained earnings is the sum of net retained earnings from all firms.

are very similar across income groups, with the difference that retained earnings from other firms are already important for the top 0.1% group before establishing this particular firm.

Figure 4: New firms and income trajectories

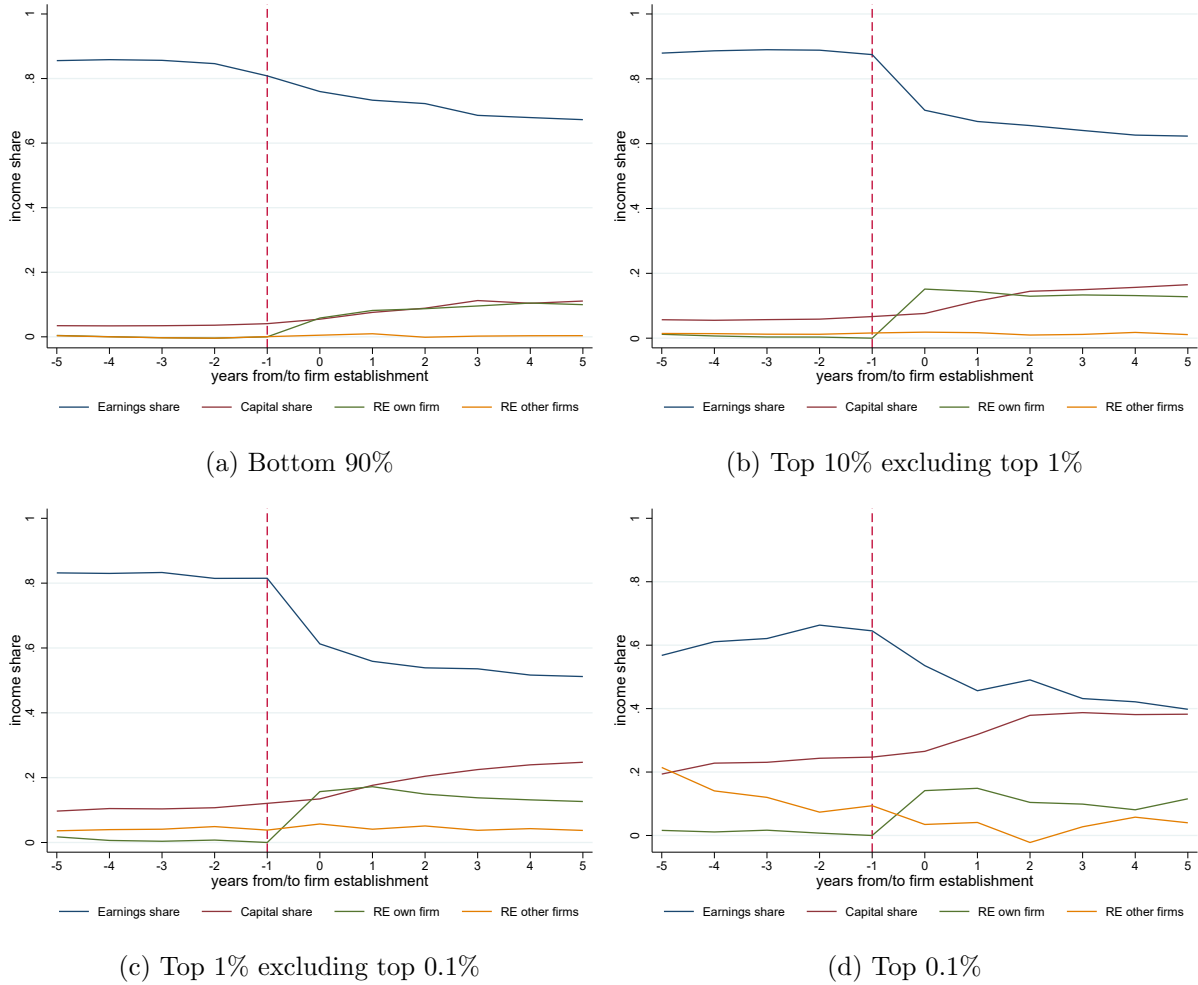


Note: Figure shows the mean income in each income group in each year relative to the starting year of the firm. Income group based on personal gross income excluding capital gains in year -1. New firm is defined as not existing in the data in any previous years and is conditional on owner not having significant ownership in any other business in year -1. New firms defined for years 2007–2018 and pooled. Unbalanced panel, observations in year 0: $N(\text{Bottom } 90\%)=59,822$. $N(\text{Top } 10\% \text{ excl. top } 1\%)=23,494$. $N(\text{Top } 1\% \text{ excl. top } 0.1\%)=5,567$. $N(\text{Top } 0.1\%)=793$.

For the bottom 90% and top 10% excluding the highest percentile, there is a clear increase in broad income already during the first year the firm exists (Figures 4a, 4b). This can indicate that these individuals are anticipating some financial gain, for example selling an invention, and take action before that transaction. For tax reasons, it can be beneficial to handle these types of transactions through a firm instead of through personal taxation.

For the top 10%, top 1% and top 0.1%, the standard income measure falls and stays below the level before firm establishment for several years, whereas the broad income measure is at a higher level. These individuals also more often own smaller shares in firms, so their retained earnings in firms prior to starting the privately held firm are already very high in total, making

Figure 5: New firms and income composition (broad income)



Note: Figure shows the aggregate value of different income types relative to the total value of broad income in each income group in each year relative to the starting year of the firm. Income group based on personal gross income excluding capital gains in year -1. New firm is defined as not existing in the data in any previous years and is conditional on the owner not having significant ownership in any other business in year -1. New firms defined for years 2007–2018 and pooled. Unbalanced panel, observations in year 0: N(Bottom 90%)=59,822. N(Top 10% excl. top 1%)=23,494. N(Top 1% excl. top 0.1%)=5,567. N(Top 0.1%)=793.

it more difficult to see the effect of the new firm.⁷

Note also how gross income spikes (falls) for the top (bottom) income groups in year $t-1$, when the income group is defined, relative to previous and following years. This indicates that there are large annual fluctuations in income and therefore also in the stability of the top income groups.⁸

As discussed in Section 2, taxation in Finland favours capital income over labour income, especially for high-income individuals. Figure 5 illustrates what happens to the relative shares of income types after establishing a firm. At first, the share of earnings income in broad income falls for all income groups in the year of firm foundation due to retained earnings in the firm.

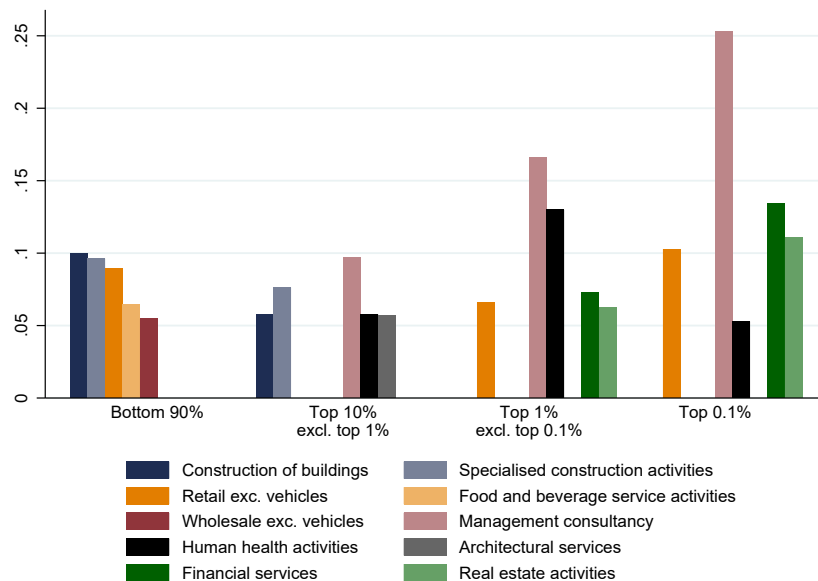
⁷Running a regression model which controls for year effects produces similar results, indicating these results are not driven by yearly fluctuations. Results available upon request.

⁸When we compose the same analysis as in Figure 4 using gross income percentiles on the y axis instead of own income levels, this fluctuation is clearly illustrated.

Afterwards, the relative shares of earnings and capital income start changing, and this effect is much more pronounced for the highest income groups. The average share of dividends from own firm per total capital income is 41%, 45%, 38% and 16% from the lowest to the highest income group, respectively. However, it is notable that the level of capital income varies drastically between these groups; while for the bottom group the average capital income during the five follow-up years is 3,900 euros, for the three top income groups the average capital incomes are 12,000 euros, 34,000 euros and 140,000 euros, respectively. This means that the level of dividend payments is higher for the top 0.1%. The shares of retained earnings in the new firms are surprisingly similar across income groups, with on average 17% of income being in the form of retained earnings in the firm in the years after establishing the firm. However, for the top 0.1%, a larger share of income moves to being within the firm where they have a significant ownership share, as the share of retained earnings from other firms falls over time.

To learn more about what types of firms these new firms are, we study the industry structure. From Figure 6 we see that there are some differences in industries based on the owner's position in the income distribution. For the top 0.1%, 25% of new firms operate in management consultancy, 13% in financial services and 11% in real estate services. These industries are also clearly very concentrated at the top of the income distribution.

Figure 6: Five most common industries (2-digit level) of new firms, by significant owner's position in income distribution



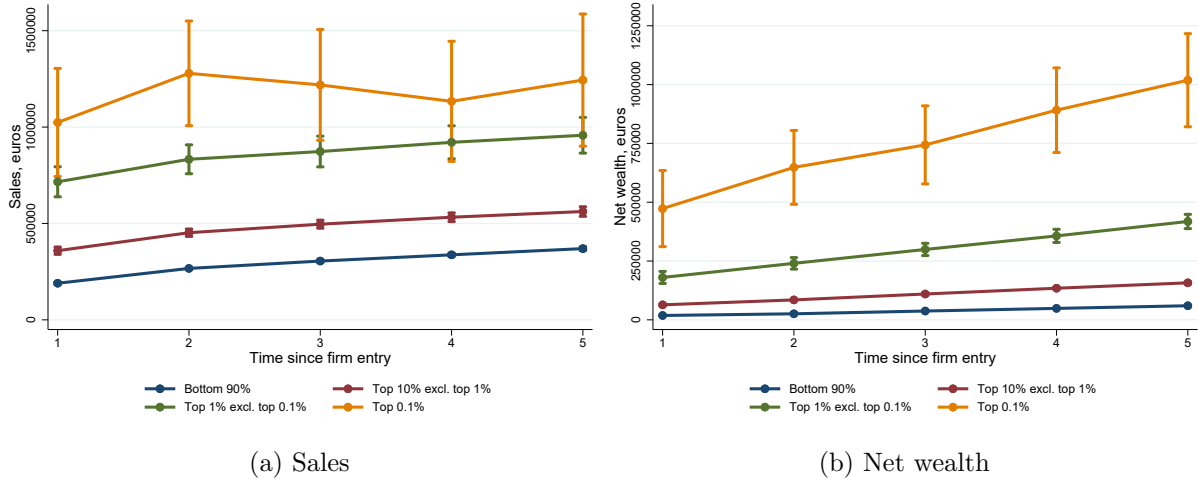
Note: Figure shows the five most common 2-digit industries among new firms in each income group. Income group based on personal gross income excluding capital gains in year -1. New firm formation is defined as the firm not existing in the data in any previous years and is conditional on the owner not having significant ownership in any other business the previous year. New firms defined for years 2007–2018 and pooled. $N(\text{Bottom } 90\%)=54,380$. $N(\text{Top } 10\% \text{ excl. top } 1\%)=21,242$. $N(\text{Top } 1\% \text{ excl. top } 0.1\%)=5,142$. $N(\text{Top } 0.1\%)=739$.

In Figure 7 we study firm outcomes, sales and net wealth since firm formation. While the former tells about the real activity of the firm, the latter is important for dividend taxation, as explained in Section 2⁹. In the figure we show a linear prediction from a regression that controls

⁹We define net wealth from the financial statement data as assets minus liabilities. The tax authorities define

for year and industry. This descriptive evidence shows that firms with main owners from very high up in the income distribution have clearly higher sales than firms with an owner from the bottom 90%, while growth in sales is very similar across the groups. Firms with an owner from the top 1% employ on average 4.2 persons, while the rest of the top 10% employ on average 3.1 and bottom 90% 2.3 persons. Turning to net wealth, we notice that for the very top, the growth rate for net wealth is clearly faster than for the rest.

Figure 7: New firms and firm outcomes



Note: Figure presents a linear prediction from a regression model where the outcome (sales, turnover) is regressed on time since entry, year and industry dummies. Sales defined as turnover minus other operating income. Net wealth defined as assets minus liabilities. New firm formation is defined as the firm not existing in the data in any previous years and is conditional on the owner not having significant ownership in any other business the previous year. New firms defined for years 2007–2017. Observations in regressions: N(Bottom 90%)=156,439. N(Top 10% excl. top 1%)=64,268. N(Top 1% excl. top 0.1%)=15,388. N(Top 0.1%)=2,163

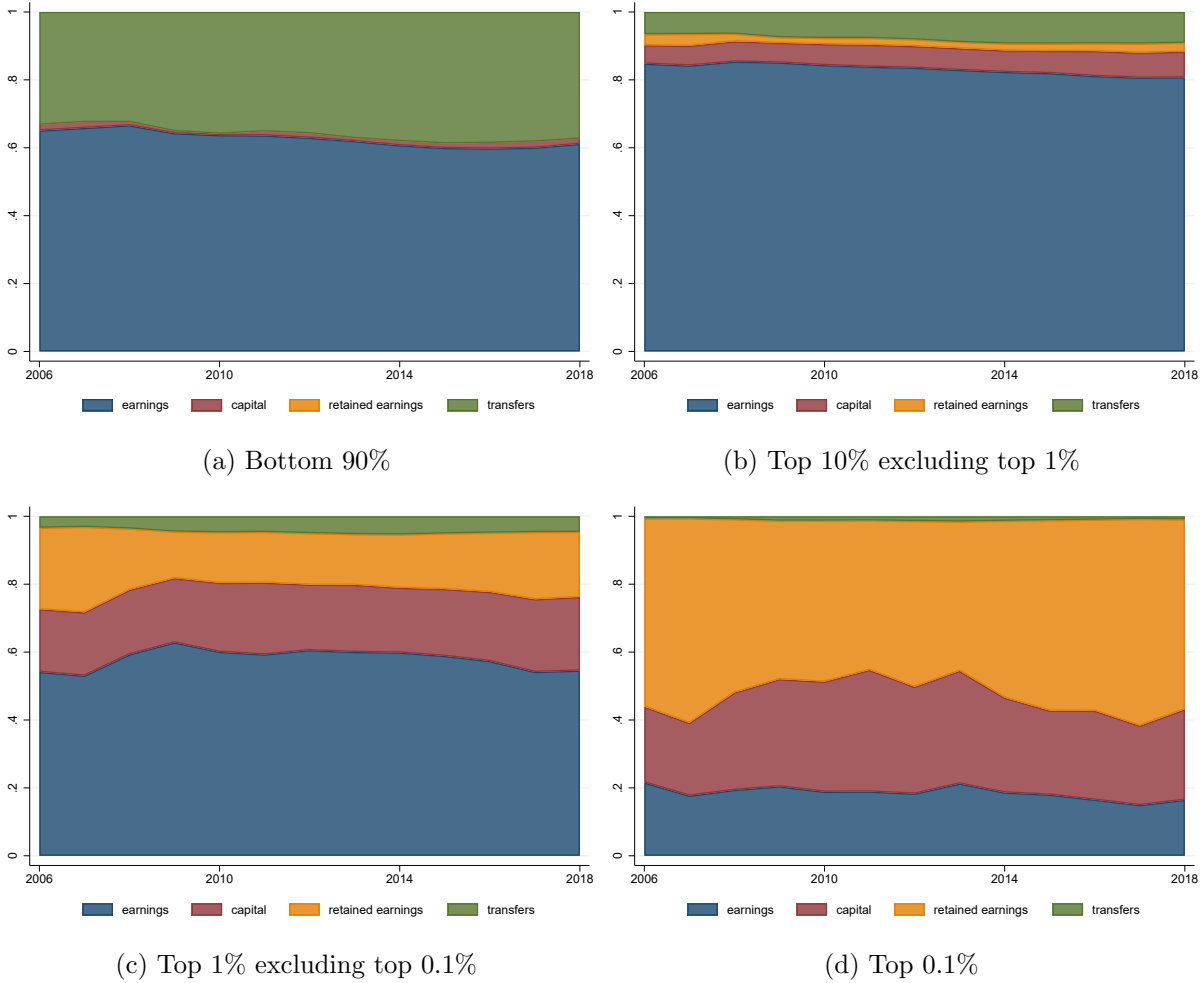
4.3 Implications for inequality measurement

In the previous sections we have shown that the ownership of privately held firms is concentrated at the top of the income distribution, and that immediately after establishment, a significant share of income is retained within firms. These factors are likely to distort standard measures of income inequality, since retained earnings are not observed in standard register data sources. We next illustrate the importance of earnings retained in firms for our understanding of income concentration. Figure 8 illustrates the composition of broad income across the income distribution. Both capital income and retained earnings are concentrated in the top 1%, and more strongly among the top 0.1%.

Even though retained earnings are clearly concentrated at the top, the relative importance of retained earnings for the broad income of the richest individuals has not grown significantly over time, but there is some volatility. This stands in contrast to e.g. Norway, where the relative role of dividends and retained earnings has changed due to changes in their tax treatment (Alstadsæter et al., 2016).

In Figure 9 we show the income shares of the top 10%, top 1% and top 0.1% with three net wealth slightly differently, removing certain balance sheet items from assets, for example.

Figure 8: Income composition including retained earnings, across broad income distribution

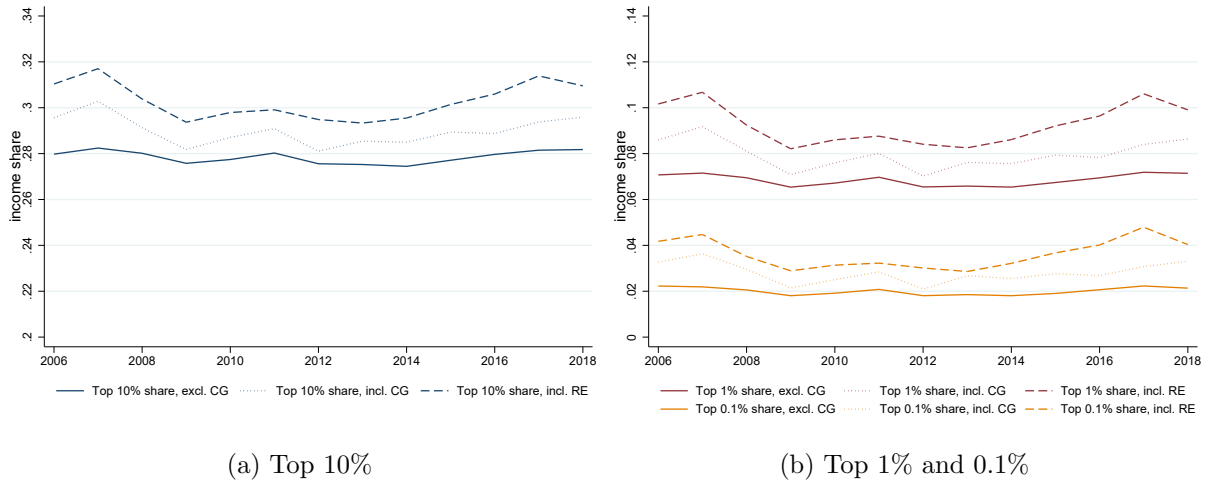


Note: Figure shows the aggregate value of different income types relative to the total value of broad income in each income group. Income group based on personal broad income including retained earnings. Authors' calculations using total population data 2006–2018. Data include all individuals at least 20 years old in Finland.

different income concepts.¹⁰ The solid line illustrates the income share using gross income excluding capital gains, a standard income measure obtained from surveys and registers and typically used in inequality studies. The dotted line adds realised capital gains to gross income, and the dashed line excludes realised capital gains but adds retained earnings. We see that realised capital gains have a relatively smaller role for the top income shares, contrary to the experience of Sweden (Roine and Waldenström, 2012) and more similarly to the experience of Norway (Alstadsæter et al., 2016). Realised capital gains increase the income share of the top 10%, top 1% and top 0.1% by on average 1 percentage point each, whereas retained earnings increase their income shares on average by 2 percentage points. The relative effect is largest at the very top, as accounting for retained earnings doubles the income share going to the richest 0.1% individuals, from 2% to 4%. This is similar to the estimates for Norway in Alstadsæter et al. (2016) after the tax change in 2005, when the tax regime and relevant incentives for privately held firms are more comparable to those in Finland. The estimates for Chile are much

¹⁰A similar top income share series is reported in Riihelä and Tuomala (2022).

Figure 9: Top income shares 2006–2018



Note: Figure shows the income shares of top 10%, top 1% and top 0.1% calculated with different income definitions. Individuals are ranked to income groups based on the income measure in question. Authors' calculations using total population data 2006–2018. Data include all individuals at least 20 years old in Finland.

higher, and also the concentration of income at the top is much sharper before accounting for retained profits (Fairfield and Jorratt De Luis, 2016).¹¹

The income share estimates with gross income excluding capital gains and retained earnings are more stable over time, whereas both realised capital gains and retained earnings are more cyclical, causing the income shares to fluctuate more over the years. (The result is qualitatively similar for the Gini index with gross and broad income measures.)

To further illustrate the effect of using standard gross income measures for the top income shares, we calculate the share of individuals who are located in the top 10%, top 1% or top 0.1% using gross income, and who are located in the same income group using the broad income measure ranking. For the top 10%, this share is around 97% across the years. For the top 1%, the share found in the same income group with both measures is clearly lower at 79%, and for the top 0.1% the share falls further to only around 59%. The estimates for Chile are very similar for the top 1%, whereas for the Chilean top 0.1% the share staying in that income group with both measures is even lower (Fairfield and Jorratt De Luis, 2016). Taken together, our evidence shows that there is a considerable reshuffling of individuals at the very top, and their sources of income and shares of total income, depending on the income concept used.

5 Results: Families in firms at the top

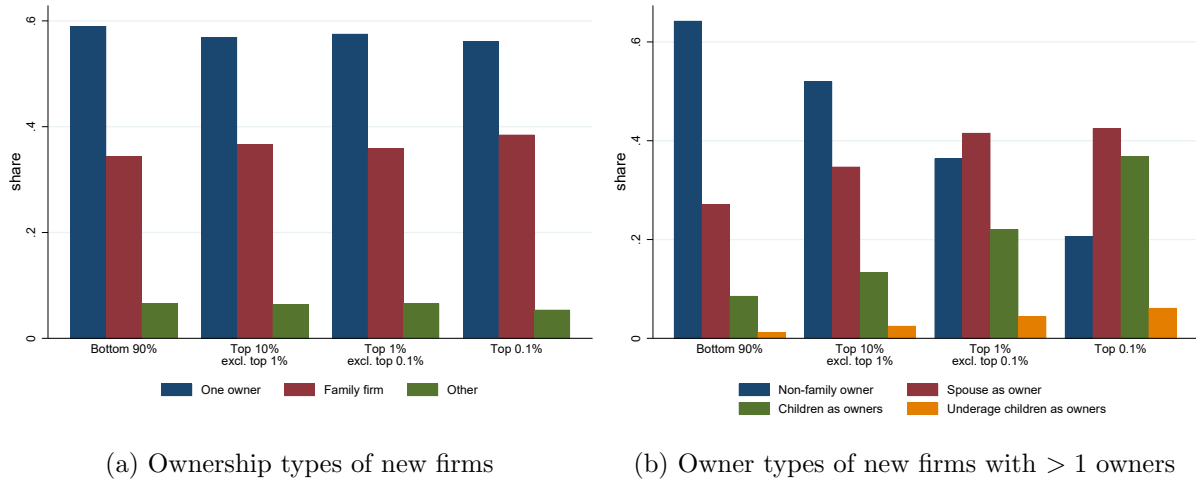
5.1 Family members as firm owners

The previous section showed for example that for the richest individuals, the income shares of capital and earnings start to change after these individuals establish a new firm where they have significant ownership, which is consistent with the incentives created by the tax system. But

¹¹The methods and definitions behind the estimates for the Netherlands in Bruil et al. (2022) and Canada in Wolfson et al. (2016) are more different from ours, and therefore the estimates are not directly comparable to ours.

in addition to own wealth, privately held firms could also be used to manage family members' wealth. In this section, we first look at the same new firm establishment as in the previous section, and study how common it is to include family members as owners of these firms. We then turn to the whole population of firms with significant owners to study the implications of this more broadly.

Figure 10: New firms' ownership, by main owner's income group

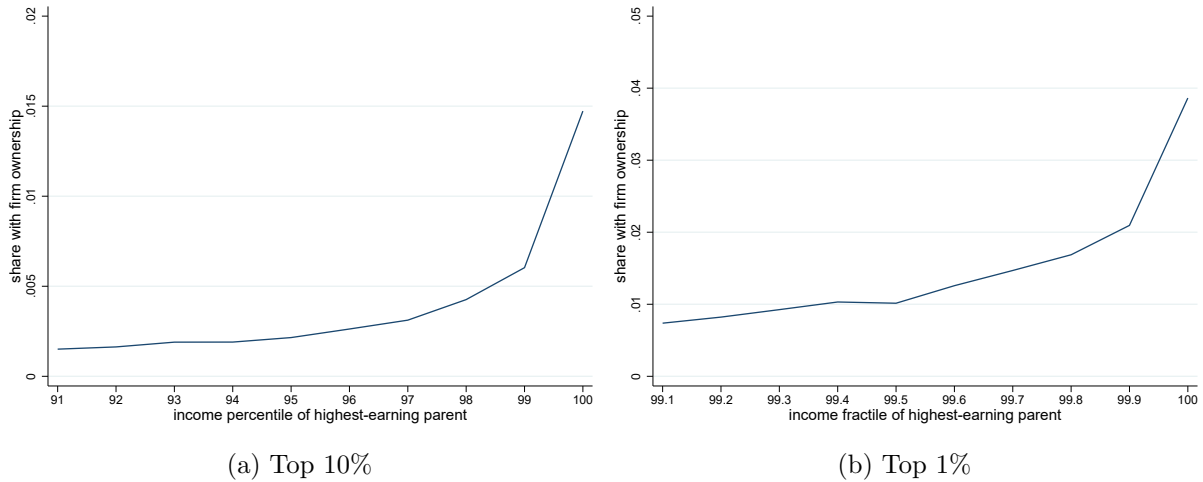


Note: Income group based on personal gross income excluding capital gains in year preceding the new firm establishment. New firm formation is defined as firm not existing in the data in any previous years and is conditional on the owner not having significant ownership in any other business the previous year. New firms defined for years 2007–2018 and pooled. One owner: one owner has 100% ownership. Family firm: > 1 owners, $\geq 50\%$ of firm owners from same family. Other: >1 owners, no family members as owners or family ownership < 50%. Panel (b) shows the share of firms with >1 owners where different family members of the main owner co-own the firm. N(Bottom 90%)=60,356. N(Top 10% excl. top 1%)=23,823. N(Top 1% excl. top 0.1%)=5,688. N(Top 0.1%)=816.

The data reveal interesting differences in the ownership structure of these firms. On average 59% of the new firms studied in the previous section have only one owner, and the probability of being a solo entrepreneur does not strongly depend on income group. (Figure 10a). Other firm owners are here considered to be either external owners or close family members (spouses and children). We find that among new firms with more than one owner, the probability of having close family members as owners is clearly correlated with the owner's income group (Figure 10b), in particular the probability of having own children as owners of the firm. Having underage children as owners is in general quite rare (on average 1.3% of these new firms with significant ownership), but the probability is 4 times higher among owners in the top 1% than among those in the bottom 90% (6.1% vs. 1.2%). In the Appendix we also show the ownership structure of all existing firms, verifying that this result is not restricted to newly established firms during the time period. The relationship between the main owner's income and co-owner types is different regarding spouses (spouse-owners are less common at the top), but the relationship between owner income and the probability of having own children as co-owners remains (share with underage children in the top 0.1% is 3 times that in the bottom 90%). On average 1.6% of all firms have own underage children as co-owners. (Figure A1)

Since the absolute number of new firms with more than one owner in Figure 10b is quite

Figure 11: Share of underage children with ownership in a privately held firm, by parent’s income group



Note: Figure shows the share of children who own shares in privately held firms with a significant owner, across the parental income distribution. Horizontal axis is the child’s highest-earning parent’s position in the individual gross income distribution. Total population, 2006–2018 pooled.

small at the top of the distribution, in the following we focus on all privately held firms with a significant owner and all underage individuals. Although we do not restrict our analysis to firms where the child’s parents are owners, parent-child links form the majority of cases of underage ownership. Among all firms and all underage individuals in 2006–2018, in firms where the main owner comes from the bottom 90%, the share with underage co-owners is 0.7%, whereas among top 1% owners the share is 2.2%. There is thus a clear correlation with the main owner’s income group and the probability of having underage individuals as co-owners in the firm.

We next turn from the firm perspective to the children’s perspective. There are around 1 million underage individuals in Finland, of which a mere 0.2% own shares in a privately held firm with a significant owner. Figure 11 illustrates a similarly stark effect of the parents’ position in the income distribution on the probability of being an underage firm owner. For children whose parent is in the top 1% but below the top 0.1%, the share owning privately held firms is 1.2%, and in the top 0.1% it is 3.9%. 70% of children with firm ownership are in the top 10% of the parent’s income distribution and very few are found in the bottom deciles.¹²

Underage firm ownership is thus a relatively rare phenomenon. Children can own different types of assets in addition to or instead of shares in privately held firms. Having any capital income can be considered as an indication of ownership more generally: owning something which creates positive capital income.¹³ Figure 12 illustrates the share of underage individuals with positive capital income in panel (a) and with ownership in privately held firms in panel (b),

¹²We describe the income level of children as the higher-income parent’s income rank among the total population aged 20 and above. This allows us to describe the position in the income distribution of all adults, including those who do not have children (for example, the actual top 0.1% of adults). However, the income percentiles then do not contain an equal number of children. Because we choose the higher-income parent’s income percentile, underage children are more concentrated towards the top of the adults’ income distribution. Roughly half of children are located in the top 20% when defined this way.

¹³Our measure of capital income covers most sources of capital income: see Section 3. In addition, not all investments generate income each year. For example, publicly listed firms do not all pay dividends each year.

Table 2: Descriptive information on firms and families

Panel (a): underage individuals as owners				
Parent income group	observations (pooled)	share with capital inc.	share owners in firms	
Bottom 90%	9,841,759	2.3%	0.08%	
Top 10% excl. Top 1%	3,586,121	4.1%	0.3%	
Top 1% excl. Top 0.1%	417,444	15%	1.2%	
Top 0.1%	43,019	26%	3.9%	

Panel (b): firms and owner-parent–underage child-owner link				
Firm main owner income group	new firms		all firms	
	observations (pooled)	child owners	observations (pooled)	child owners
Bottom 90%	60,356	0.5%	795,027	0.7%
Top 10% excl. Top 1%	23,823	1.1%	419,663	1.2%
Top 1% excl. Top 0.1%	5,688	1.9%	118,354	2.0%
Top 0.1%	816	2.7%	20,876	3.2%

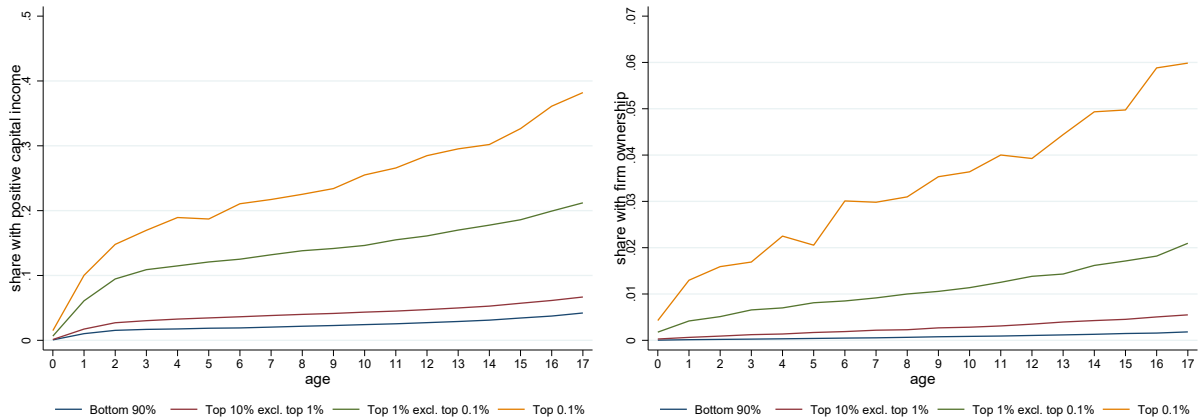
Note: Average shares in total population data, 2006–2018 pooled. Ownership in firms with a significant owner. New firm formation is defined as the firm not existing in the data in any previous years and is conditional on the owner not having significant ownership in any other business the previous year. "New firms" refers to all new firms (not conditioning on having >1 owners as in Figure 10b). New firms defined for years 2007–2018 and pooled.

across ages and income groups. On average 3.8% of the underage population own something that generates positive capital income. Owning firms is therefore a considerably narrower phenomenon than owning in general. However, both types of ownership occur at all ages, being more prevalent for older children. Both types of ownership also display a strong income gradient, but ownership in firms is even more strongly concentrated by parent's income, at all ages. An underage individual whose parent is in the top 0.1% is 12 times more likely to have positive capital income than those whose parents are in the bottom 90%, but 51 times more likely to own shares in a privately held firm. The various underage ownership measures are collected in Table 2 by income group.

The children owning these firms are surprisingly young. The average age across our sample period is 11.9 years. Figure 12b also illustrates that the share owning firms is positive across all ages. Given that there are legal limitations on whether and how much minors can work¹⁴, and that parents represent their underage children in all financial and legal transactions, young children's true role in any corporation is bound to remain small. What could be the motivation for underage ownership in these circumstances? The inclusion of younger children as owners could stem from a wish to help them forward in life by providing an opportunity to earn business experience or additional income, or to provide advance inheritances. Boserup et al. (2018) provide evidence that in Denmark, wealthy parents use inter vivos transfers to their underage children that could be related to more than a mere income transfer – a transmission of savings

¹⁴In Finland, children are allowed to start 'light work' in the calendar year when they turn 14 years old. Before this, a child can be granted an exception by the Occupational Safety and Health Administration, if the child e.g. performs in cultural events. And even after this age, as long as the child has not finished compulsory schooling, there are also limitations on daily and weekly work hours.

Figure 12: Share of underage children with different types of ownership, by age and parent's income group.



(a) Share of underage children with positive capital income

(b) Share of underage children owning privately held firms

Note: Figure shows the average share of children of different ages with ownership in firms with a significant owner. Child's age is age in years at end of calendar year. Total population, 2006–2018 pooled.

behaviour from parents to children. In Finland, Kantola and Kuusela (2019) provide evidence that wealthy Finnish families actively pursue strategies to transmit such attitudes and skills to their offspring.

However, given the very young age of underage firm owners, it is likely that firm ownership is also simply a form of income transfer to children, either in itself or also relating to some kind of tax optimisation. Boserup et al. (2018) find evidence that inter vivos transfers in Denmark are often exactly the size of the maximum gift exempt from gift tax, indicating that such transfers are made in a tax-optimising manner. In addition, earlier literature has shown that families practice income-splitting to reduce their tax burden. In countries with individual and progressive taxation (such as Finland), if families are able to distribute income from the highest-earning family member to lower-income family members, the total tax burden will be lower. For example, LaLumia (2008) shows that in the US, when states moved from individual taxation to joint taxation of couples, women married to self-employed men reported less non-wage income, consistent with a pre-reform tendency to allocate family income to lower-taxed wives. Furthermore, Bauer et al. (2015) show that income splitting also occurs between parents and children. They observe that in Canada children below 20 years old received considerable amounts of dividend income, and when a reform strongly tightened the taxation of dividend income of underage individuals, this source of income declined by 86%.

As Finland has individual taxation, income splitting between family members is a potential strategy for tax burden optimisation. However, as dividends can be taxed at the flat capital income tax rate, dividend income splitting does not matter as much as with a global progressive income tax. Since 2012, the capital income tax rate has been slightly progressive (two brackets, currently taxed at 30% and 34%), providing some incentive to split income between family members. If dividends disbursed from a firm are so high that they are taxed at the labour income tax rate, the incentive is stronger. However, a potential consideration could be a strategy of

longer-term tax optimisation through inheritance taxes. For instance, if the parent receives all of the dividend income flows during the child's childhood (paying taxes annually), and eventually passes the accumulated amount on to the child as a bequest, the child would pay inheritance taxes on the inherited amount. However, if the child receives the dividend income flows, he/she pays taxes on the income as it accrues, but no inheritance tax is needed.

5.2 Implications for income of underage children

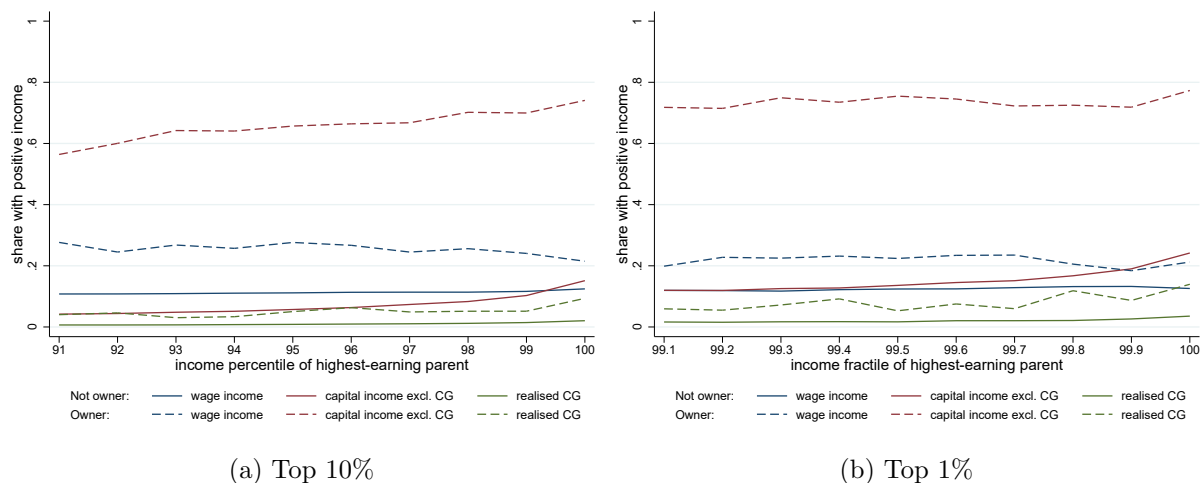
In the previous section we saw that individuals at the top who start firms are more likely to have their own underage children also owning a part of the firm. Whereas this behaviour could at least partly be related to long-term planning involving e.g. transferring family businesses to the next generation, it is also evident that these children accrue significant income already during their childhood, which can have implications for income and wealth inequality in their generation upon adulthood.

We next look at the prevalence of different income types among underage children across the parents' income distribution, contrasting between children who own privately held firms and those who do not. Figure 13 shows the share of underage children with positive wage income, capital income, or realised capital gains. In panel (a), we show these shares for the top 10%. Within the top decile, it is obvious that both capital and wage income are much more common for firm-owning children compared to other children. Panel (b) zooms in on the top percentile more closely. Even among these children with the richest parents, those not owning firms are much less likely to have any positive incomes. The average share with positive capital income for non-firm-owning children is 15%, whereas 74% of children owning firms receive capital income. For those children who are not firm owners, the share with positive capital income reaches 20% only in the top 0.1%. For firm-owner children, the share with positive capital income is quite stable and high over these top income groups, but the magnitudes are clearly different at the very top: children who own firms and whose parent is in the top 1% but not in top 0.1% receive on average 5,000 euros of capital income per year, but those with a parent in the top 0.1% receive on average 24,000 euros of capital income. Approximately 3/4 of the capital income is from dividend income from their privately held company. By contrast, children with parents in the top 0.1% who do not own privately held firms earn on average 1,600 euros of capital income.

Finally, we illustrate the prevalence of positive capital income across ages and by firm ownership. Compared to the relatively low levels of capital income among the underage on average (see Table 2 and Figure 12a), Figure 14 illustrates that children who own privately held firms are on a different scale. Around 60% of firm-owner children already receive positive capital income in their early childhood. The mean capital income for 5-year-olds owning firms is 1,792 euros, for 10-year-olds 3,577 euros and 17-year-olds 5,376 euros. Children owning firms are also more likely to earn wage income, and they start earning wages at a younger age. In addition to accrued capital income, children owning firms also benefit from earnings retained in firms. The average net retained earnings of underage children with firm ownership are 5,700 euros.

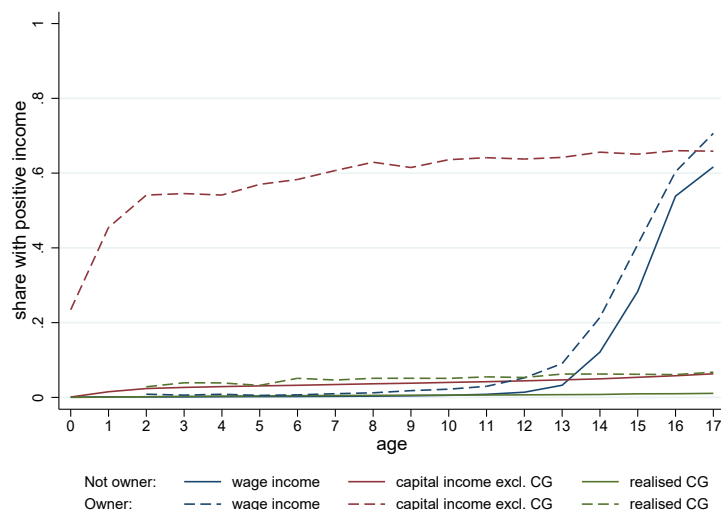
Even though a full-fledged study on the implications of privately held firms on inter-generational mobility is beyond the scope of this paper, this finding already indicates the relative advantage that a small set of children have gained upon entering adulthood compared to other children

Figure 13: Share of underage children with positive income, by firm ownership and parent's position in the gross income distribution



Note: Figure shows the share of children who have positive incomes by income type, for children who own firms with a significant owner and children who do not own firms. Total population data, 2006–2018 pooled.

Figure 14: Share of underage children with positive income, by child age and firm ownership



Note: Figure shows the share of children who have positive incomes by income type and child's age, for children who own firms with a significant owner and children who do not own firms. For firm-owner children, we show wage income and capital gains starting at age 2. Total population data, 2006–2018 pooled.

from less affluent families.

6 Conclusions

This paper has aimed to document the relevance of privately held firms at the top of the income distribution, and some of the consequences on individual and family incomes. The focus on firms and income distribution is warranted as privately held firms can be used to optimise an individual's total tax burden in a way that wage earners or publicly traded firm owners

cannot, through choices regarding for example what amount of dividends to distribute, and what amount or whether to retain part of the firm's profits in the firm. Furthermore, the tax system can affect these choices and create even unexpected behaviours. Such incentives are typically relevant for the highest-income individuals. Previous literature has for example shown that personal income taxation can lead to high-income individuals establishing firms to reduce their tax burden (Romanov, 2006), but the literature is still quite limited on this subject. We have shown that owning and founding firms is more common among individuals in the top 0.1% of the income distribution in Finland compared to individuals lower in the distribution.

Measuring the income retained within firms is also important for the measurement of inequality. We show that new firms start retaining profits immediately after their establishment, causing part of incomes to become invisible to standard income and wealth measures. Top income individuals have a majority of their income in the form of retained wealth within firms, blurring the perception of top incomes and income concentration in society.

The aspect of firms and capital income concentration is especially relevant for Finland. In the late 1990s, capital income started increasing considerably in Finland, but also began to be concentrated strongly at the top of the income distribution, contributing significantly to income inequality (Jääntti et al., 2010). Paukkeri et al. (2023) show how inequality in labour earnings among the working-age has developed much more mildly since the 1990s compared to disposable income, which accounts for changes both in capital income and the taxation of incomes. This paper complements that analysis by looking additionally at retained earnings among firm owners. In 1993, the dual income tax reform created strong incentives for high-income individuals to shift income from the labour income tax base to the lower-taxed capital income tax base. Later reforms in the taxation of dividends created strong incentives to retain profits in firms in order to be able to distribute dividends at a lower tax rate in the future. These incentives function in particular through privately held firms.

Among Nordic dual income tax systems, the Finnish scheme of using a firm's net assets and a high imputed rate of return as the basis for calculating the 'normal' dividend amount offers stronger incentives to shift income between the labour and capital income tax bases, compared to schemes in the other Nordic countries. (Lindhe et al., 2002). For example, the Norwegian scheme is more neutral in this respect (Sørensen, 2005), but still creates strong incentives for retaining profits (Alstadsæter et al., 2016). And while dual income tax systems are prone to cause income shifting and retaining responses to minimise the tax burden, other types of tax systems are not cushioned from such behavioural consequences either. The effect is similar to that of pass-through income and changes in corporate types in the US (Kopczuk and Zwick, 2020). Fairfield and Jorratt De Luis (2016) show that in Chile, where incomes are more heavily concentrated at the top, the tax system creates further strong incentives to retain profits in firms, increasing income concentration even further.

In addition to corporate income taxation, gift and inheritance taxation can also be relevant for the behaviour of privately held firms. Many parents consider how to best transfer wealth to the next generation. This paper has provided suggestive evidence that owning privately held firms' shares can be one potential channel in this, while we acknowledge that further research on this and on other potential channels is needed. In this paper we observe that high-income

individuals who establish new firms where they hold a significant ownership share are 2–4 times more likely to include their underage children as owners in the firm compared to individuals lower in the income distribution. Across all firms and all underage individuals, we find similarly that underage ownership of privately held firms is a relatively small phenomenon but very strongly correlated with the main owner’s income as well as the parents’ income. Consequently, a small number of children accumulate considerable amounts of wealth during their childhood. This phenomenon is likely to transmit some inequalities from the parents’ generation to the next. A related study (Harju et al., 2023) finds similarly that there is some intergenerational transmission of entrepreneurship, which creates some persistence of income inequality over the generations. Our study has focused on a different channel of transmission, of underage children holding shares in privately held firms at an age when they are not likely to yet be fully considered as entrepreneurs, which likely reflects a channel of transferring income and family wealth to children.

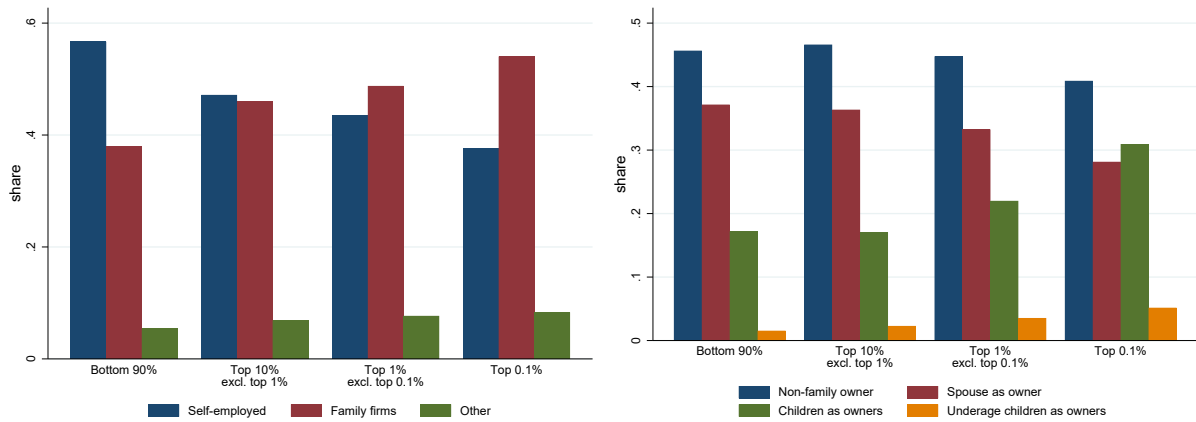
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A Additional Figures

Figure A1: Firms' ownership, by main owner's income group



(a) Ownership types of all firms

(b) Owner types of all firms with > 1 owners

Note: Income group based on personal gross income excluding capital gains in year preceding the new firm establishment. All firms with a significant owner, 2006–2018 pooled. One owner: one owner has 100% ownership. Family firm: > 1 owners, $\geq 50\%$ of firm owners from same family. Other: > 1 owners, no family members as owners or family ownership < 50%.