Capitalists in the Twenty-First Century*

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Abstract

Have passive rentiers replaced the working rich at the top of the U.S. income distribution? Using administrative data linking 10 million firms to their owners, this paper shows that private business owners who actively manage their firms are key for top income inequality. Private business income accounts for most of the rise of top incomes since 2000 and the majority of top earners receive private business income—most of which accrues to active owner-managers of mid-market firms in relatively skill-intensive and unconcentrated industries. Profit falls substantially after premature owner deaths. Top-owned firms are twice as profitable per worker as other firms despite similar risk, and rising profitability without rising scale explains most of their profit growth. Together, these facts indicate that the working rich remain central to rising top incomes in the twenty-first century.

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> [The human capital hypothesis] is far less consequential than one might imagine. There is little evidence that labor's share in national income has increased significantly in a very long time: "non-human" capital seems almost as indispensable in the twenty first century as it was in the eighteenth or nineteenth, and there is no reason why it may not become even more so. —Thomas Piketty (2014)

> For a rich client whose reputation or fortune, or both, are at stake will scarcely count any price too high to secure the services of the best man he can get: and it is this again that enables jockeys and painters and musicians of exceptional ability to get very high prices. —Alfred Marshall (1890)

In the last few decades of the twentieth century, the primary driver of rising top incomes was labor income growth of the "working rich" (Piketty and Saez, 2003). Since then, rising capital income has shifted focus to the possible renaissance of rentiers.[1] Understanding the nature of top incomes is essential for explaining their evolution and assessing policy implications. Have passive rentiers replaced the working rich at the top of the income distribution?

This paper uses de-identified administrative tax data to characterize top incomes and their rise in the twenty-first century.[2] We begin with a little-known fact: nearly all of the recent rise in top incomes has come in the form of *business income*. As a share of top 0.1% income, business income now exceeds both non-business capital income and wage income. Most of this top business income growth comes from private "pass-through" businesses, which are not taxed at the entity level; instead, income passes through to the owners who pay taxes on their share of the firm's income.[3] We exploit this structure to build a new dataset linking firms to their owners for nearly 10 million firms between 2001 and 2014, which enables us to provide a novel perspective on the nature of top business income.

We use these data to test two key implications of the hypothesis that top earners are passive rentiers: (1) firm performance does not depend on the owner's active participation; and (2) differences in business income depend only on differences in the scale of business holdings because risk-adjusted returns are equal across capital providers. According to the

[1] Piketty (2014) provides a comprehensive account of how passive wealth accumulation can lead to increasing inequality. Karabarbounis and Neiman (2014) document rising capital shares in the U.S. and internationally. Kopczuk and Saez (2004) use estate tax returns and Saez and Zucman (2016) use capitalized income flows to show wealth concentration in the U.S. has been increasing. Piketty and Zucman (2014) document rising capital-output ratios in the U.S. and Europe. Rognlie (2016) argues that capital accumulation cannot explain rising capital shares. Also see, e.g., Caballero, Farhi and Gourinchas (2017).

[2] Throughout our analysis, we focus on directly observed income from tax filings, i.e., fiscal income as in Piketty and Saez (2003), as opposed to imputed national income, as in Piketty, Saez and Zucman (2016).

[3] In contemporaneous work, Guvenen and Kaplan (2017) highlight this point, noting that administrative wage data do not show a recent rise in top income shares. Cooper et al. (2016) document the increasing role of pass-throughs in generating business income.

rentier hypothesis, growing business income solely reflects differences in non-human factor accumulation (including capital, patents, brands, etc.).[4]

The first part of the paper describes who earns business income and the salient features of their firms. Three key facts emerge. First, most top earners are business owners. Specifically, in 2014, more than half of the top 1% and nearly eighty percent of the top 0.1% earn some pass-through business income. In absolute terms, that amounts to 947K business owners with total income over $386K and 130K business owners with total income over $1.5M. Second, this income is undiversified: it typically derives from one firm with one or two owners and amounts to a large share of their total income. Last, these owners participate actively in firm operations. Their age distribution closely mirrors that of prime age workers, and less than ten percent of top owners earn only passive income (i.e., income earned without hours engaged) from their businesses. These facts about top earners support the notion that most top earners better resemble the working rich, not passive rentiers.

Examining top-owned firms provides more evidence against the view of top earners as passive owners of large stocks of accumulated capital. Most private business income derives from mid-market firms—those with $5M to $500M in sales—and the distribution within industries is not especially concentrated among a few large firms. These firms operate across diverse geographies and sectors. Despite this diversity, most profits are earned in relatively labor-intensive industries, especially in those that demand high-skilled labor. Typical firms owned by the top 1-0.1% are single-establishment firms in professional services (e.g., consultants, lawyers, specialty tradespeople) or health services (e.g., physicians, dentists). A typical firm owned by the top 0.1% might be a regional business with $30M in sales and 150 employees, such as an auto dealer, beverage distributor, or a large law firm.

The second part of the paper sheds light on the role top owners play in their firms' performance. In this part, we narrow our analysis to the population of S-corporations, the largest and most transparent form of pass-through business.[5] We present three findings that underscore the importance of inalienable factors embodied in top owners, thus rejecting the rentier hypothesis. The first finding is that premature owner deaths cause a substantial decline in firm performance, which rejects a story in which top owners are passive beneficiaries of firm profitability. In a sample of 2,673 deaths of non-elderly top 1% owners, the average owner death causes a 54% decline in firm profits. Thus, top-owned firms are not merely a

[4]Views differ on the importance of heterogeneous returns to capital. Saez and Zucman (2016), for example, assume uniform within asset class returns when capitalizing income flows, but others, e.g., Bricker et al. (2016); Fagereng et al. (2016), emphasize the importance of return heterogeneity, especially at the top.

[5]We focus on S-corporations because pyramidical partnership structures make it difficult to allocate partnership profits to owners (Cooper et al., 2016) and because different accounting practices make it difficult to analyze partnership and S-corporation performance using the same measure.

collection of assets that generate profit independent of their ownership, rather performance depends critically on the owner's contribution of inalienable factors.

The second finding is that top-owned firms generate superior profitability, which rejects a story in which business income differences simply reflect differences in capital holdings. The mean profitability of firms owned by the top 0.1% is over twice that of firms owned by those in the 90-95th percentiles. Differences in risk cannot account for heterogeneous profitability between top-owned and non-top-owned firms. The profitability advantage of top-owned firms is a persistent characteristic of top earners: startups founded by individuals with high incomes before founding the startup go on to enjoy superior profitability over the next five years.

The third finding is that rising profitability rather than rising scale explains rising top business income, which rejects a story in which growing business income reflects factor accumulation. Between 2001 and 2014, both the profitability of top-owned firms and the profitability advantage relative to non-top-owned firms grew dramatically over time. While top-owned firm profitability rose over time, scale did not: approximately 85% of the increase in S-corporation income is due to rising profitability. This rise in profitability was broad-based across sectors and cannot be explained by rising risk. In contrast to patterns observed among public companies or in aggregate Census data, this rise did not coincide with a dominant role of large "superstar" S-corporations.[6]

Our results inform three literatures. First, recent work on top incomes has raised the possibility that the story of rising income inequality in the twenty-first century is a story of rising passive capital income (Piketty, 2014; Piketty and Zucman, 2014; Piketty, Saez and Zucman, 2016). While top passive capital income has increased, our linked firm-owner data reveal that most capitalists in the twenty-first century are not passive rentiers, but active owner-managers of closely held firms who play a key role in their firm's success. Our findings are consistent with the earlier conclusion in Piketty and Saez (2003) that, in the 1990s, the working rich were more prevalent than rentiers at the top of the income distribution. More broadly, our findings are consistent with the view that the demand for top skill has outpaced its supply, with the returns to top skill increasingly taking the form of business income.[7] However, we stress that returns to owner-manager skill need *not* be socially optimal and can include returns to rent-seeking (Krueger, 1974; Murphy, Shleifer and Vishny, 1991) or elite

[6]Furman and Orszag (2015), Gutiérrez and Philippon (2016), and Autor et al. (2017) document increasing dispersion in profitability among large public companies and within the manufacturing industry, which are not well represented in our S-corporation sample. Appendix Figures A.5 and A.6 show how the distributions of firm sales and profits have evolved among C-corporations, S-corporations, and top-owned S-corporations.

[7]See Katz and Murphy (1992), Autor, Katz and Kearney (2008), Goldin and Katz (2009), and Murphy and Topel (2016) for some prominent articulations of this view. Kaplan and Rauh (2013) argue that the broad-based rise in top incomes reflects market-driven forces, such as an increased return to skill.

connections (Fisman, 2001; Khwaja and Mian, 2005).[8]

Second, this paper is among the first to document an explicit empirical link between firm profitability and top income inequality. Separate literatures have documented firm- and industry-level variation in profitability (Hall, 1988; Hsieh and Klenow, 2009; Syverson, 2011) and shown that firm-level variation in wage premia contributes to wage inequality (Card, Heining and Kline, 2013; Song et al., 2015). We connect these ideas by showing that firm-level variation in profitability amplifies top income inequality among firm owners. Relatedly, Fagereng et al. (2016) document heterogeneous and persistent returns in Norway, finding a key role for closely held firms at the top of the income distribution. Persistently high returns to private business may be explained statistically by higher firm profitability, with a scale-limiting scarcity of owner-manager skill being the underlying driver.[9]

Third, we contribute to a literature that studies the impact of taxes on economic measurement, the composition of top incomes, and corporate organization.[10] We use two approaches to show a significant component of business income would have been labeled as labor income in the prior tax regime. Our estimates imply that the decline in the corporate labor share in the U.S. is overstated by 19% as labor payments have increasingly taken the form of S-corporate profits.[11] For tax policy, our estimates imply that the ability of top earners to label their labor income as S-corporate income and thereby avoid payroll taxes undermines the net progressivity of the U.S. tax system and creates horizontal inequities between top earners. Moreover, behavioral responses to "capital" income taxation will reflect a mix of capital and labor elasticities.

The paper is organized as follows. Section 1 documents the importance of business income for top income inequality. Section 2 presents a model of business income. Section 3 describes the institutional background and data. Section 4 presents descriptive statistics on the prevalence of top business ownership and the sizes and industries of those businesses. Section 5 studies the effect of owner deaths on firm performance. Section 6 analyzes the profitability of top-owned businesses in the cross section and the contribution of rising prof-

[8] Zimmerman (2017) shows the importance of elite connections in "making it" into the top 1% in Chile.

[9] A recent literature has emphasized the importance of management practices for firm performance (Bloom and Van Reenen, 2007; Bertrand and Schoar, 2003; Bloom et al., 2012; Bender et al., 2016). Regarding whether skill translates into firm scale, Lucas (1978) presents a model in which scarcity of scaleable managerial talent drives differences in firm size, while Rosen (1981) explores the possibility that scale-constrained expertise (e.g., opera singers) accessing large demand with few employees can generate high incomes.

[10] See, e.g., Slemrod (1996), Gordon and Slemrod (2000), Alstadster et al. (2016), Auten and Splinter (2016), DeBacker and Prisinzano (2015), Cooper et al. (2016), Clarke and Kopczuk (2017), Prisinzano and Pearce (2017), and Dyrda and Pugsley (2017).

[11] Work on the decline in the labor share (e.g., Karabarbounis and Neiman (2014)) often restricts attention to the corporate sector to avoid measurement problems associated with classifying self-employment income as labor or capital income (Gollin, 2002; Elsby, Hobijn and Şahin, 2013). We show these issues also matter for measuring factor income shares in the corporate sector.

itability to rising top business income. Section 7 explores implications of disguised labor income for the corporate labor share and tax policy. Section 8 concludes.

1 Business Income and Top Income Inequality

To motivate our investigation of top business income, we highlight a little-known fact: around 2000, the character of rising top income changed from rising wage and salary income to rising private business income.

Figure 1 uses the updated distributional statistics of Piketty and Saez (2003) to plot the time series of directly observed top incomes.[12] Figure 1A reprints the well-known U-shape of U.S. top income shares from 1913 through 2015. The top 1% of households earned nearly 20% of total income in the early twentieth century, less than 10% in the middle of the century, and now nearly 20% once again. Top incomes in the early twentieth century comprised mostly passive capital income like interest income, while rising top incomes of the final two decades of the twentieth century comprised mostly wage income. Piketty and Saez (2003) conclude that, at the top of the income distribution, the working rich had replaced the "coupon-clipping" rentiers prevalent in Marx's era.

Figures 1B and 1C decompose these top income series to reveal that rising top wage income ceded to rising top business income after 2000. Figure 1B separates the top 1% series into three income types: wage income, business income, and other capital income including interest, rents, royalties, estates, and trusts. Top 1% wage income as a share of total income rose through 2000 but has since flattened. In contrast, top 1% business income as a share of total income doubled since 1990, with most of that growth coming after 2000. Top 1% other capital income fell since 1990. Thus, rising business income accounts for all the growth in the top 1% income share since 2000.[13] Appendix Figure A.1 shows similar patterns for the top 0.1%, for whom business income now exceeds both non-business capital income and wage income.

Figure 1C shows that the vast majority of rising top business income came in the form of income from private businesses. As we detail in Section 3, there are three major business organizational forms in the United States: C-corporations, S-corporations, and part-

[12]This data series measures households as personal income tax filing units, imputes non-filing units with incomes too low to require a tax filing, and measures market income as total personal tax return income ("fiscal income") minus unemployment compensation, taxable Social Security benefits, and realized capital gains.

[13]Top realized capital gains, which is a mix of business and other types of income, as a share of total income also rose over this period. When imputing all of national income to individuals rather than directly measuring fiscal income, Piketty, Saez and Zucman (2016) replicate the patterns of Panel B while also finding modest growth in top interest income and housing rents.

nerships. All publicly traded businesses are C-corporations while most C-corporations, all S-corporations, and nearly all partnerships are private. Figure 1C separates the top 1% business income series of Figure 1B into income from businesses divided by organizational form. While top income in each form rose as a share of total income since 2000, most of this growth took the form of S-corporation and partnership income, rather than C-corporation dividend income, with S-corporation income being the largest category.

In short, private business income has played a central role in rising top income inequality in the twenty-first century. We therefore focus our empirical investigation into the nature of rising top business income.

2 Model of Business Income

This section introduces a model of how owners generate business income. We use the model to clarify the channels through which the talent of business owners can affect firm performance.

Supply. Each firm j has a technology for producing a differentiated good or service,

$$y_j = f(T_j, L_j, K_j) = A_j T_j^{\alpha_T} L_j^{\alpha_L} K_j^{\alpha_K}, \tag{1}$$

where A_j is productivity, T_j is the business owner's talent, L_j is the number of workers, K_j is units of physical capital, and $\alpha_L + \alpha_K \leq 1$ are output elasticities. A_j should be interpreted broadly as including all forms of non-physical capital that remain transferable, such as intangible assets, patents, and brands.[14]

For a particular firm, talent and productivity are exogenous. The firm maximizes profits by choosing the optimal amount of workers and capital. Profits for firm j is given by revenues less payments to factors L_j and K_j:

$$\max_{K_j, L_j} \pi_j = p_j A_j T_j^{\alpha_T} L_j^{\alpha_L} K_j^{\alpha_K} - wL_j - rK_j - F_j, \tag{2}$$

where p_j is the price of the good produced by firm j, w and r are factor prices that are common across all firms, and F_j are fixed costs.

Demand. Demand $y_j = B_j p_j^{\eta}$ is a function of a demand shifter B_j, which depends on market size, product appeal, and other factors, price p_j, and a demand elasticity η where

[14]This setup is similar to Edmans and Gabaix (2016), who model talent as a factor of production and have similar notation, and Murphy, Shleifer and Vishny (1991), who decompose effective productivity into a component related to public technology and one due to the entrepreneur's skill.

$\eta < -1$.

Profitability. After paying factors based on their importance in the production process, firm owners obtain a residual share of firm sales less fixed costs.[15] Thus, forces that increase sales such as appealing products B_j, technology A_j, and owner-manager talent T_j will increase profits. Profitability, which we measure as profits per worker, is given by:

$$\frac{\pi_j}{L_j} = \mu_j \frac{w}{\alpha_L} \tag{3}$$

where

$$\mu_j = \underbrace{\left(\frac{\eta}{\eta+1}\right)}_{\text{Markup}} - \underbrace{(\alpha_L + \alpha_K)}_{\text{Returns to scale}} - \left(\frac{\eta}{\eta+1}\right) \underbrace{\frac{F_j}{Sales_j}}_{\text{Fixed cost}}. \tag{4}$$

Equation 3 highlights four channels for profitability that rises with owner talent. First, if firm owners can make demand for their firm's services less elastic, then they can increase profit margins and enjoy higher profitability. Second, talent-intensive firms with relatively low returns to non-owner labor and capital will enjoy high profitability. For example, in NAICS 7115, independent artists, writers, and performers generated $1.9 billion in top 1% profits with 3.3 workers per firm and 14,668 workers overall in 2014.[16] In this sector, owner payments account for the majority of overall firm compensation, which corresponds to high α_T, low α_L, and high $\frac{\pi}{L}$ in the model. Third, sales and profits in our model are increasing functions of owner talent, so more talented owners can spread their higher sales and profits over fixed costs. Fourth, if talented owners recruit high-wage workers, then profitability will be larger.[17] Additionally, considering the outside options of owners provides additional insight on the relationship between firm owner talent and profits. Talented owners can earn high wages in the labor market, so in order to choose business ownership over formal employment, they will have to obtain high profits and, in some specifications, high profits per worker as an owner.

[15] When profits exceed fixed costs, optimizing firms make scale decisions such that factor prices equal the value of the marginal products, implying that factor payments are: $wL_j = \alpha_L \left(\frac{1}{\eta}+1\right) p_j y_j$ and $rK_j = \alpha_K \left(\frac{1}{\eta}+1\right) p_j y_j$. Appendix B.1 provides expressions for sales, profits, and profitability in terms of primitives.

[16] These features are common across many other top sectors such as 6211 Offices of Physicians and 5411 Legal Services in which owners earn 44% and 41% of overall compensation, amounting to tens of billions of dollars in 2014. The owner share for 7115 was 53% and was the highest among four digit industries.

[17] We find qualitatively similar results when measuring profitability as profits divided by sales, so this fourth channel is not the only channel driving the results. In practice, profitability can vary across firms for additional reasons: non-linear production technologies, input quality heterogeneity, fixed costs, risk, and other reasons such as capital market or labor market frictions.

The model frames our empirical tests of whether owner talent matters for firm performance. First, we should find that owners actively participate in their firms' operations and are more prevalent in skill-intensive industries where talent is likely an important factor. Second, we should find that a premature owner death causes firm profits to decline. Third, under some parameterizations we should find that top-owned firms generate superior profitability relative to other firms. Fourth, if the supply of talent is relatively inelastic and there are diminishing returns to scale, we should find that rising profitability contributes to rising profits at top-owned firms.

3 Data on Firms Linked to Owners and Workers

This section describes the relevant institutional background and our primary data, which links S-corporations and partnerships to their owners and workers from 2001 to 2014.

3.1 How U.S. Businesses Are Organized and Taxed

Historically, U.S. business activity was largely organized in one of two forms: sole proprietorships (accounting for 20% of 1986 taxable business income) or C-corporations (accounting for 75%) (Cooper et al., 2016; Clarke and Kopczuk, 2017). Sole proprietorships are unincorporated business entities owned by individual taxpayers. Their annual income is taxed at ordinary personal income tax rates at the owner level on Form 1040, Schedule C. Sole proprietors lack limited liability and sole proprietorship dividends are not taxed. C-corporations (named "C" after their subsection of the Internal Revenue Code) are incorporated and officially registered business entities. C-corporations may be owned by individuals, businesses, non-profits, and foreigners. C-corporations are distinct legal entities whose owners enjoy limited liability. C-corporations pay the corporate income tax on annual taxable income, and taxable shareholders pay dividend taxes on dividends and capital gains taxes on gains realized from selling shares.

The Tax Reform Act of 1986 reduced the top ordinary personal income tax rate below the top corporate income tax rate for the first time in the post-war era, unleashing a dramatic rise in business activity conducted in "pass-through" business form. By 2011, 54.2% of U.S. taxable business income was earned by pass-throughs and sole proprietorships and only 45.8% by C-corporations (Cooper et al., 2016). Pass-through businesses enjoy limited liability but pay no entity-level tax. Instead, taxable business income "passes through" to shareholders' tax returns and is taxed as personal ordinary income on Form 1040, Schedule E, in the year it is earned. This tax burden applies regardless of whether the firm actually distributes the

income to shareholders. When distributed, pass-through dividends are untaxed.

As of 2014, the dominant pass-through type is the S-corporation (named after its subsection of the Internal Revenue Code). S-corporations have the same legal structure as C-corporations but are taxed differently. Since 1986, S status has been tax-superior, but legal restrictions prevent C-corporations with more than 100 owners, with owners who are not U.S. individuals, and with more than one class of stock from enjoying S status. These restrictions bar public corporations, corporations with institutional equity financing, and corporations with sophisticated divisions between ownership and control such as multiple stock classes from being S-corporations. There are now more S-corporations than C-corporations, even among firms with over $500M in revenue. Prominent publicly-known examples of S-corporations include Fidelity Investments and home improvement retailer Menards.

Partnerships are the other major pass-through type. Partnerships are taxed similarly to S-corporations but are subject to partnership law rather than corporate law and can be owned by any type of individual or business entity. Prominent publicly-known examples of partnerships include Goldman Sachs before its 1999 initial public offering and the U.S. arm of PricewaterhouseCoopers. Many financial and real estate investors structure their firms as partnerships as well.

Under current law, taxes encourage firms meeting the above ownership limitations to file federal taxes as an S-corporation, rather than as a C-corporation or a partnership.[18] Considering only current federal taxes for simplicity, C-corporations pay the corporate income tax, which is a nearly flat 35% rate on their annual taxable income, and their owners are liable for the dividend income tax or capital gains tax (23.8% in the top personal bracket, including the 2013 Affordable Care Act (ACA) surtax of 3.8% on investment income) on the remaining 65% of income when it is distributed to owners. Partnerships typically enjoy lower taxes than identical C-corporations: annual partnership income is taxed at the owner level at ordinary income tax rates, payroll tax rates, and ACA Additional Medicare Tax rates (totaling 43.4% at the top), with no other income taxes or taxes on distributions.[19]

S-corporations usually face the weakly lowest taxes. S-corporation income is taxed identically to partnership income, except that if the owner "materially participates" in the firm's operation, the income is classified as actively earned income and faces only the ordinary income tax (39.6% at the top). Owners determine their material participation status, which

[18] In order to file as an S-corporation, a firm must be organized at the state level as either a corporation or a limited liability company (LLC). An LLC is treated as a partnership by the court system but can choose to be treated as an S-corporation by the tax system and thus file an S-corporation income tax return if the LLC meets the S-corporation ownership limitations.

[19] Owner-managers of investment partnerships can characterize and defer much of their income as capital gains (namely, "carried interest"), taxed at lower rates. Our paper focuses on income exclusive of capital gains, the main income concept in the inequality literature.

requires the owner to supply at least 500 hours of labor to the firm in the year the income was earned. Owners face tax incentives to classify themselves as material participants in order for their income to be deemed active and face lower taxes. Note that whereas a partnership owner faces identical taxes when receiving her income as W-2 wage income and business income, an S-corporation owner faces lower taxes when receiving her income as business income.[20]

Litigation considerations also tend to favor corporate form over partnership form. Legal certainty is often higher in corporate form than in partnership (or LLC) form: corporate form is older than partnership form, so corporate law is more settled. Corporate form also provides more assurance that relatively well-known federal law will be used to adjudicate civil complaints, rather than lesser-known state law.[21]

The incentives to file taxes as an S-corporation have oscillated modestly in magnitude over time but have remained qualitatively constant since 1986. For example, the 2003 dividend tax cut made C-corporate form more attractive than it had been, while the 2001 income tax cut and the Affordable Care Act surtax on investment income made the C-corporate form relatively less attractive.

3.2 Samples

Due to the legal requirements mentioned above, S-corporations are owned directly by U.S. individuals rather than through arbitrarily complicated ownership tiers and are taxed at the owner level. The U.S. government receives annual information linking all S-corporations to their owners in order to administer owner-level taxation of S-corporation income. We exploit this information to build our *main sample*.

Our main sample comprises the universe of S-corporations linked to owners and workers using de-identified data from income tax records spanning 2001-2014. Universal data are available only from 2001-2014. We construct the sample as follows.

We construct the core of our main sample by merging the population of S-corporation business income tax returns (Form 1120S) to the population of S-corporation information returns (Form 1120S, Schedule K-1) that identify the owners. These information returns detail each owner's share of the corporation's income for inclusion on the owner's Form 1040

[20] An S-corporation owner-manager's W-2 compensation is required to be "reasonable" and to reflect the market-value of labor services. However, the IRS rarely adjusts tax liabilities by deeming W-2 compensation to be unreasonable.

[21] For example, if a New Jersey citizen sues a partnership and the partnership has at least one partner who is also a New Jersey citizen, a New Jersey state court will hear the case. But if the firm had been a corporation that was neither headquartered nor incorporated in New Jersey, a U.S. district court would hear the case.

individual income tax return. S-corporations are required to submit to the Internal Revenue Service a K-1 on behalf of each owner of the S-corporation when the corporation submits its Form 1120S business income tax return. Each owner receives a copy of the K-1, which she uses to report S-corporation income on her Form 1040, Schedule E, and compute her tax liability. Each 1120S includes the firm's masked Employer Identification Number (EIN), and each K-1 includes the firm's masked EIN as well as the owner's masked Social Security Number (SSN). We merge the 1120S records onto the K-1 records by masked EIN in order to yield linked firm-owner data.

We further merge on information from two additional sources: Form 1040 individual income tax returns and Form W-2 wage and tax information returns. In order to rank owners by their percentile in the annual personal income distribution, we merge the firm-owner data by masked SSN to 1040 records. Finally, to measure firm scale, we merge on the number of W-2s with the firm's masked EIN listed as the W-2's payer. All data sources are in principle universal. We remove the few observations in which the firm has negative sales.

For the analysis of Section 4, we append linked partnership returns to our main sample in order to construct our *full sample*. The partnership rows comprise the population merge of partnership business income tax returns (Form 1065) to the population of partnership information returns (Form 1065, Schedule K-1). Unlike S-corporations, partnerships can be owned by individuals and entities other than U.S. individuals. Thus many partnerships are not linked to owners and are omitted from the Section 4 analysis. Sections 5 and 6 confine analysis to the main sample where links are nearly universal.

3.3 Variables

We now define variables in our main sample. All variables are annual and are available in all years. Year refers to calendar year, which by law is also each S-corporation's fiscal year.

1. Firm-level. A *firm* is an S-corporation or partnership unless otherwise specified. *Sales* is the firm's operating revenue (gross sales minus returns) as listed on the 1120S or 1065. Passively earned income (e.g., interest on bank deposits) is excluded. *Profits* is the firm's ordinary business income, equal to operating revenue minus costs as listed on the 1120S or 1065. *Costs* equals the sum of inputs (cost of goods sold), employee and owner wage compensation, rent, interest, capital asset tax depreciation, and other deductions related to ordinary business.[22] Profits are divided among owners pro rata according to ownership

[22]Pass-throughs' costs exclude costs associated with passive income, such as interest on bonds used to hold interest bearing bank assets.

stakes on Forms K-1, which owners then include on their Form 1040, Schedule E.[23] Hence, profits are exactly the S-corporation and partnership income concept that Figure 1C showed had more than doubled among the top 1% of U.S. households since 1990.

Profits per worker equals profits divided by the number of workers. *Number of workers* equals the number of individuals who received a W-2 from the firm that year. *Officer compensation* equals the wage compensation of officers as listed on the 1120S or 1065. *Industry* is the four-digit North American Industry Classification System (NAICS) code reported by the firm on its 1120S or 1065 as corresponding to its principal business activity. A firm is a top-owned firm if it has an owner in the top 1% of the income distribution, defined below.

2. Owner-level. An *owner* is an owner of a firm. *Personal income* is the income concept used in Piketty and Saez (2003) and equals Form 1040 total income minus Form 1040 capital gains minus Form 1040 unemployment compensation minus Form 1040 taxable social security benefits. An owner is a *top 1% owner*, a *top 1-0.1% owner*, or a *top 0.1% owner* if her personal income lies in a year's top 1%, the top 1% but not the top 0.1%, or the top 0.1% of all tax units in the year, respectively. An owner's S-corporation income is *active* if the owner reports she materially participates in the firm's operation (see the previous subsection) and is *passive* otherwise.

Firm wage income equals W-2 wage income paid to an owner by a firm she owns. *Passive owner* is an indicator for whether an owner reports only passive S-corporation income on her Form 1040, Schedule E.

3.4 Auxiliary Data

The main sample begins in 2001. In order to analyze a longer time series and also to compare S-corporation activity to C-corporation activity, we supplement our main sample with the Statistics of Income (SOI) sample of corporate income tax returns from 1993-2014.[24] We use data from W-2 forms to measure wage payments to individual owners and to calculate firm-level aggregates of the total number of employees at the firm.

[23] Partnership profits are not always divided according to ownership stakes.

[24] Each year the Internal Revenue Service (IRS) SOI division randomly samples corporate income tax returns (approximately seventy thousand), edits many variables for accuracy and consistency, and uses them to publish aggregate statistics. The sampling percentages are a function of assets and a measure of net income; corporations with at least $50 million in assets are sampled with probability one and progressively smaller corporations are sampled at progressively smaller rates. Sample weights allow us to use the SOI sample to reproduce population statistics.

3.5 Summary Statistics

Tables 1A and 1B provide summary statistics from the main sample for S-corporations and their owners.

Firms. In the pooled main sample of all S-corporations 2001-2014, the average S-corporation earned $350K in profits on sales of $7.5M in 2014 dollars, employed 52 workers, and had two owners. S-corporations that have at least one owner whose income is in the top 0.1% are much larger and more profitable—these firms earned $2.2M in profits on $32.9M in sales with 151 employees and 3.6 owners on average. On a per worker and per owner basis, top-owned firms have superior performance. The average S-corporation generates $30K in profits per worker and $195K in profits per owner (and $285K in profits plus owner wage payments per owner). Top-0.1%-owned S-corporations are roughly five times more profitable per worker and per owner. Payments to owners as a share of sales are nearly twice as large for top-0.1%-owned S-corporations as they are for the average S-corporation.

Owners. Owner income varies widely. The average S-corporation owner's income is $205K and the P10-90 range is $14K-414K. The average age of owners is 50 with a P10-90 range of 34-67. The average owner earns roughly the same business income ($65K) as wage income ($70K). 22% of owners are in the top 1% of personal income and 8% are in the top 0.1% of personal income. Owners in the top 0.1% with business income earn $4.4M in personal income on average but are only five years older on average than all S-corporation owners. They earn a much larger share of their income in the form of business income (74% versus 48%) but just 6% earn only passive income. The average top owner is less diversified in terms of the share of their personal income coming from business income (30%) relative to the average S-corporation owner (24%). Overall, the average owner whose personal income is in the top 0.1% earns $1.6M in total wage and business income from the S-corporations that they own.

4 Business Ownership in the Top 1%

This section describes who earns business income and the salient features of their firms. We ask whether owners actively participate in their firms' operations and are more prevalent in skill-intensive industries where talent is likely an important factor.

4.1 The Prevalence of Business Ownership in the Top 1%

Figures 2A and 2B demonstrate the prevalence of pass-through business income among the top 1% and top 0.1% of earners in 2014 using the full sample of firm-owner-linked S-corporations and partnerships. Top 1% households had personal income over $386,000 while top 0.1% households had personal income over $1.5 million. The graph shows that pass-through ownership is very widespread among top earners: 57.4% of the top 1% and 78.8% of the top 0.1% are a pass-through owner. Panels C and D present analogous statistics on these owners' pass-through share of personal income and show that these owners derive substantial income from their businesses. The average pass-through owner in both the top 1% and the top 0.1% earns nearly half of their income from their pass-through businesses. Table 1B reports more detailed summary statistics for the main sample of S-corporations. It shows that 91% of top 1-0.1% owners and 94% of top 0.1% owners report their income as actively earned. That high self-reported share of active ownership is plausible: the table shows that the typical top-owned S-corporation has only two owners.

The remainder of Figure 2 along with Figure 3 provide additional texture in the full sample. The panels of Figure 2 break down pass-through ownership and income into firm size ranges. Approximately half of top 1% and three-quarters of top 0.1% owners own a business with more than $5 million in sales, and over half of the pass-through income of both groups derives from firms with between $5 million and $500 million in sales. Figure 3A-C focuses on our main sample of linked S-corporations in 2014 to document that most S-corporation owners are middle-age and pre-retirement, that S-corporations have a similar size distribution as C-corporations except at the very top of the size distribution, and that S-corporation income is earned across states approximately proportionately to population.[25] Taken together, the data suggest that most top business income accrues to mid-market firms that are closely held by owners who report substantial participation in the business's operations.

4.2 The Industry Composition of Top Firms

Figure 3D compares the distribution of total profits across 1-digit NAICS sectors of top-owned S-corporations to the distributions for all S-corporations and C-corporations for the year 2014. S-corporation profits are earned broadly across sectors and are similarly dis-

[25] Appendix Figure A.5 presents figures showing the share of firm profits accounted for by each size bin. The distribution of C-corporations has substantially more concentration in the right tail, with more than 90% of profits accounted for by firms with more than $500M in sales; in contrast, approximately 10% of total S-corporation profits and 20% of top 0.1% S-corporation profits are accounted for by firms in this size bin.

tributed as overall corporate profits. The exception is that S-corporation profits are underrepresented in manufacturing and overrepresented in information, professional services, and health care.

Table 2 presents a more disaggregated analysis of S-corporation profits for 30 industries, sorted by the 2014 level of profits among firms with a top 0.1% owner.[26] For these industries, we also present the level of profits and within-group rank for firms with a top 1-0.1% owner and for all S-corporations. The top 30 industries compose 56.4% and 61.5%, respectively, of top 1-0.1% and top 0.1% income.

Among the top 0.1%, the five largest industries are management of companies and enterprises ($12.9B), other financial investment activity ($7.8B), automobile dealers ($6.5B), other professional and technical services ($5.2B), and oil and gas extraction ($4.4B). Among the top 1-0.1%, the five largest industries are offices of physicians ($9.0B), other professional and technical services ($4.9B), offices of dentists ($4.4B, not shown), other specialty trade contractors ($4.3B), and legal services ($3.5B). Typical firms owned by the top 1-0.1% are single-establishment firms in professional services (e.g., consultants, lawyers, specialty tradespeople) or health services (e.g., physicians, dentists). A typical firm owned by the top 0.1% might be a regional business with $30M in sales and 150 employees, such as an auto dealer, beverage distributor, or a large law firm. For both groups, 17 of the top 20 industries are outside finance, and management of companies and enterprises often represents non-financial activity as well.[27] Thus, most top S-corporation businesses do not operate in finance and instead actively produce goods or services across diverse industries.

Table 3 presents statistics comparing the level of S-corporation profits to partnership profits among top-owned firms in 2014 for the top thirty industries in Table 2. In terms of industry composition, there is substantial overlap between top S-corporations and top partnerships. However, partnership profits skew more toward high skilled services, especially other financial investment activity ($40.9B)—which includes private equity, venture capital, and hedge funds—and legal services ($38.6B). These two industries alone account for 65.7% of the $121B of total profits among top 0.1%-owned firms in 2014.[28]

The facts that top S-corporation profits predominate outside of manufacturing and that

[26] Appendix Table A.1 presents analogous statistics that apportion S-corporation profits pro rata to owners in either the top 0.1% or the top 1-0.1% and then aggregate those apportioned profits by industry. Because S-corporations are closely held, this alternative approach does not materially alter the aggregates.

[27] Holding companies often own related but formally distinct non-financial firms, such as a dairy producer and a dairy distributor.

[28] Appendix Table A.2 presents analogous statistics that apportion S-corporation and partnership profits pro rata to owners in either the top 0.1% or the top 1-0.1% and then aggregates those apportioned profits by industry. Top partnerships (e.g., large law firms) include many more owners than do top S-corporations, so this exercise reallocates roughly 40% of the top 0.1% profits to the top 1-0.1% category.

the list of top-1-0.1% industries are high-skilled service industries suggests that top-owned S-corporations are relatively skill intensive. Figures 4A and 4B systematize this observation by presenting a set of pairwise correlations at the NAICS 4-digit level comparing top 1% and top 0.1% profit levels to industry-level measures of skill intensity and other characteristics.

The first four rows of each graph present correlations of profits with measures of industry skill intensity. Row 1 shows correlations with the skill share of employment, defined as the average share of workers in an industry with some college education from the March supplement of the Current Population Survey from the years 2000 through 2014. Row 2 shows correlations with the average wage per worker among firms with a top owner, based on our main sample. Row 3 shows correlations with the officer share of labor compensation, defined as follows. For each S-corporation in the SOI corporate sample, we divide officer compensation by the sum of officer compensation, salaries and wages, labor contribution to cost of goods solds, and deductions for pension and benefit contributions. The officer share of labor compensation is the sales-weighted average of this variable for all S-corporations between 2000 and 2014. Row 4 shows correlations with the share of workers using a computer at work, measured in the October Current Population Survey. All four skill correlations both top 1% profits and top 0.1% profits are strongly positive and statistically significant.

The strongly positive correlations between top S-corporation profits and industry-level skill measures contrast with insignificant or negative correlations with other industry-level characteristics. We use the SOI sample to construct sales Herfindahls in each 4-digit industry, including both C- and S-corporations. This proxy for market concentration is negatively correlated with both top 1% and top 0.1% S-corporation profits, implying that market power at the product-market level is unlikely to explain the rise in top incomes. Workers per firm is the number of aggregate S-corporation W-2 payees employed by the average top firms. This measure of firm scale also is negatively correlated with profits. Capital per worker is the total book value of depreciable assets less accumulated depreciation divided by aggregate W-2 payees. Capital is measured as the average for all S-corporations in the IRS SOI corporate sample betweeen 2000 and 2014, weighted to represent the population. Aggregate W-2 payees is measured directly for the population of S-corporations. We rely on data from Compustat to measure the intensity with which firms in different industries rely on intellectual property (proxied by R&D expenditures) or brand capital (proxied by advertising expenditures). For these variables, we compute the share of total public company expenditures in that category accounted for by public companies in that industry. We then compute the mean of this share over the years between 2000 and 2014. We measure international market presence as the 2000-2014 average of total foreign net income reported by S-corporations on Schedule M3 of their tax return divided by the 2000-2014 average of total S-corporation profits. All

correlations are negative or statistically insignificant.

Together, this section's descriptive statistics confirm the prediction that a large share of top earners are active owner-managers of mid-market firms in relatively skill-intensive and unconcentrated industries. We now turn to confirm the role of top owners using premature owner deaths, focusing on S-corporations—the dominant form of private business.

5 The Impact of Owner Deaths

An owner death will have no impact on a firm's profits if the firm is merely a collection of assets that generate profits independent of the owner's influence. In contrast, an owner death will affect a firm's profits if those profits reflect returns to the owner-manager's talent. We find that the average premature owner death causes a 54% decline in firm profits.

5.1 Sample Construction

We construct a sample of firms with owner deaths as follows. We obtain owner year of death from Social Security Administration files housed alongside tax records, linked to our de-identified owner-firm data. Our data on firm ownership ranges from 2000 to 2014. There are 40,026 S-corporations that are of non-trivial size and have an owner who dies at or before age 65, which we define as a premature death.[29] We restrict the sample to premature deaths in order to restrict attention to deaths of owners who are representative of the typical owner (who is not elderly) rather than the typical dying owner (who is elderly). Among these S-corporations, 7,055 have premature top 1% owner deaths. Of these, 2,673 occurred between 2005 and 2010 inclusive. We focus on this sample to estimate effects for all of the pre- and post-death years.

For each of these 2,673 treated firms, we find a matching firm in the population of S-corporations that share the following characteristics: have an owner who was born in the same year and is in the same personal income centile, have the same four-digit NAICS, and have the same firm size (measured as a sales ventile).[30] After doing this matching procedure, which is similar to other death-based event studies (e.g. Jaravel, Petkova and Bell (2015) and Jäger (2016)), we then have 2,763 pairs of firms: the 2,763 firms that were treated with an owner death and their paired control firm.

[29] We define non-trivial firm size as at least $150,000 in sales in the best year they are alive from 2000-2014.

[30] In the cases in which there are multiple matches, we randomly select a matching firm among those that share the same owner age, income, industry, and sales ventile. The year used for personal income and firm size is the year before the owner dies in the treatment sample.

5.2 Event Study Estimates

Using the sample of 2,763 firm pairs, we estimate the typical path of firm outcomes preceding and following an owner's death. We use an event study specification of the form:

$$Y_{jt} = \gamma_t + \sum_{k \in \{-4,-3,-2,0,1,2,3,4\}} \beta_k D_{jt}^k + \underline{\beta} \sum_{k<-4} D_{jt}^k + \overline{\beta} \sum_{k>4} D_{jt}^k + \varepsilon_{jt} \quad (5)$$

where Y_{jt} is the difference in firm outcomes between the treated firm that had an owner death and the outcome of its matched pair, D_{jt}^k is an indicator for firm j having experienced an owner death k periods in the past, and γ_t is a calendar year fixed effect. The coefficients β_k provide the impact on the time path of mean outcomes relative to the period before the owner death (which has been normalized to zero). Additionally, we address imbalance issues by "binning" periods greater than 5 or less than -4, which is reflected in the $\bar{\beta}$ and $\underline{\beta}$ coefficients that are assumed to be stable within end point bins. We cluster standard errors by firm.

We consider two main outcomes: firm survival and profitability. Both measures of firm performance decline substantially. Relative to similar control firms, Figure 5 Panel A shows that the probability the firm remains in business declines immediately and persistently upon owner death. Four years after the owner death, firm survival is 0.221 percentage points lower at owner death firms than at counterfactual firms—a -47.8% effect size relative to the counterfactual $t+4$ survival rate of 46.5%. The effect size is precisely estimated, with a t-statistic of 13.1.

Panel B shows the impacts on profitability. To be able to measure impacts on profitability that allows for firms to exit while still contributing to the estimates, we define the number of workers as the average number of W-2 employees in the pre-event period (i.e., $\bar{L}_{jt} = \frac{1}{4}\sum_{s=1}^{s=4} L_{jt-s}$), so the outcome is profits per lagged average firm size $\frac{\pi_{jt}}{\bar{L}_{jt}}$. Profitability declines substantially following the death of a top 1% owner. The point estimate is $-\$12,161$ per pre-period worker—a -54.2% effect size relative to the counterfactual $t+4$ level of $\$22,426$ per pre-period worker. The effect size is precisely estimated, with a t-statistic of 3.5.

6 High and Rising Firm Profitability

We move to explore whether capital accumulation or superior profitability is driving top incomes and their rise. Under the rentier view, top owners earn high business income purely because of scale: all firms are equally profitable, and high earners have simply accumulated large capital holdings. However, if owner talent is an important input to production, then

owners may earn high business income because their firms generate superior profitability, possibly in addition to being larger. Moreover, if the supply of talent is relatively inelastic and there are diminishing returns to scale, we should find that rising profitability contributes to rising profits at top-owned firms.

We find that firms owned by individuals in the top 1% and top 0.1% ("top-owned firms") generate very high profitability that has grown over time in the twenty-first century. In contrast, the scale of top-owned firms has not risen. A decomposition shows that rising profitability rather than rising scale explains most of the rise in top S-corporation income. Neither high and rising risk nor rising assortative matching of high-earners to highly profitable firms explains the results. We also show that rising pass-through income is a largely real rather than reporting phenomenon.

6.1 High Profitability

To test whether top-owned firms generate especially high profitability, we begin by binning year-2014 owners in the main sample by their personal income rank in the overall U.S. income distribution. We confine attention to the top personal income decile, where the vast majority of S-corporation owners lie. The bins are one-percentile wide, except in the top 1% where we consider bins between the 99th percentile and 99.5th percentile, the 99.5th percentile and 99.9th percentile, and the top 0.1%.

We then compute mean profitability—measured as profits per worker—across firms owned by individuals within each personal income bin, with and without controls, as follows. When not using controls, we simply compute the mean profitability across owner-firm observations within each bin weighting by firm scale (the number of workers).[31] Our main specification controls for industry (four-digit NAICS) by removing profitability variation across owner income bins that is correlated with industry fixed effects.[32] We similarly execute a specification in which we control for interactions of industry fixed effects and firm size ventiles (five-percentile-point bins of firm sales).

Figure 6A plots the results. The series in red squares is our preferred specification, which plots mean profitability net of industry fixed effects. If profitability did not vary systematically by owner income, the series would be flat. Instead, the series is highly convex.

[31] We restrict attention to firms with positive workers. We winsorize profitability at the 1st and 99th percentiles across the year's top-decile owner-firm observations. We do not apportion profits and workers to owners according to ownership shares. Results are similar when apportioning (Appendix Figure A.2A).

[32] Specifically, we compute profitability at the owner-firm level for all owners in the top personal income decile, regress profitability on industry fixed effects weighted by scale, compute residuals, add a constant to the residuals such that the sum of the product of the residuals and scale equals total profits, and then compute the scale-weighted mean of each bin's residuals. The addition of the constant ensures that the overall scale-weighted mean profitability is constant across specifications.

Firms owned by top 0.1% earners enjoy profitability ($16K per worker) that is over twice as large as the profitability ($7.5K per worker) of firms owned by individuals in the bottom half of the top decile. The graph displays similar patterns without controls and when controlling additionally for firm size.

Panel A's convex profitability-income gradient implies that top owners do not earn high business income simply because their firms operate at larger scale. Instead, their firms generate superior profits per unit of scale. Figure 6B demonstrates that high firm profitability is a persistent and systematic characteristic of high earners. It does so by replicating Panel A in the subsample of startups, plotting the profitability-income gradient using owner income ranks from the year *before* the owner founded the startup. A firm qualifies as a startup in year t if it filed an S-corporation income tax return in year t and did not file a business income tax return of any kind before year t. We find all such owner-startup observations in the main sample in years 2001-2010 and define the owner's income rank using her personal income in the year before she founded the startup. Then for each firm in each startup year, we produce a profitability-income gradient net of industry fixed effects using the firm's profitability in its fifth year of existence, conditional on it existing for at least five years. We then average those gradients evenly across years and plot the mean gradient in Panel B.

Panel B's profitability-income gradient is convex: startups founded by top earners go on to be much more profitable than those started by other lower earners. Panel B conditions on startups that survived for at least five years. We find very similar results when including all startups, computing each owner-startup's profitability as total profits in the startup's first five years divided by total annual workers in the startup's first five years (Appendix Figure A.2B). Hence, superior firm profitability is a persistent and systematic characteristic of high earners.

6.2 Rising Profitability, Not Rising Scale

We now turn to testing whether rising profitability rather than rising scale explains rising top business income. To do so, we first separately analyze the time series of profitability and scale. Then in the next subsection, we quantify their relative contributions to rising top business income.

Figure 6C analyzes the profitability of top-owned firms in the time series. To do so, we construct annual versions of the profitability-income gradient of Figure 6A and plot two quantities: mean profitability among top-0.1%-owned firms (blue circles and left axis) and the profitability of top-0.1%-owned firms minus the profitability of firms owned by the individuals in the 90th-95th percentiles ("profitability advantage", red squares and right axis) over time

2001-2014. The figure shows that top-owned firms have doubled in profitability, from $8K per worker in 2001 to $16K in 2014. Moreover, the graph shows that the profitability advantage of top-owned firms nearly doubled as well, from $5K per worker to $9K in 2014. Thus, we find that top owners generate superior profitability that has risen dramatically over time.

To investigate whether top-owned firm scale has also risen over time, Figure 7 plots two measures of the distribution of S-corporation activity across firms of different scale. We measure scale as the firm's number of workers and plot distributions in three years: 2001, 2007, and 2014. Panel A plots the share of workers across four scale bins: firms with fewer than 10 workers, firms with 10-50 workers, firms with 50-100 workers, and firms with over 100 workers. The share of workers at firms with over 100 workers has *fallen* slightly over time from 57% in 2001 to less than 50% in 2014. Panel B shows a similar pattern for the distribution of firm profits across the four scale bins. Thus firm profitability has risen over time while scale has not.

Panel A and B of Figure 8 summarize the lessons of this subsection and the previous subsection by plotting how S-corporation profitability and scale has evolved since 2001, by owner income groups. Figure A plots aggregate profits per worker for three different types of S-corporations: those with a top 0.1% owner, those with an owner in the top 1-0.1%, and those without a top owner. As already communicated, top-owned firms exhibited high and rising profitability. Panel B replicates Panel A for firm scale (the number of workers) rather than profits per worker. Similar to Panel A's profitability patterns in Panel A, top-owned firms are larger than other firms: they employed roughly 125 more workers than non-top-owned firms on average in 2001. But unlike Panel A's profitability patterns, top-owned firms shrunk on average between 2001-2014. The scale difference between top-owned firms and non-top-owned firms also fell between 2001-2014. Together, these facts suggest that rising profitability rather than rising scale explains rising top S-corporation income.

To quantify the degree to which rising profitability rather than rising scale explains rising top S-corporation income, Figures 8C and 8D decompose the growth of S-corporation profits for top-1-0.1%- and top-0.1%-owned firms, respectively. The graphs show how profitability and components of scale evolved relative to their 2001 levels. Specifically, we plot the following components:

$$\underbrace{\frac{\pi_t}{\pi_{01}}}_{\text{Profit Growth}} = \underbrace{\frac{\pi_t/L_t}{\pi_{01/L_{01}}}}_{\text{Profitability Growth}} \times \underbrace{\frac{L_t/Owner_t}{L_{01}/Owner_{01}} \times \frac{Owner_t/Firm_t}{Owner_{01}/Firm_{01}} \times \frac{Firms_t}{Firms_{01}}}_{\text{Scale Growth}} \tag{6}$$

where growth is defined as the ratio of the current value (denoted by t) to the value in 2001 (denoted by 01), profit π is aggregate S-corporation profits for a given set of firms, prof-

itability is the ratio of profits to scale (the number of workers), and scale can be decomposed further as the product of three terms: the number of workers per owner, the number of owners per firm, and the number of firms. Panels C and D show that for top-owned firms, aggregate profits roughly doubled since 2001. Profitability also nearly doubled for top-owned firms, while scale and each of its subcomponents did not increase since 2001 (though firm entry did increase modestly for top-1-0.1%-owned firms). This decomposition illustrates that rising profitability explains nearly all of the growth in top S-corporation profits.

Table 4 reports the precise results of our decomposition, both overall and across industry. The table has three panels: all owners in A, top-1-0.1%-owned firms in B, and top-0.1%-owned firms in C. Profit growth was fairly broad-based across industries and the largest growth overall was in healthcare and information and professional services. Profitability growth, while also fairly broad-based across industries, was highest in manufacturing. In terms of the components of scale, manufacturing also saw sizable declines in the number of workers per owner. The number of owners per firm also decreased overall and among top-1-0.1%-owned firms, but was roughly flat for top-0.1% owned firms. Net entry, defined as the growth in the number of firms, increased overall and especially in healthcare. Overall, profitability growth accounted for roughly 85% of the growth in top S-corporation profits.

6.3 Not Risk or Rising Assortativeness

This subsection tests two basic explanations for high and rising profitability at top-owned firms. The first potential explanation is undiversifiable risk, which is a common explanation for high profitability. For example, if top-owned firms have a higher probability of failure, owners could be compensated for that risk by higher profitability in years of survival. The blue circles (left axis) in Figure 9A plot the share of year-2001 firms in the main sample that had exited the sample by 2014 (which typically indicates failure) versus 2001 owner personal income rank, weighting by the firm's 2001 number of workers. Rather than experiencing higher exit rates than average, top-owned firms experienced lower exit rates than average. This finding suggests that top-owned firms exhibit higher profitability and lower risk.

Whereas the exit rate measure proxies for risk along the extensive margin of firm exit, we employ a second measure that proxies for risk on the intensive margin of survival: a version of the Sharpe ratio, computed within each personal income bin. The Sharpe ratio—typically defined as an asset's mean return divided by the standard deviation of its returns—is commonly used in finance to assess whether an asset's return compensates for its risk. A high Sharpe ratio indicates returns in excess of what one would expect given the risk. In our context, higher Sharpe ratios among top-owned firms would indicate that top-owned firms'

high profitability more than sufficiently compensates their owners for their risk. For each year 2011-2014 in the main sample, we compute each personal income bin's Sharpe ratio as the ratio of scale-weighted mean profitability to the scale-weighted standard deviation of profitability across owner-firm observations. We then average those within-bin Sharpe ratios evenly across years and plot the means in the green triangles (right axis) of Figure 9A. Top income bins have higher standard deviations of profitability, indicating somewhat higher risk. However, profitability is so much higher in top income bins that we find higher Sharpe ratios among top-owned firms. This finding suggests that higher risk does not explain higher profitability among top-owned firms.

Turning to the time series, we further use the Sharpe ratio to test whether rising risk among top-owned firms explains rising top-owned firms' profitability. In Figure 9A, we plot a 2001-2004 version of the 2011-2014 Sharpe ratio curve defined above. If rising risk explained rising top-owned-firms' profitability, we would expect the top bins' 2011-2014 Sharpe ratio values to lie at or below their 2001-2014 values. Instead, the 2011-2014 values lie above the 2001-2014 values: top-owned firms in 2011-2014 appear to have enjoyed higher profitability without commensurately higher risk. Hence, we do not find evidence that higher risk explains higher profitability among top-owned firms—neither in the cross section nor in the time series.

Finally, we consider a second basic explanation for rising profitability at top-owned firms: ownership reallocation such that top owners are increasingly assortatively matched with highly profitable firms. Under this explanation, the distribution of firm profitability has not changed; all that has changed is the mean income rank of the owners at the most profitable firms. We test this possibility by ranking firms in the main sample according to their profitability in each year. We then plot in Figure 9B the mean firm profitability rank for different top-owner groups: the top 0.1%, top 0.1-top 0.5%, top 1%-top 0.5%, and top 2%. The graph shows that top owners tend to own higher ranked firms. However, the average rank is quite stable over time.

The stability in the allocation of top firm ownership found in Panel B implies that diverging firm performance explains rising profitability among top-owned firms. Panel C illustrates this fact directly. It plots the percentiles of the S-corporation profitability distribution for each year 2001-2014. The graph shows that the firm-level profitability distribution widened at the top. While the 25th percentile and median profitability across each year's S-corporations has been relatively stable, the 75th percentile and especially the 95th percentile have increased. Thus, diverging firm profitability rather than a rising assortative matching of the most-profitable firms to high-income individuals accounts for the rising profitability enjoyed by top owners.

To sum up, this section has shown that high and rising profitability among top-owned firms explains the vast majority of rising S-corporation income in the twenty-first century. The high and rising profitability enjoyed by top owners is not explained by high or rising risk and is a direct consequence of high and rising profitability of the most profitable firms.

6.4 Not a Reporting Phenomenon

When business income is earned in C-corporation form, corporate income taxes never appear on personal income tax returns and retained earnings do not appear in the year the income is earned and may never appear.[33] The rising top S-corporation income documented in Section 1 could therefore reflect relabeling of business income, as businesses reorganized from C-corporation form to S-corporation form. We now demonstrate that most of the rise in top S-corporation income is in fact a real economic phenomenon.

Figure 10A uses SOI aggregate statistics to highlight the possibility that the rising top S-corporation income documented in Figure 1C does not represent a real rise in business income. We plot the S-corporation share of three measures of total (C+S+P) corporate and partnership activity: the total number of firms, total profits, and total sales. After the Tax Reform Act of 1986 changed the incentives to organize business activity as an S-corporation, the S-corporation share of the number of total corporate firms and partnerships rose from 16% to 47% in 2012. Similarly, the S-corporation share of total corporate and partnership profits rose from 4% to 20%, and the S-corporation share of total corporate and partnership sales rose from 5% to 19%. The rising S-corporation share of total corporate and partnership profits indicates that some share of rising top S-corporation income is an artifact of changes in the organizational form through which a given form of corporate income is reported. However, Figure 10B shows this rapid increase in the number of S-corporations is due to S-corporations that are not owned by top income earners. For instance, the number of S-corporations that have top 0.1% owners was actually slightly lower in 2010-2014 (roughly 135 thousand S-corporations) than it was in the early-to-mid 2000s (roughly 140 thousand S-corporations).

To assess this concern more directly, we collect data from the population of businesses that switch corporate forms between 2001 and 2014. On average, approximately sixty-seven thousand C-corporations switch each year, corresponding to between 3 and 5 percent of total potential C-corporations. To evaluate the importance of these switchers for the aggregate

[33] See Alstadster et al. (2016) for a more detailed discussion of these issues.

growth of S-corporation profits, consider the decomposition

$$\Delta Y_1 \equiv \Delta Y_0 + [\Delta Y_1 - \Delta Y_0] = \Delta Y_0 + \Delta Z, \tag{7}$$

where Y_1 is total S-corporation profits, Y_0 is counterfactual S-corporation profits without any switchers, and Z refers to S-corporation profits not driven by organic factors. We measure ΔZ by cumulating profits earned by all switchers between 2001 and 2014. This figure amounts to \$70.5B, or 30% of the total growth in S-corporation profits of \$235.2B. Thus, 70% of the growth in S-corporation profits is due to firms that did not switch from C-corporation form during this time. However, this calculation neglects the role of organic entry and exit. If changes in the propensity to enter or exit as an S-corporation have led to a differential increase in the share of total activity in S-corporation form, this could account for some share of ΔZ not captured by our switchers analysis.

To explore this concern, Figure 10C decomposes the level of S-corporation profits between 2001 and 2014 into actual S-corporation profits and the share attributed to organizational form changes. To correct for the effect of differential net entry into the S-corporation sector, the decomposition assumes the level of S-corporation sales remains a constant share of total business sales (including S-corporations, C-corporations, and partnerships) for each 4-digit NAICS industry throughout the time period. The top bars represent the share of S-corporation profits that are due to S-corporations having a higher share of total business sales relative to 2001. Figure 10D applies the same transformation to decompose the growth in S-corporation profits among those with top 0.1% owners.

Figure 10C shows that in 2014, the share of profit levels due to organizational form changes was approximately 15%, while 85% of S-corporation profits remain under the constant share assumption. In terms of growth, Figure 10D shows that actual top profits doubled between 2001 and 2014 in real terms, while counterfactual profits rose roughly 75%. Thus, most of the growth in top profits remains after adjusting for corporate form reorganization.

7 Implications of Disguised Wages

Our evidence has suggested that top business income does not simply derive from passive returns to accumulated capital. Instead, a large share of top earners derive private business income as active owner-managers, which implies that some portion of top private business income is wage income in disguise. We close our analysis by quantifying two implications of this finding.

7.1 Disguised Wages and the Corporate Sector Labor Share

Our paper has found in the universe of S-corporations that a large share of business profits derive from the active participation of owner-managers. Owner-managers have leeway in whether they report their income for tax purposes as wages or as profits. C-corporation owner-managers face tax incentives to report their income as wages while S-corporation owner-managers face tax incentives to report it as profits. We show in this subsection that this fact substantially affects the measurement of changes in the U.S. corporate labor share. The U.S. corporate sector comprises C-corporations and S-corporations. The Tax Reform Act of 1986 made S form tax superior to C form for eligible firms. Ever since, the share of business activity in S form has risen while the share in C form has fallen. This transformation of C-corporation activity into S-corporation mechanically reduces the measured labor share, given owner-managers' incentives to report their income as profits rather than wages under S form.

We use a sample of firms that switch from C-corporation to S-corporation form to study the role of corporate form changes for trends in the aggregate labor share in the U.S. Figure 11 presents evidence that a nontrivial share of S-corporation profits would have been reported as labor payments if the firms organized as C-corporations. To show this, we plot average labor payments (including officer compensation) and profits relative to firm sales, conditional on firm and calendar year fixed effects, for a sample of 259,957 S-corporations that switched from C-corporation form to S-corporation form between 2000 and 2014. The sample excludes firms that never have sales below \$150K and that are active and present for at least 4 years prior to the switch event.

Figure 11A plots the impacts on profits and labor payments for all firms. On average, labor payments fall sharply in the event year by 1.95% on average relative to sales, which are offset by a profit margin that increases by 1.76% on average. Figures 11B-D present subsample analyses. Panel B shows that offices of physicians and dentists, which are closely held with relatively few workers, display much larger responses than the full sample. For this group, profit margins increase 7.81% and labor payments fall 6.36% relative to sales following a switch. Panel C shows that when large firms (i.e., with mean sales $>$ \$50M) switch, approximately zero relabeling occurs. Panel D shows that small firms that switch (i.e., with mean sales $<$ \$5M) show similar patterns to the full sample. This is partly because these firms account for 85% of the sample.

How much of the decline in the corporate sector labor share can be explained by disguised wages of S-corporation owners? To answer this question, we combine labor share data from Karabarbounis and Neiman (2014), aggregate S-corporation sales going back to 1980 from SOI, and our estimate of the effect of organizing as an S-corporation on reported labor

compensation relative to sales (1.95% of sales). Figure 12A displays our results. In 2012, the last year for which labor share data are provided by Karabarbounis and Neiman (2014), our estimate implies that roughly $116B of aggregate S-corporation profits are disguised wages. Thus, the aggregate labor share is understated by 1.4 percentage points. Since 1980 the labor share in the U.S. corporate sector fell 7.5 percentage points from 64.7% to 57.2%. Our counterfactual series shows a decline of 6.3 percentage points, 16% smaller than in the raw data. This finding shows that the fact that owners actively generate their business income meaningfully affects economic measurement of different components of national income, in a real-world environment of changing tax policy.

7.2 Disguised Wages and Tax Policy

A simple tax implication of our results is that, under current law, the federal marginal tax rate on labor income falls at the top of the income distribution. As explained in Section 3.1, wage income is subject to both the federal ordinary income tax (39.6% at the top) and additional federal labor income taxes (the 2.9% employee and employer Medicare taxes and the 0.9% the Affordable Care Act Additional Medicare Tax on labor income), while active S-corporation income is subject only to the personal income tax.[34] Our analysis of the profit impact of an owner death yielded an estimate of 54% of the share of S-corporation profits. In this subsection's exercise, we will interpret that finding as showing that 54% of top S-corporation income is wage income in disguise. We apply these parameters to the 2014 SOI personal income tax sample in order to estimate the effective federal marginal tax rate on labor income at various points in the personal (i.e. labor plus other) income distribution. We define labor income as Form 1040 Wages, Salaries, and Tips (explicit wages) plus the disguised wages share of active S-corporation income.[35]

Naturally, we find that the effective marginal tax rate on labor income rises as one's personal income breaches the top ordinary income tax bracket (above $457,601 for married-filing-jointly tax units and somewhat less for other units). However, disguised wages constitute a larger share of labor income among very-high-income tax units than among lower-income units. As a result, we find that the effective federal marginal tax rate on labor income falls at the very top of the income distribution.

[34]None of the Affordable Care Act's surtaxes applied to active S-corporation income.

[35]For tax units with both explicit wages and disguised wages, we compute the tax unit's marginal tax rate on labor income as the weighted average between its marginal tax rate on explicit wages and its tax rate on disguised wages, with weights equal to their respective shares of labor income. The marginal top tax rate on explicit wages equals 43.4%. The marginal top tax rate on disguised wages equals 39.6%. Tax units subject to the alternative minimum tax are assigned a marginal income tax rate equal to the maximum of their marginal ordinary income tax rate and their marginal alternative minimum tax rate.

Figure 12B plots the effective marginal tax rate by broad income group within the top tax bracket. Tax units with personal income between $1 million and $50 million face a 42.9% tax rate on their marginal dollar of labor income. That marginal tax rate falls as personal income rises above $50 million, down to 42.1% among tax units with over $100 million in personal income. Though the decline in the marginal labor income tax rate is small in absolute magnitude, its negative direction contrasts with normative tax prescriptions for rising or flat top labor income tax rates (Diamond, 1998; Saez, 2001) and the apparent desire for rising or flat top labor income tax rates embodied in the graduated personal income tax. From a positive perspective, the results suggest that high-earners' relative ability to earn wage income in the form of S-corporation income allows them to enjoy lower taxes than those less well off.

8 Conclusion

This paper uses administrative data linking 10 million firms to their owners in order to show that private business owners who actively manage their firms are key for top income inequality. The majority of top earners receive some private business income—most of which accrues to active owner-managers of mid-market firms in relatively skill-intensive and unconcentrated industries. Top-owned firms' profits fall by half after a premature owner death. Top-owned firms are twice as profitable as other firms despite similar risk, and rising profitability at top-owned firms explains most of the rise in top profits. Taken together, this evidence rejects the hypothesis that high and rising top business income reflects passive returns to high and rising capital accumulation. Instead, the working rich remain central to rising top incomes in the twenty-first century.

We highlight three implications. First, rising top income inequality remains consistent with rising returns to top skill, though we stress that we remain silent on the social value of those returns. Second, firm-level variation in profitability amplifies top income inequality. Third, conventional measures overstate the decline in the U.S. labor share as well as marginal tax rates on top labor income. Future work can use our findings to model income and wealth dynamics and derive optimal policy prescriptions.

References

Alstadster, Annette, Martin Jacob, Wojciech Kopczuk, and Kjetil Telle. 2016. "Accounting for Business Income in Measuring Top Income Shares: Integrated Accrual Approach Using Individual and Firm Data from Norway." National Bureau of Economic Research Working Paper 22888.

Auten, Gerald, and David Splinter. 2016. "Using Tax Data to Measure Long-Term Trends in U.S. Income Inequality." *Treasury Office of Tax Analysis Working Paper*.

Autor, David, David Dorn, Lawrence F Katz, Christina Patterson, and John Van Reenen. 2017. "The Fall of the Labor Share and the Rise of Superstar Firms." Working Paper, Massachusetts Institute of Technology.

Autor, David H, Lawrence F Katz, and Melissa S Kearney. 2008. "Trends in US Wage Inequality: Revising the Revisionists." *The Review of Economics and Statistics*, 90(2): 300–323.

Bender, Stefan, Nicholas Bloom, David Card, John Van Reenen, and Stefanie Wolter. 2016. "Management Practices, Workforce Selection and Productivity." National Bureau of Economic Research Working Paper 22101.

Bertrand, Marianne, and Antoinette Schoar. 2003. "Managing with Style: The Effect of Managers on Firm Policies." *The Quarterly Journal of Economics*, 118(4): 1169–1208.

Bloom, Nicholas, and John Van Reenen. 2007. "Measuring and Explaining Management Practices across Firms and Countries." *The Quarterly Journal of Economics*, 122(4): 1351–1408.

Bloom, Nicholas, Benn Eifert, Aprajit Mahajan, David McKenzie, and John Roberts. 2012. "Does Management Matter? Evidence from India." *Quarterly Journal of Economics*, 128(1): 1–51.

Bricker, Jesse, Alice Henriques, Jacob Krimmel, and John Sabelhaus. 2016. "Measuring income and wealth at the top using administrative and survey data." *Brookings Papers on Economic Activity*, 2016(1): 261–331.

Caballero, Ricardo J., Emmanuel Farhi, and Pierre-Olivier Gourinchas. 2017. "Rents, Technical Change, and Risk Premia Accounting for Secular Trends in Interest Rates, Returns on Capital, Earning Yields, and Factor Shares." *American Economic Review*, 107(5): 614–20.

Card, David, Jörg Heining, and Patrick Kline. 2013. "Workplace heterogeneity and the rise of West German wage inequality." *Quarterly journal of economics*, 128(3): 967–1015.

Clarke, Conor, and Wojciech Kopczuk. 2017. "Business Income and Business Taxation in the United States since the 1950s." *Tax Policy and the Economy, Volume 31*. University of Chicago Press.

Cooper, Michael, John McClelland, James Pearce, Richard Prisinzano, Joseph Sullivan, Danny Yagan, Owen Zidar, and Eric Zwick. 2016. "Business in the United States: Who Owns It, and How Much Tax Do They Pay?" *Tax Policy and the Economy*, 30(1): 91–128.

DeBacker, Jason M., and Richard Prisinzano. 2015. "The Rise of Partnerships." *Tax Notes*, 147(13): 1563–75.

Diamond, Peter A. 1998. "Optimal Income Taxation: An Example with a U-shaped Pattern of Optimal Marginal Tax Rates." *American Economic Review*, 83–95.

Dyrda, Sebastian, and Benjamin Pugsley. 2017. "Taxes, Regulations of Businesses and Evolution of Income Inequality in the US." *University of Toronto Working Paper*.

Edmans, Alex, and Xavier Gabaix. 2016. "Executive compensation: A modern primer." *Journal of Economic Literature*, 54(4): 1232–1287.

Elsby, Michael W.L., Bart Hobijn, and Ayşegül Şahin. 2013. "The Decline of the U.S. Labor Share." *Brookings Papers on Economic Activity*, , (2): 1–63.

Fagereng, Andreas, Luigi Guiso, Davide Malacrino, and Luigi Pistaferri. 2016. "Heterogeneity and persistence in returns to wealth."

Fisman, Raymond. 2001. "Estimating the value of political connections." *The American economic review*, 91(4): 1095–1102.

Furman, Jason, and Peter Orszag. 2015. "A firm-level perspective on the role of rents in the rise in inequality." Presentation at "A Just Society" Centennial Event in Honor of Joseph Stiglitz Columbia University.

Goldin, Claudia Dale, and Lawrence F Katz. 2009. *The Race between Education and Technology*. Harvard University Press.

Gollin, Douglas. 2002. "Getting Income Shares Right." *Journal of Political Economy*, 110(2): 458–474.

Gordon, Roger, and Joel Slemrod. 2000. "Are 'Real' Responses to Taxes Simply Income Shifting between Corporate and Personal Tax Bases (New York: Russell Sage Foundation; Cambridge, MA: Harvard University Press, 2000)." In *Does Atlas Shrug? The Economic Consequences of Taxing the Rich.* , ed. Joel Slemrod, Chapter 8, 240–288. Cambridge:Russell Sage Foundation Books at Harvard University Press.

Gutiérrez, Germán, and Thomas Philippon. 2016. "Investment-less Growth: An Empirical Investigation." National Bureau of Economic Research Working Paper No. w22897.

Guvenen, Fatih, and Greg Kaplan. 2017. "Top Income Inequality in the 21st Century: Some Cautionary Notes." National Bureau of Economic Research.

Hall, Robert E. 1988. "The Relation between Price and Marginal Cost in US Industry." *Journal of Political Economy*, 96(5): 921–947.

Hsieh, Chang-Tai, and Peter Klenow. 2009. "Misallocation and Manufacturing TFP in China and India." *Quarterly Journal of Economics*, 124(4): 1403–1448.

Jäger, Simon. 2016. "How Substitutable Are Workers? Evidence from Worker Deaths." *MIT Working Paper*.

Jaravel, Xavier, Neviana Petkova, and Alexander Bell. 2015. "Team-Specific Capital and Innovation." *Harvard University Working Paper*.

Kaplan, Steven N, and Joshua Rauh. 2013. "It's the market: The broad-based rise in the return to top talent." *Journal of Economic Perspectives*, 27(3): 35–55.

Karabarbounis, Loukas, and Brent Neiman. 2014. "The Global Decline of the Labor Share." *The Quarterly Journal of Economics*, 129(1): 61–103.

Katz, Lawrence F., and Kevin M. Murphy. 1992. "Changes in relative wages, 1963–1987: supply and demand factors." *The Quarterly Journal of Economics*, 107(1): 35–78.

Khwaja, Asim Ijaz, and Atif Mian. 2005. "Do lenders favor politically connected firms? Rent provision in an emerging financial market." *The Quarterly Journal of Economics*, 120(4): 1371–1411.

Kopczuk, Wojciech, and Emmanuel Saez. 2004. "Top Wealth Shares in the United States, 1916-2000: Evidence From Estate Tax Returns." *National Tax Journal*, 57(2): 445–87.

Krueger, Anne O. 1974. "The political economy of the rent-seeking society." *The American economic review*, 64(3): 291–303.

Lucas, Robert E. 1978. "On the Size Distribution of Business Firms." *The Bell Journal of Economics*, 9(2): 508–523.

Murphy, Kevin M., Andrei Shleifer, and Robert W. Vishny. 1991. "The Allocation of Talent: Implications for Growth." *The Quarterly Journal of Economics*, 106(2): 503–530.

Murphy, Kevin M., and Robert H. Topel. 2016. "Human Capital Investment, Inequality and Growth." NBER Working Paper No. 21841.

Piketty, Thomas. 2014. *Capital in the 21st Century*. Cambridge, MA:Harvard University Press.

Piketty, Thomas, and Emmanuel Saez. 2003. "Income Inequality in the United States, 1913–1998." *Quarterly Journal of Economics*, 118(1): 1–41.

Piketty, Thomas, and Gabriel Zucman. 2014. "Capital is Back: Wealth-Income Ratios in Rich Countries, 1700-2010." *The Quarterly Journal of Economics*, 129(3): 1255–1310.

Piketty, Thomas, Emmanuel Saez, and Gabriel Zucman. 2016. "Distributional National Accounts: Methods and Estimates for the United States." National Bureau of Economic Research Working Paper 22945.

Prisinzano, Richard, and James Pearce. 2017. "Tax Based Switching of Business Income." *mimeo*.

Rognlie, Matthew. 2016. "Deciphering the Fall and Rise in the Net Capital Share: Accumulation or Scarcity?" *Brookings Papers on Economic Activity*, , (1): 1–69.

Rosen, Sherwin. 1981. "The Economics of Superstars." *American Economic Review*, 71(5): 845–858.

Saez, E. 2001. "Using elasticities to derive optimal income tax rates." *The Review of Economic Studies*, 68(1): 205.

Saez, Emmanuel, and Gabriel Zucman. 2016. "Wealth inequality in the United States since 1913: Evidence from capitalized income tax data." *The Quarterly Journal of Economics*, 131(2): 519–578.

Slemrod, Joel. 1996. "High Income Families and the Tax Changes of the 1980s: The Anatomy of Behavioral Response." In *Empirical Foundations of Household Taxation*. Vol. 118, , ed. Martin Feldstein and James M. Poterba, Chapter 6, 169–192. Chicago:University of Chicago Press.

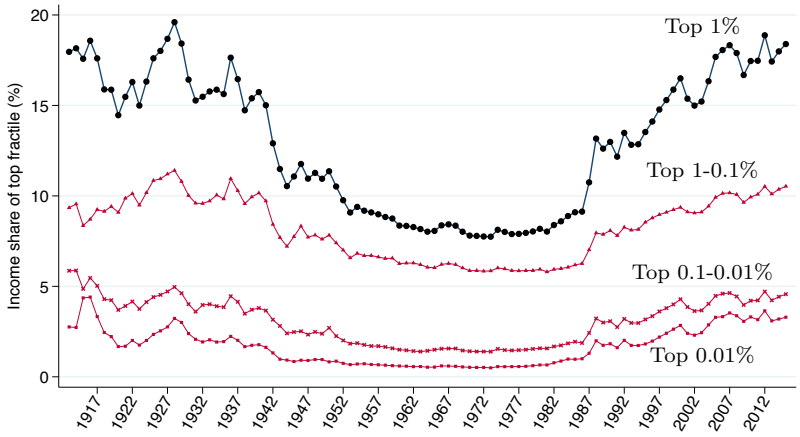
Song, Jae, David J Price, Fatih Guvenen, Nicholas Bloom, and Till Von Wachter. 2015. "Firming Up Inequality." National Bureau of Economic Research.

Syverson, Chad. 2011. "What Determines Productivity?" *Journal of Economic Literature*, 49(2): 326–65.

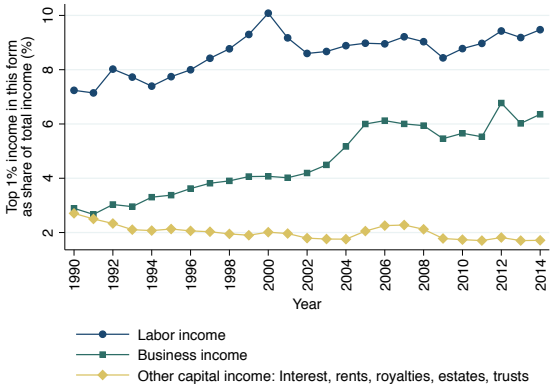
Zimmerman, Seth D. 2017. "Making the One Percent: The Role of Elite Universities and Elite Peers." *NBER Working Paper*, 22900.

Figure 1: Rising U.S. Income Inequality and Business Income

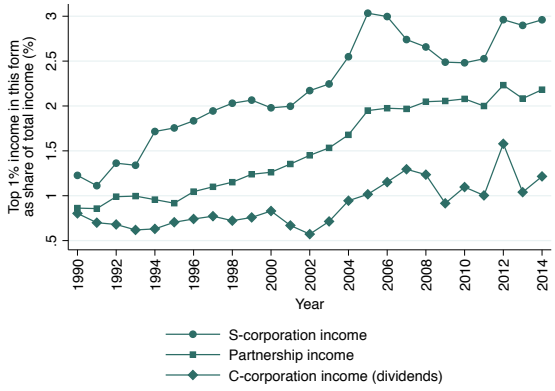
A. The Rise in Income Inequality



B. Business Income vs. Other Income

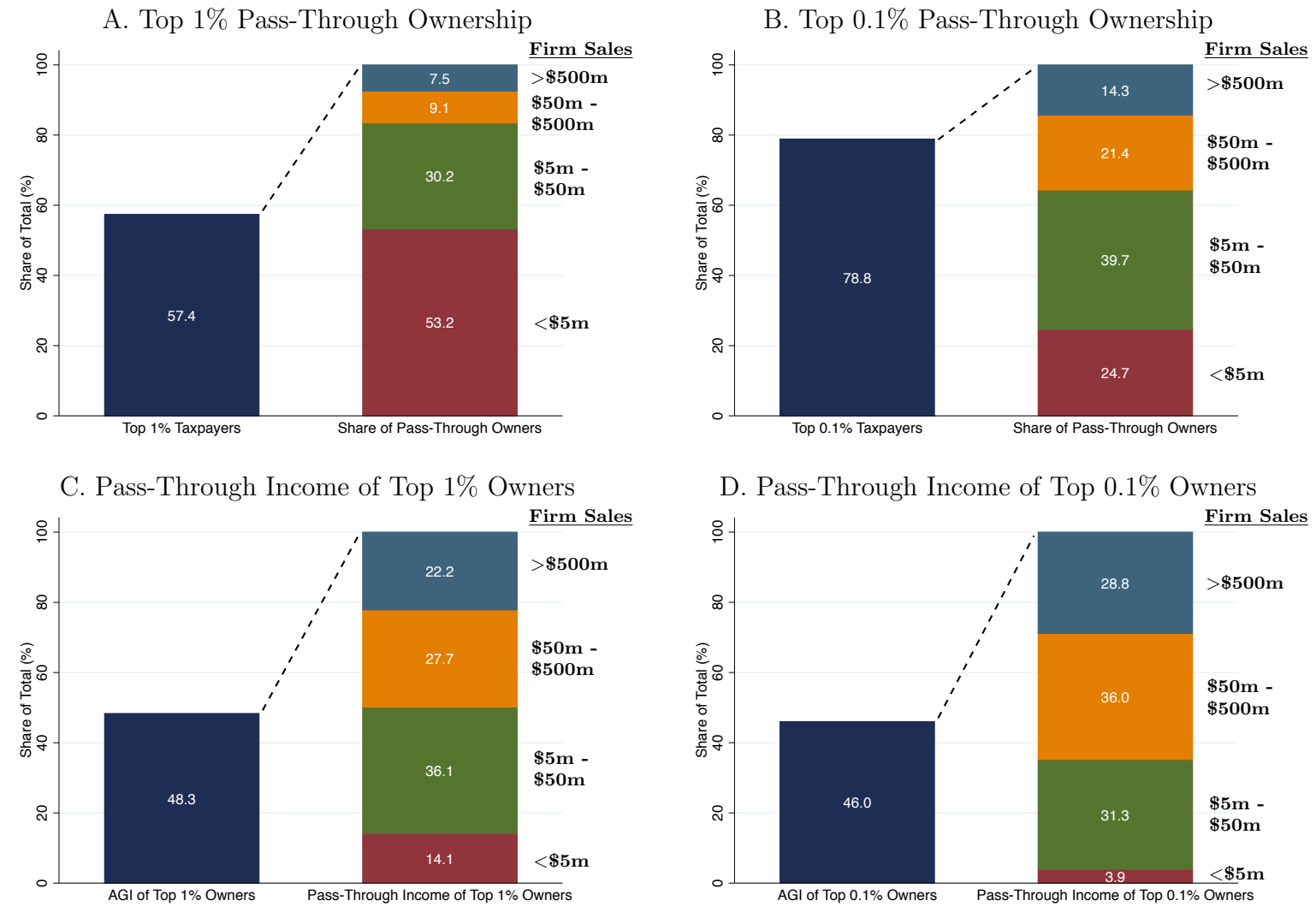


C. Types of Business Income



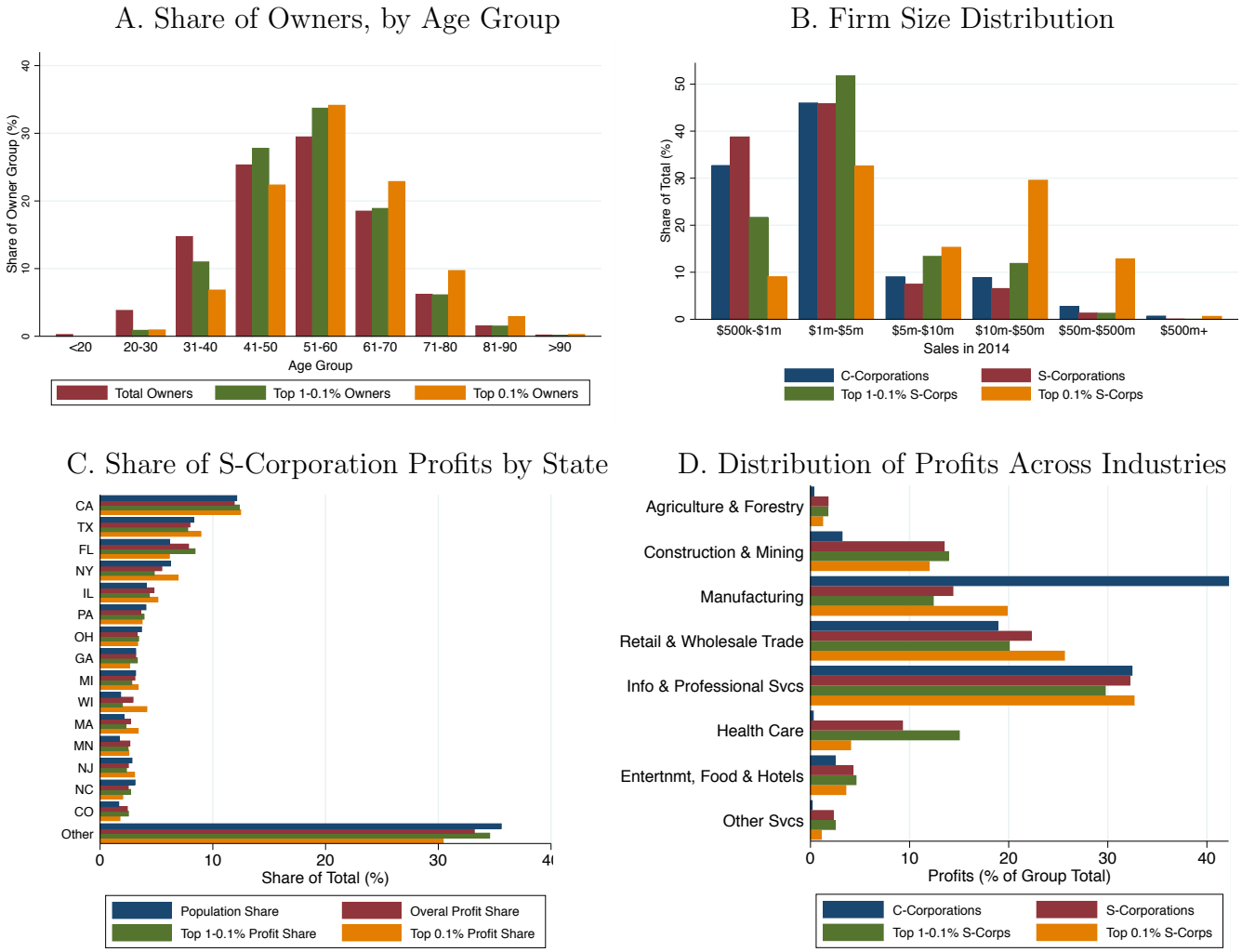
Notes: Panel A uses data from Piketty and Saez (2003) to plot the share of AGI earned by the top 1%, top 1-0.1%, top 0.1-0.01%, and top 0.01%, respectively. Panel B decomposes the top 1% income share into components from labor income, business income, and other capital income (i.e., interest, rents, royalties, estates, and trusts) since 1990. Panel C decomposes business income into income from different business entity types: S-corporations, Partnerships, and C-corporations (in the form of dividends). See Appendix Figure A.1 for analogous decompositions to those in Panels B and C for the top 1-0.1% and the top 0.1%.

Figure 2: Most of Top 1% and 0.1% Have Pass-Through Income



Notes: Panel A plots for 2014 the share of the top 1% with pass-through income, and breaks down pass-through owners' share of total sales by sales bin. Panel B is similar to Panel A, but plots the share of top 0.1% with pass-through income and top 0.1% sales by sales bin. Panel C plots pass-through income share for top 1% pass-through owners, and graphs share of top 1%-owned pass-through income by total sales. Panel D replicates Panel C for top 0.1% owned pass-throughs.

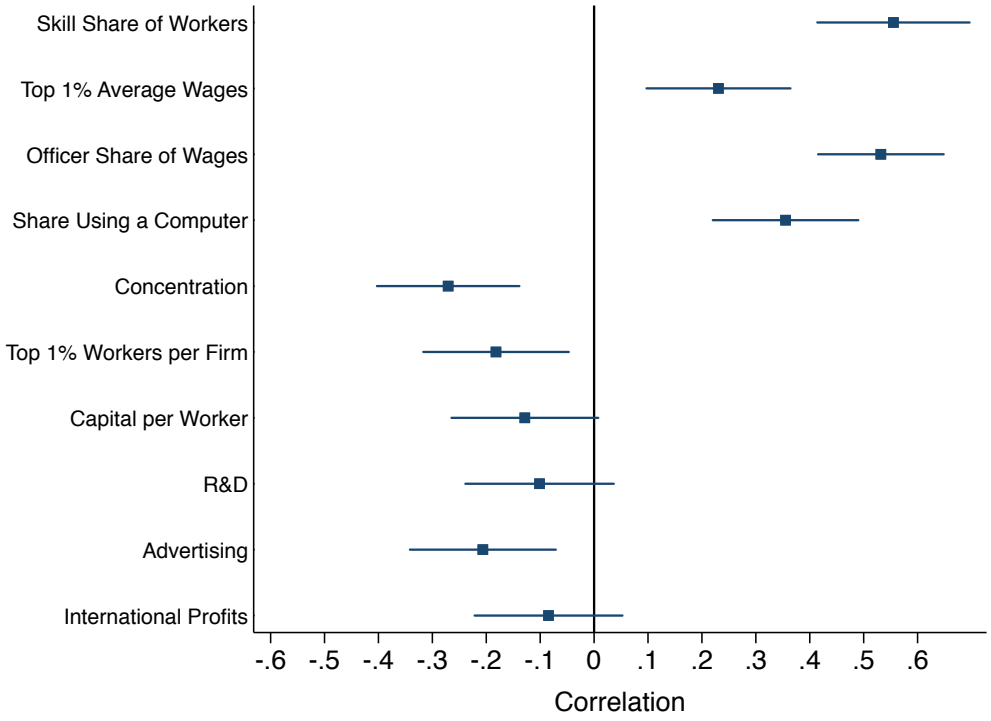
Figure 3: S-Corporations Are Often Actively Held, Mid-Market, and Broad-Based Across Geography and Industry



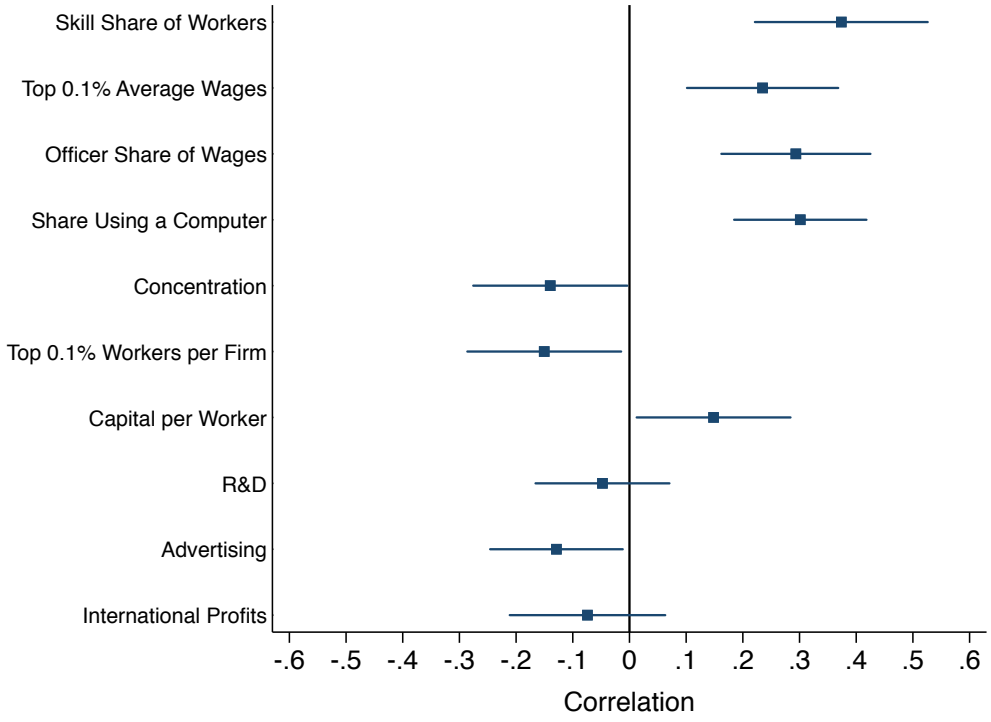
Notes: Panels A, B, C, and D use 2014 data to show that S-corporations are actively held, and are relatively dispersed across firm sizes, states, and sectors. Panel A shows the share of S-corporation owners by owner age group. Panel B plots the firm size distribution of total profits for different groups of firms, including C-corporations, S-corporations, and within S-corporations, firms having a top 1-0.1% or top 0.1% owner. Panel C decomposes total S-corporation profits by state where firms are located and compares states by share of total S-corporation profits and share of US population. Population data for 2014 comes from the 2014 Census National Population Estimates. Panel D plots the distribution of total profits across 1-digit NAICS sector for different groups of firms, including C-corporations, S-corporations, and within S-corporations by whether firms have a top 1-0.1% or top 0.1% owner.

Figure 4: Correlates of S-Corporation Profits across Industries

A. Top 1% Profits

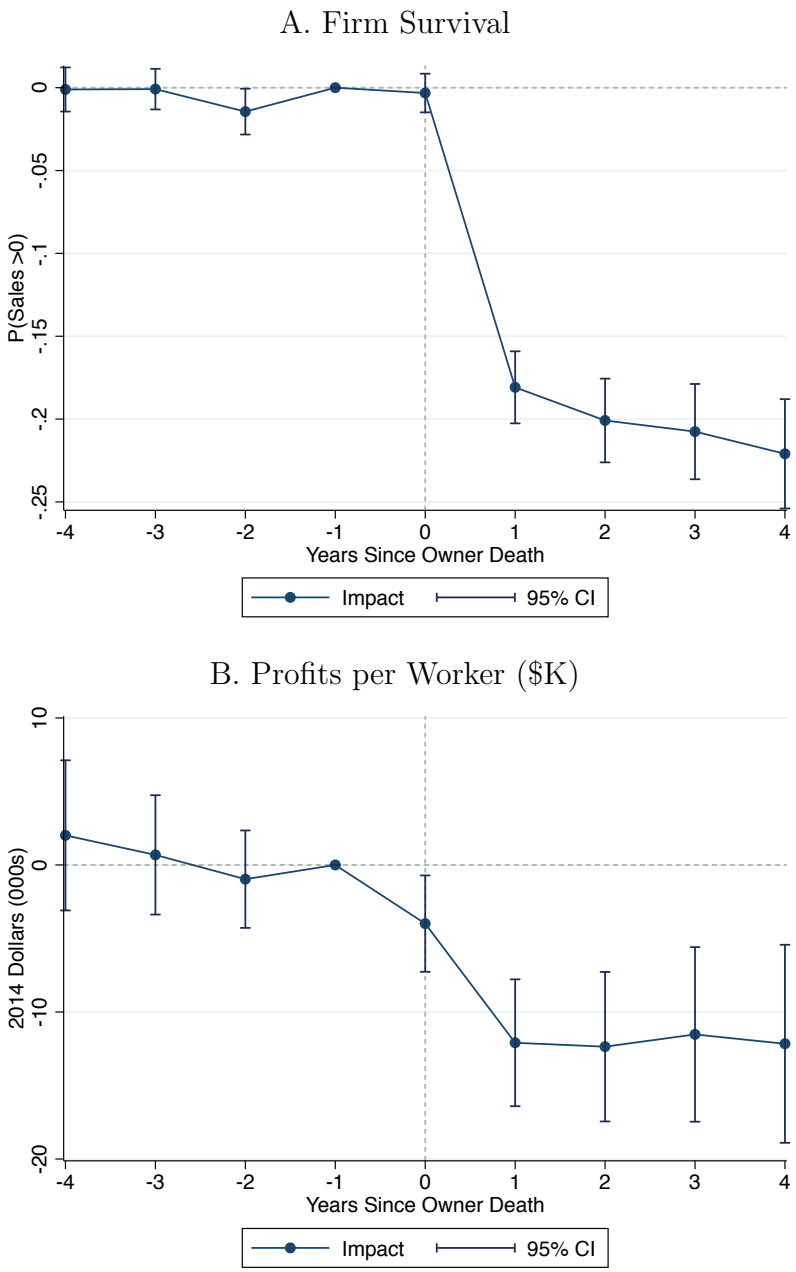


B. Top 0.1% Profits



Notes to Figure 4: This figure presents correlations among firms owned by the top 1% in Panel A and top 0.1% in Panel B for total profits and several industry-level characteristics, defined below. **Top profits** are the 2014 level of profits in 2014 dollars profits among firms with top 1% or top 0.1% owners. **Skill share of workers** is the 2000-2014 average share of workers in a 4-digit industry who have at least some college in the CPS. **Top average wages** is total 2014 wages among top-owned firms divided by top-owned firms' 2014 number of W-2 payees. **Officer share of wages** is the share of labor compensation (the sum of salaries and wages paid to employees, employee benefit programs such as health insurance, and contributions to pension and profit-sharing plans) that accrues to officers. Specifically, on Form 1120S it is line 7 divided by the sum of lines 7, 8, 17, and 18. **Share using a computer** is the share of 2000-2014 average share of workers who use a computer as part of their role. **Concentration** is the sum of the sales shares of the four largest S- and C- corporations relative to total S + C industry sales, averaged over the years 2000-2014. **Top workers per firm** is the number of W-2 payees in top-owned firms in 2014 divided by the number of top-owned firms in 2014. **Capital per worker** is total book value of depreciable assets less accumulated depreciation divided by aggregate W-2 payees. Capital is measured as the average for all S-corporations in the IRS SOI corporate sample betweeen 2000 and 2014, weighted to represent the population. Aggregate W-2 payees is measured directly for the population of S-corporations. **R&D** and **advertising** are the industry's average share of total R&D expenditures and total advertising expenditure in Compustat between 2000 and 2014. **International profits** is the 2000-2014 average of total foreign net income reported by S-corporations on Schedule M3 of their tax return divided by the 2000-2014 average of total S-corporation profits. All variables were standardized.

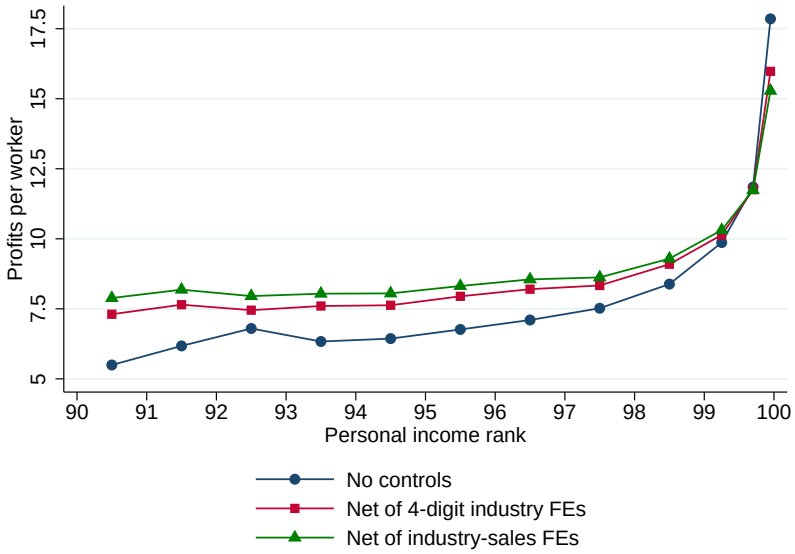
Figure 5: Impact of Top 1% Owner Death on Firm Performance



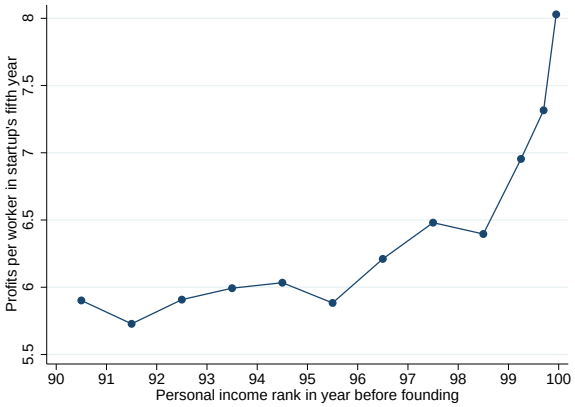
Notes: This figure shows how premature death of top owners impacts firm performance. Top owners are owners whose AGI in the year before death is in the top 1% of AGI. Death is classified as premature if the owner dies at or before age 65. For each top owner that dies prematurely, we match the owner with another owner with the same AGI in the year before death, same four digit industry, and same firm size bin where sales is the measure of firm size. We then plot, for each year in event time, the difference between the firm outcome of the firm that has a top owner die and of the firm to which it's matched. Panel A shows the evolution of differences between treated and control firms in terms of an indicator for whether or not the firm's sales are greater than zero. Panel B shows the evolution of differences in terms of profits per worker. There are 40,026 S-corporations that are of non-trivial size, which we define as having at least $150,000 in sales in the best year they are alive from 2000-2014, and have an owner with a premature death. Among these S-corporations, 7,055 have young top 1% owner deaths. Of these, 2,673 occurred between 2005 and 2010 inclusive. We focus on this sample to estimate effects for pre- and post-event years, as the overall sample has data from 2000-2014. The specification that we use to produce these estimates is equation 5. See section 5.1 for additional details.

Figure 6: Profitability Rises with Owner Income Rank

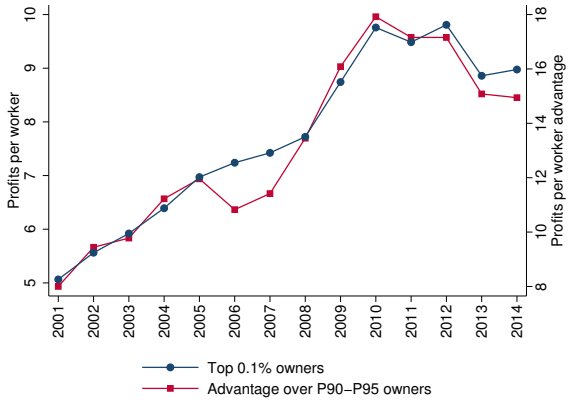
A. Profitability Increases with Owner Income Rank (All Firms)



B. Profitability Increases with Owner Income Rank (Startups)



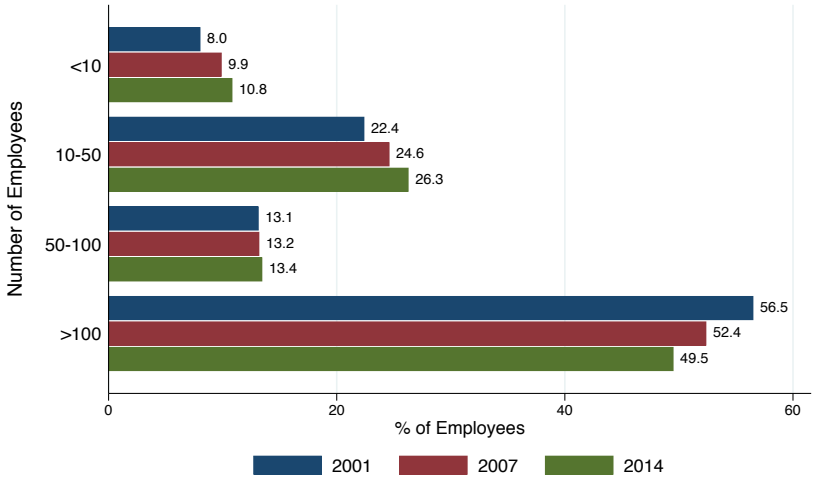
C. Rising Top 0.1% Profitability over Time



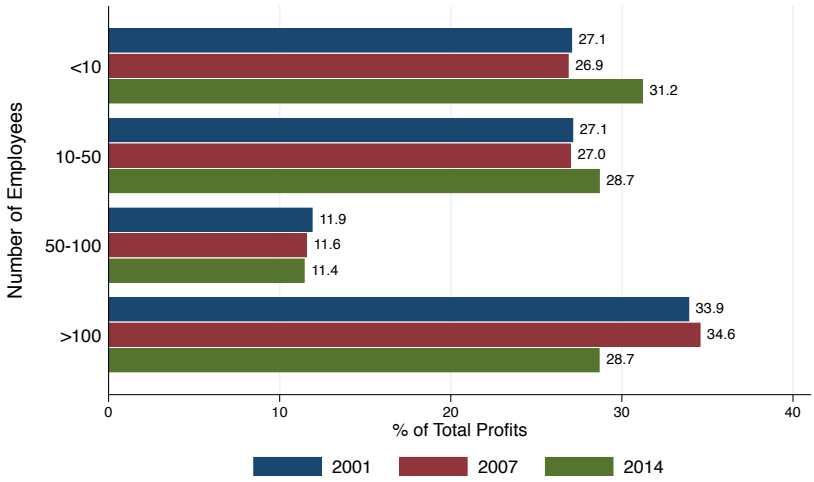
Notes: Panel A plots our main measure of profitability—profits ($K) per worker—by owner personal income rank across owner-firm observations in the 2014 main sample. Owners are ranked by their positions in the overall U.S. income distribution using the personal income concept of Piketty and Saez (2003). The bins are one-percentile-point wide in personal income ranks, except in the top 1% where we consider bins of ranks between the 99th percentile and 99.5th percentile, the 99.5th percentile and 99.9th percentile, and the top 0.1%. Means are weighted by scale (the firm's number of workers). Sales fixed effects denote ventiles (five-percentile-point bins). Panel B plots the equivalent of Panel A's within-industry series using the population of S-corporation start-ups 2001-2010. It ranks owners by their personal income in the year *before* founding their startups and plots profits per worker in the firm's fifth year of existence. Panel C plots the time series of Panel A's within-industry top-0.1% data point (left axis), along with the difference between that time series and the annual time series of the evenly weighted mean of Panel A's 90th-95th data points (right axis). See Section 6.1 for additional detail.

Figure 7: Share of Economic Activity Has Not Been Increasing at Large Employers

A. Share of Workers (W-2 + 1099) by Firm Size

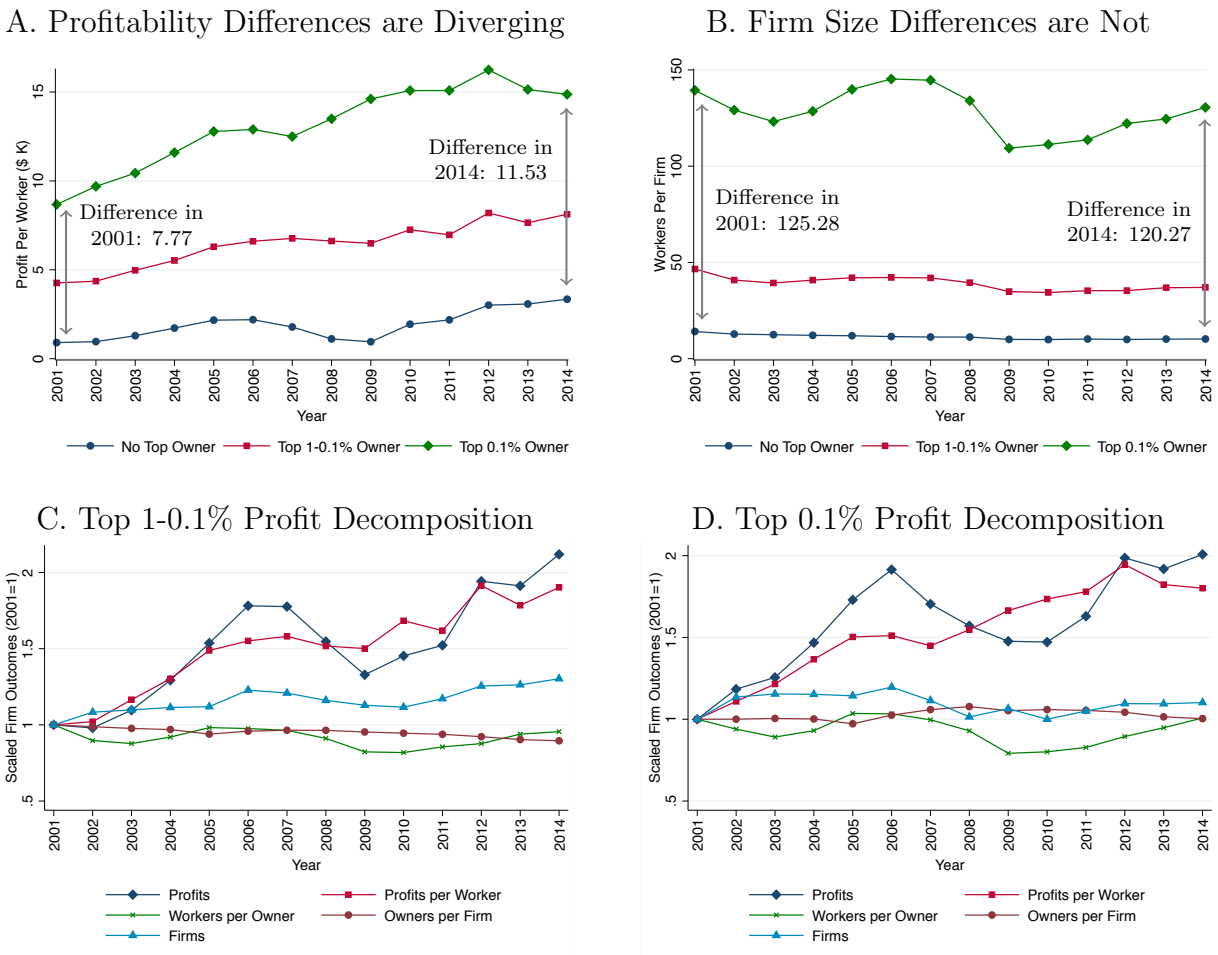


B. Share of Profits by Firm Size



Notes: This figure plots two measures of the distribution of S-corporation activity across firms of different scale, using the main analysis sample. We measure scale as the firm's number of workers and plot distributions in three years: 2001, 2007, and 2014. Panel A plots the share of workers across four scale bins: firms with fewer than 10 workers, firms with 10-50 workers, firms with 50-100 workers, and firms with over 100 workers. Panel B plots the analogous distributions of firm profits across the four scale bins in each of the three years.

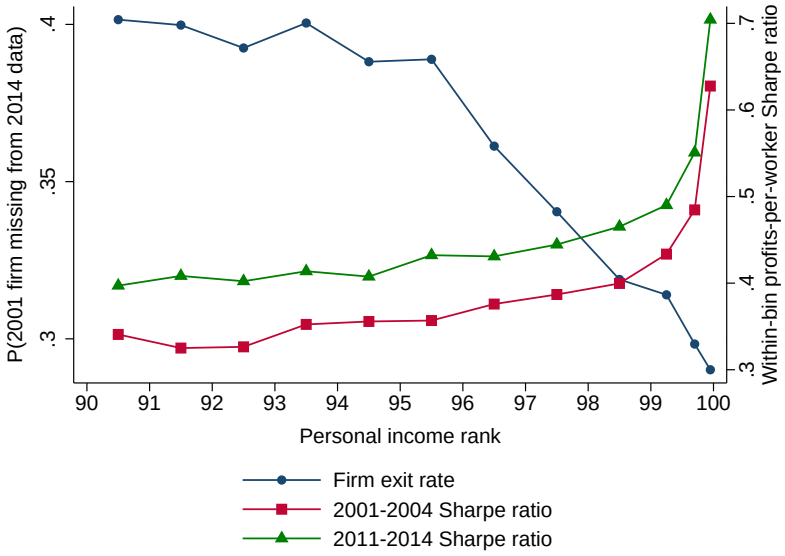
Figure 8: Rising Profitability Explains Most Top S-Corporation Income Growth



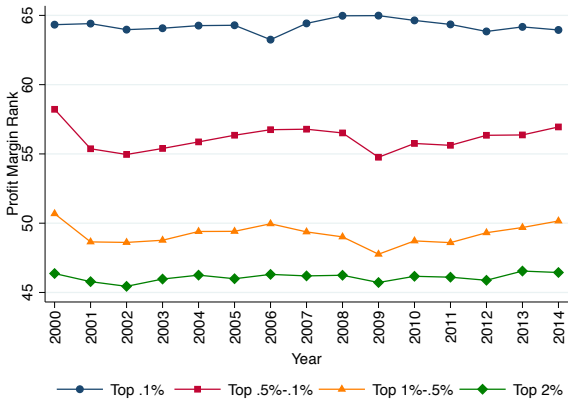
Notes: Panel A plots aggregate profits per worker in thousands of dollars by year and owner type. Panel B plots workers per firm by year and ownership. Panels C and D plot the time series of each component of our decomposition of S-corporation profit growth: scale components (number of workers per owner, number of owners per firm, and number of firms) and a profitability component (profits per worker). Panel C considers firms owned by individuals in the top 1%-0.1% of the personal income distribution. Panel D considers firms owned by individuals in the top 0.1% of the personal income distribution. See Figure A.9 for a version that measures workers using both employees and contractors rather than just employees.

Figure 9: Diverging Firm Profitability, Not Risk or Assortativeness

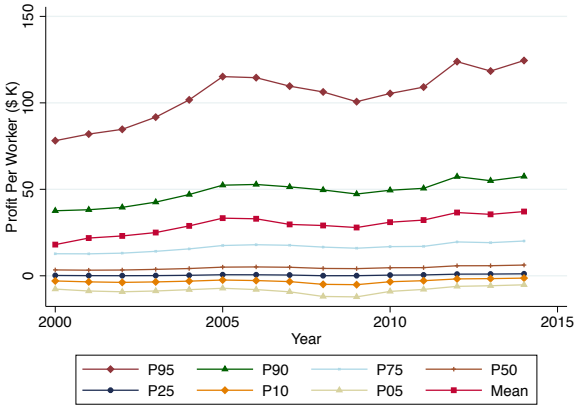
A. Risk Decreases with Owner Income Rank



B. Stable Assortative Matching of Firm Profitability Ranks to Owners

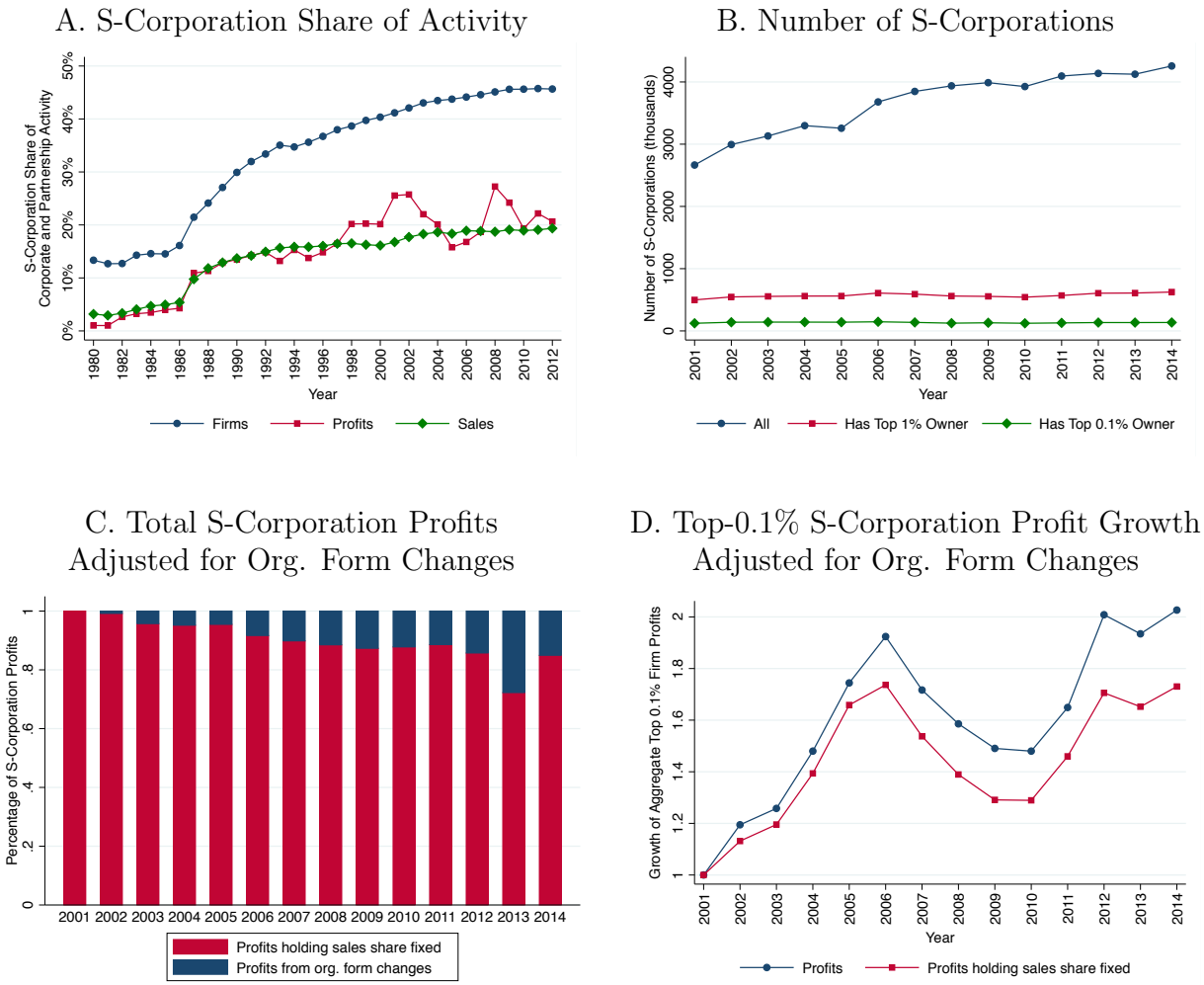


C. Widening Distribution of Firm-Level Profitability



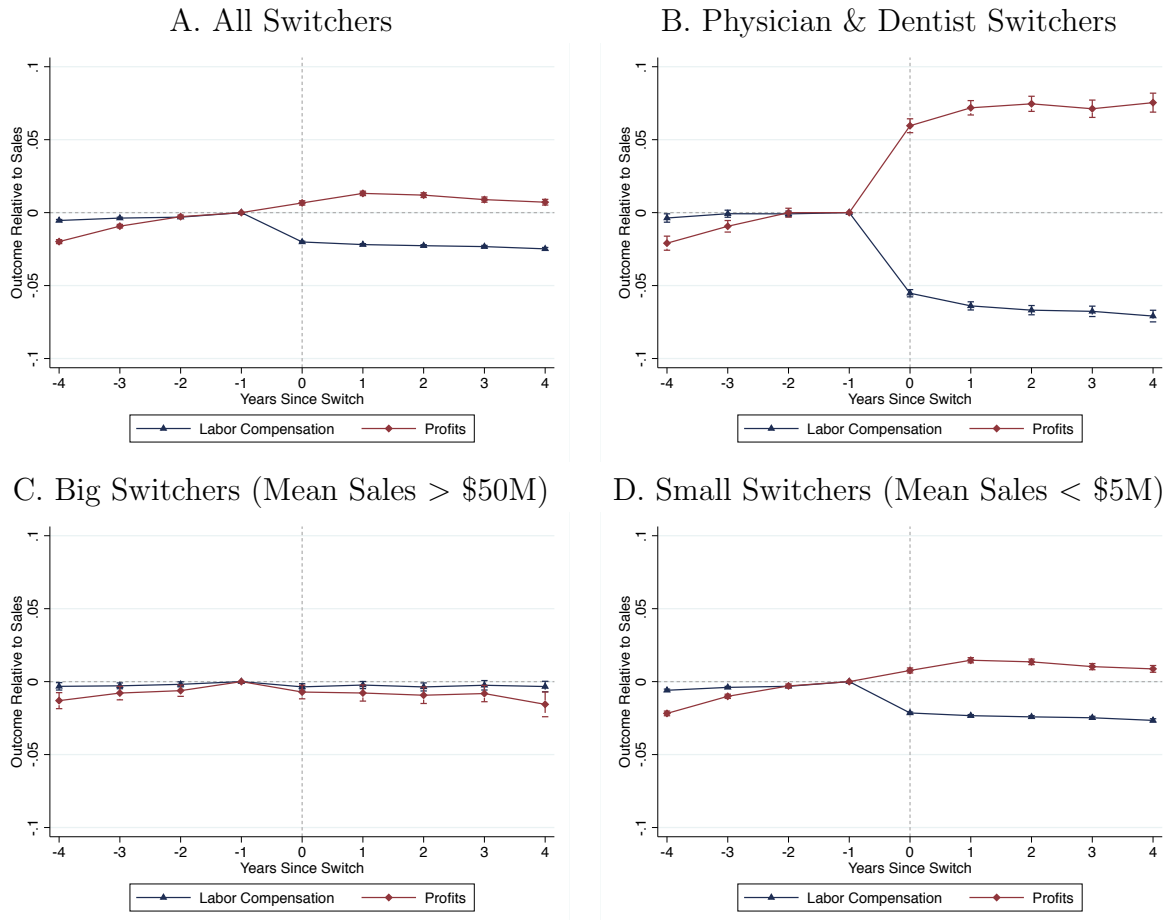
Notes: Panel A plots measures of risk in the main analysis sample by owner personal income rank. The circles plot the share of 2001 firms within each personal income rank that had exited the sample by 2014, weighting by the firm's 2001 number of employees. The squares and triangles plot a measure of the mean Sharpe ratio across firms. Our Sharpe ratio is defined as the average profits per worker at firms owned by individuals within the personal income bin divided by the standard deviation of profits per worker at those firms, weighting firms by their number of workers and then averaging ratios across the listed years. Panel B plots the average profitability rank of S-corporations for different groups of owners ranked by their personal income. Panel C plots percentiles of the distribution of profits per worker in a given year among S-corporations. See Section 6.3 for additional detail.

Figure 10: Growth in S-Corporation Profits Accounting for Organizational Form Changes



Notes: Panel A shows the S-corporation shares of total business activity since 1980 (excluding sole proprietorships). Panel B shows the number of S-corporations by owner income group since 2001, which is the period for which the US Treasury tax files enable us to link firms and owners. Panel C decomposes the level of S-corporation profits between 2001 and 2014 into actual S-corporation profits and the share attributed to organizational form changes. The decomposition assumes the level of S-corporation sales is a constant share of total business sales (including S-corporations, C-corporations, and partnerships) for each 4-digit NAICS industry. The top bars represent the share of S-corporation profits that are due to S-corporations having a higher share of total business sales relative to 2001. Panel D applies the same transformation to decompose the growth in S-corporation profits among those with top 0.1% owners. The first series shows how actual S-corporation profits increased since 2001. The second series shows a counterfactual series, which assumes that S-corporation sales are a constant share of total business sector activity.

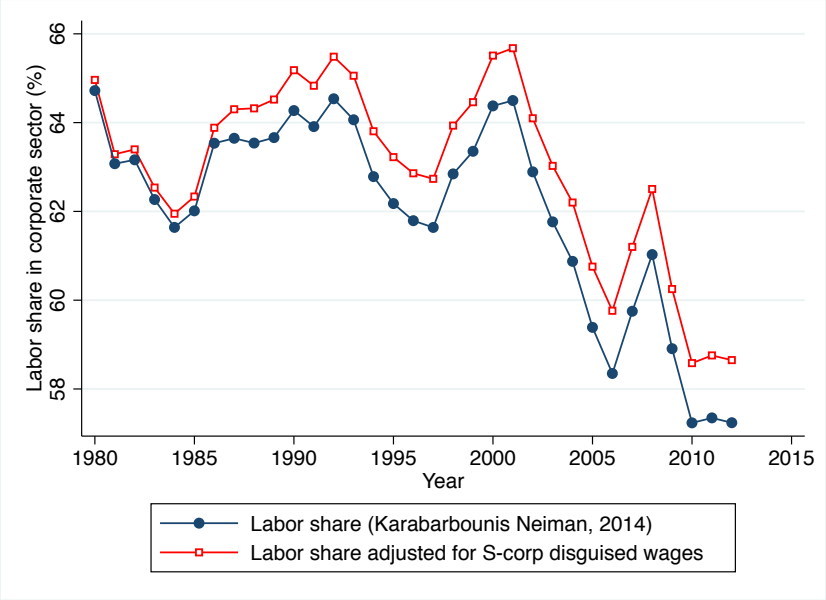
Figure 11: Impact of Organizational Form Switch on Labor Payments and Profits



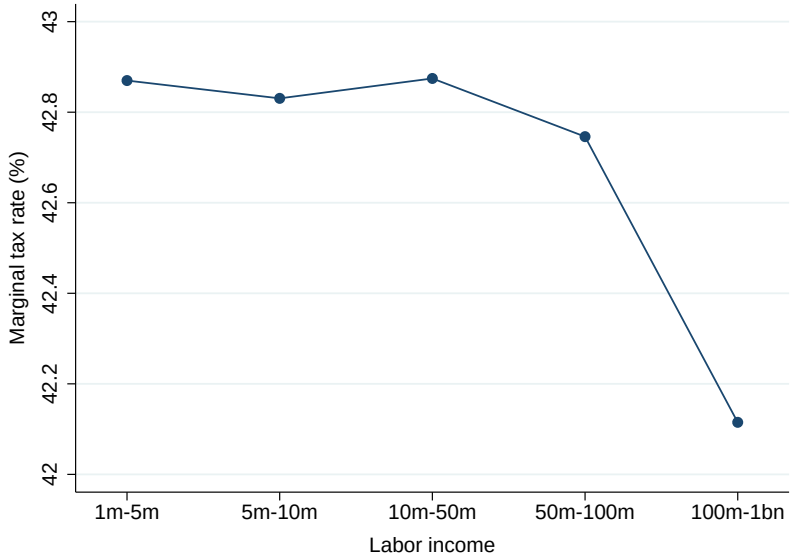
Notes: This figure shows how the allocation of value-added to labor compensation and profits responds when a firm switches organizational form from C-corporation to S-corporation. For each year in event time around a switching event, we plot the average of profits divided by sales and the average of labor compensation (including officer compensation) divided by sales, conditional on firm and calendar year fixed effects. Panel A shows the impact for all switch events between 2000 and 2014. The sample includes 259,957 S-corporations that have switched from C-corporate to S-corporate form between 2000-2014; are of non-trivial size, which we define as having at least $150,000 in sales in the best year they are alive from 2000-2014; and are active in event times $t = -4$ and $t = -3$. Panel B shows the impact for the subsample of 19,539 switch events in the offices of physicians (NAICS 6211) and offices of dentists (NAICS 6212) industries. Panel C shows the impact for the sample of 3,159 switch events for firms with mean sales above $50M in 2014 dollars. Panel D shows the impact for the sample of 220,828 switch events for firms with mean sales below $5M in 2014 dollars. 95% confidence intervals are based on standard errors clustered at the firm level.

Figure 12: Implications for the Labor Share and Tax Progressivity

A. The Decline of the Labor Share is Overstated



B. The Marginal Labor Income Tax Rate Falls at the Top



Notes: In circles, Panel A plots the labor share in the corporate sector from Karabarbounis and Neiman (2014). In squares, we plot a adjusted series that accounts for disguised wages from S-corporations. We estimate the magnitude of disguised wages as follows. We use the point estimate from Figure 11A that labor payments decline 1.95% as a share of sales when C-corporations switch to S-corporations. We then assign 1.95% of sales as disguised wages. This product generates an adjustment that grows with the size of the S-corporation sector. In 2012, the last year for which labor share data are provided by Karabarbounis and Neiman (2014), our estimate implies that roughly $116B of aggregate S-corporation profits are disguised wages. Our counterfactual series shows a decline of 6.3 percentage points, 16% smaller than in the raw data. Panel B plots our estimate of the 2014 marginal federal tax rate on labor income—wage income plus the labor component of S-corporation income—implied by our results. The marginal tax rate falls at the top because active S-corporation income is a larger share of total labor income at the top but is not subject to the 2.9% Medicare tax and 0.9% ACA Additional Medicare Tax. See Section 7 for additional details.

Table 1: Summary Statistics on S-Corporations and Their Owners

A. Firm Summary Statistics

	A. All Firms				B. Firms with Top 1-0.1% Owner				C. Firms with Top 0.1% Owner			
	Mean	p10	p50	p90	Mean	p10	p50	p90	Mean	p10	p50	p90
Sales	7,558	1,150	2,304	13,021	7,375	1,250	3,164	16,102	32,854	1,706	8,655	68,288
Profits	347.33	-69.20	90.92	778.97	364.63	-4.90	279.84	915.07	2,235	-42.97	915.80	4,744
Profit Margin	0.06	-0.02	0.03	0.19	0.10	0	0.07	0.27	0.14	0	0.08	0.39
Assets	3,510	84.69	537.71	5,044	3,020	106.82	778.68	5,969	18,631	251.32	3,275	30,346
Employees	51.85	0.50	16.02	96.95	57.44	0.84	19.23	114.79	150.80	0	31.75	260.24
Number of owners	2.18	1	2	3.99	2.44	1	2	4.33	3.64	1	2	6.51
Sales per worker	125.93	6.54	52.56	290.60	115.28	6.12	53.17	270.70	179.23	5.91	70.30	421.52
Profits per worker	5.53	-1.12	0.99	15.36	5.71	-0.26	1.39	16.28	11.58	-0.03	2.49	26.83
Profits per owner	1,283	-123.45	106	1,844	135.17	-50.39	161.49	677.80	4,397	-30.61	931.87	8,200
Owner payments	505.37	-11.64	200.50	1,140	619.62	62.19	502.05	1,296	2,531	4.21	1,374	5,495
Owner payments per owner	964.69	-45.70	206.69	2,118	271.22	3.04	304.42	861.12	2,965	18.65	1,166	6,408
Owner payments per worker	8.76	-0.20	1.98	23.06	10.19	0	2.71	28.56	14.09	0.02	2.75	32.44
Owner payments / Profit	5.01	0.17	1.14	3.79	6.14	0.58	1.26	3.97	6.04	0.37	1.06	2.20
Owner payments / Sales	0.07	-0.01	0.05	0.19	0.09	0	0.06	0.24	0.08	0	0.05	0.20

B. Owner Summary Statistics

	A. All Owners				B. Top 1-0.1% Owners				C. Top 0.1% Owners			
	Mean	p10	p50	p90	Mean	p10	p50	p90	Mean	p10	p50	p90
Income	205.17	13.71	96.39	414.24	643.40	389.29	557.68	1,074	4,419	1,550	2,393	7,417
Age	50.11	34.49	49.84	66.99	52.30	38.79	51.68	67.44	55.06	40.91	54.40	71.42
Number of Firms Owned	1.19	1	1	2	1.48	1	1	2.48	2.22	1	1	4.22
Wage Income	69.79	0	29.08	155.64	203.79	0	142.53	498.69	764.31	0	235.29	1,844
S-Corporation Income	49.48	-14.08	3.91	112.36	170.84	-5.01	85.89	509.32	1,309	-7.92	509.66	2,999
Total Owner Payments	83.28	-7.90	16.32	198.26	277.20	-1.31	217.29	712.55	1,596	-3.08	861.32	3,522
Business Income	64.72	-19.08	6.84	150.56	244.06	-2.67	194.84	636.26	2,127	-1.56	1,294	4,412
Top 1% Indicator	0.22	0	0	1	1	1	1	1	1	1	1	1
Top 0.1% Indicator	0.08	0	0	0.04	0.14	0	0	1	1	1	1	1
Business Income / Income	0.24	-1.03	0.04	0.27	0.27	-0.01	0.15	0.47	0.30	-0.01	0.21	0.40
Wage Income / Income	0.34	0	0.30	0.38	0.32	0	0.26	0.46	0.17	0	0.10	0.25
Business Income / Owner Pay	0.59	1.78	0.24	0.57	0.62	3.82	0.40	0.71	0.82	2.57	0.59	0.85
Only Earns Passive Income	0.09	0	0	0.33	0.09	0	0	0.28	0.06	0	0	0

Notes: Statistics are in thousands of 2014 USD. Data are from years 2000-2014. For firms, samples A and B are 9,901,890 and 987,120 observations, respectively. For owners, samples A and B are 19,087,040 and 2,694,880 observations, respectively. The sample includes firms with at least $1M in 2014 USD in sales. Income defined as in Piketty and Saez (2003), i.e., total income − capital gains − UI − taxable social security. Business income is income from S-corporations ("Ordinary Income" on 1120S K1).

Table 2: Industrial Composition of S-Corporation Profits (Total vs. Top 1-0.1% vs. Top 0.1%, 2014)

	Top 0.1% Owners			Top 1-0.1% Owners			All S-Corps	
Industry (NAICS)	Rank	Profits	Share of All	Rank	Profits	Share of All	Rank	Profits
Management of cos/enterprises (5511)	1	12870	1.018	23	1180	0.091	3	14250
Other financial investment actvty (5239)	2	7815	0.893	18	1500	0.145	6	9961
Automobile dealers (4411)	3	6482	0.853	20	1460	0.204	10	8348
Other professional/technical svc (5419)	4	5157	0.389	2	4890	0.314	2	15440
Oil/gas extraction (2111)	5	4359	1.633	28	1030	0.438	15	6811
Offices of physicians (6211)	6	4266	0.287	1	8980	0.546	1	16660
Misc. durable goods merch whlsl (4239)	7	4244	0.654	14	1720	0.262	16	6783
Management/techncl consulting svc (5416)	8	3889	0.479	11	2230	0.271	11	8306
Computer sys design/related svc (5415)	9	3861	0.399	9	2680	0.29	7	9386
Other heavy constr (2379)	10	3835	0.75	31	983	0.215	21	5427
Other specialty trade cntrctr (2389)	11	3815	0.372	4	4300	0.33	4	13300
Other fabricated metal prod mfg. (3329)	12	3695	0.653	15	1680	0.269	17	6458
Other miscellaneous mfg. (3399)	13	3684	0.705	19	1460	0.249	20	5772
Misc. nondrbl gds merch whlsl (4249)	14	3240	0.672	25	1090	0.228	26	4815
Legal svc (5411)	15	3048	0.332	5	3540	0.352	5	10030
Nonresidential building constr (2362)	16	2823	0.607	13	1920	0.343	24	5339
Activities related to real estate (5313)	17	2658	0.737	17	1530	0.373	23	5384
Plastics product mfg. (3261)	18	2573	0.808	42	652	0.21	33	3390
Restaurants (7225)	19	2457	0.356	7	2850	0.425	14	7974
Building equipment cntrctr (2382)	20	2438	0.347	8	2780	0.329	9	8429
Insurance agencies/brokerages (5242)	21	2350	0.293	10	2680	0.315	8	8628
Architectural/engineering svc (5413)	22	2251	0.287	6	2880	0.369	13	8040
Machinery/supply merch whlsl (4238)	23	2047	0.553	24	1150	0.336	30	3747
Building material/supp dealers (4441)	24	2011	0.665	35	781	0.264	34	3290
Residential building constr (2361)	25	1889	0.596	21	1410	0.267	19	6122
Nondepository credit intrmd (5222)	26	1862	0.722	55	464	0.194	45	2490
Other miscellaneous store retailers (4539)	27	1705	0.524	32	955	0.32	31	3578
Electric goods merch whlsl (4236)	28	1695	0.697	52	476	0.227	43	2514
Depository credit intrmd (5221)	29	1648	0.799	59	414	0.195	48	2116
Grocery/related product whlsl (4244)	30	1585	0.643	37	720	0.256	40	2720

Notes: This table presents statistics on the level of S-corporation profits in 2014 by 4-digit industry. We present statistics for three groups of firms: all S-corporations, S-corporations owned by the top 1-0.1%, and S-corporations owned by the top 0.1%. The rows are sorted by the level of S-corporation profits for firms owned by the top 0.1%. Rank columns indicate the rank of that 4-digit industry within a particular group of firms. Profits columns indicate the level of profits in millions of 2014 dollars. Share of All columns indicate the share of profits for a particular group of firms relative to profits in that industry for all S-corporations. See Appendix Table A.1 for statistics that apportion S-corporation profits pro rata to owners in either the top 0.1% or the top 1-0.1% and then aggregate those apportioned profits by 4-digit industry.

Table 3: Industrial Composition of Pass-Through Profits (S-Corporations vs. Partnerships, 2014)

	Top 0.1% Owners				Top 1-0.1% Owners			
Industry (NAICS)	S Rank	S Profits	P Rank	P Profits	S Rank	S Profits	P Rank	P Profits
Management of cos/enterprises (5511)	1	12870	5	5547	23	1180	22	468
Other financial investment actvty (5239)	2	7815	1	40860	18	1500	4	2580
Automobile dealers (4411)	3	6482	16	1216	20	1460	23	423
Other professional/technical svc (5419)	4	5157	11	2721	2	4890	7	1760
Oil/gas extraction (2111)	5	4359	3	8825	28	1030	3	3520
Offices of physicians (6211)	6	4266	6	5210	1	8980	2	4640
Misc. durable goods merch whlsl (4239)	7	4244	23	814	14	1720	33	345
Management/techncl consulting svc (5416)	8	3889	10	2763	11	2230	9	1140
Computer sys design/related svc (5415)	9	3861	53	274	9	2680	25	401
Other heavy constr (2379)	10	3835	46	341	31	983	57	134
Other specialty trade cntrctr (2389)	11	3815	33	516	4	4300	18	544
Other fabricated metal prod mfg. (3329)	12	3695	41	390	15	1680	44	211
Other miscellaneous mfg. (3399)	13	3684	24	793	19	1460	24	407
Misc. nondrbl gds merch whlsl (4249)	14	3240	22	906	25	1090	37	268
Legal svc (5411)	15	3048	2	38600	5	3540	1	10400
Nonresidential building constr (2362)	16	2823	37	411	13	1920	30	354
Activities related to real estate (5313)	17	2658	8	3761	17	1530	10	1040
Plastics product mfg. (3261)	18	2573	54	272	42	652	95	48
Restaurants (7225)	19	2457	21	995	7	2850	11	788
Building equipment cntrctr (2382)	20	2438	55	258	8	2780	42	225
Insurance agencies/brokerages (5242)	21	2350	17	1179	10	2680	16	601
Architectural/engineering svc (5413)	22	2251	29	639	6	2880	15	603
Machinery/supply merch whlsl (4238)	23	2047	60	247	24	1150	43	223
Building material/supp dealers (4441)	24	2011	96	109	35	781	52	154
Residential building constr (2361)	25	1889	20	999	21	1410	21	481
Nondepository credit intrmd (5222)	26	1862	13	1789	55	464	49	174
Other miscellaneous store retailers (4539)	27	1705	61	245	32	955	65	93
Electric goods merch whlsl (4236)	28	1695	79	171	52	476	114	36
Depository credit intrmd (5221)	29	1648	47	337	59	414	191	6
Grocery/related product whlsl (4244)	30	1585	93	111	37	720	54	140

Notes: This table presents statistics on the level of S-corporation and partnership profits in 2014 by 4-digit industry. We present statistics for two groups of firms: S-corporations and partnerships owned by the top 1-0.1%, and S-corporations and partnerships owned by the top 0.1%. The rows are sorted by the level of S-corporation profits for firms owned by the top 0.1%. Rank columns indicate the rank of that 4-digit industry within a particular group of firms. Profits columns indicate the level of profits in millions of 2014 dollars. See Appendix Table A.2 for statistics that apportion S-corporation and partnership profits pro rata to owners in either the top 0.1% or the top 1-0.1% and then aggregate those apportioned profits by 4-digit industry.

Table 4: Decomposition of Profit Growth

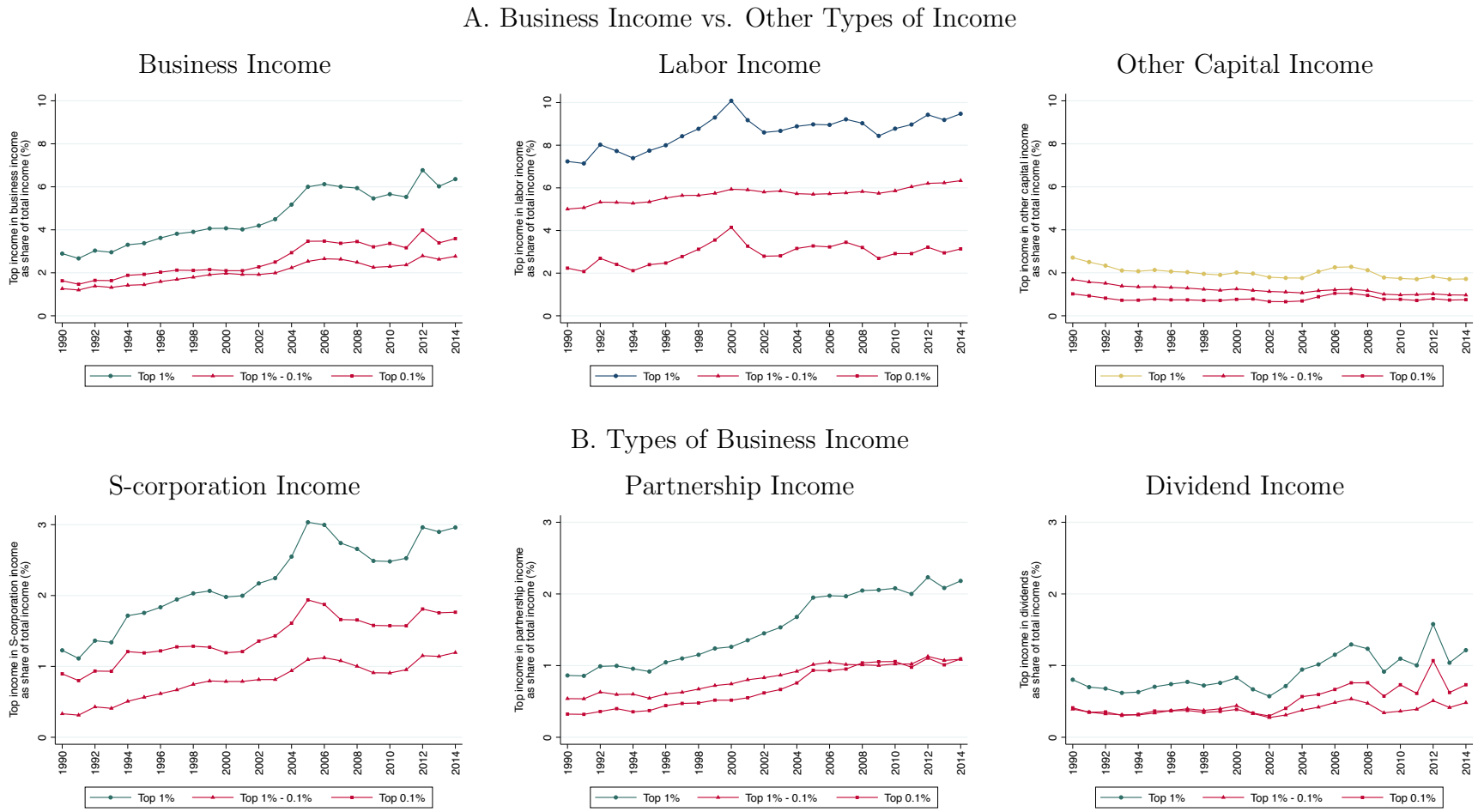
Industry	Profit Growth Rate	Share of Profit Growth (%)				% Total Profits (2014)
		Profitability	Workers per Owner	Owners per Firm	Firms	
Panel A: All Owners						
Overall	136.03	82.63	-24.05	-13.30	54.72	100.00
Agriculture & Forestry	717.42	87.65	1.83	-3.68	14.19	1.74
Construction & Mining	70.88	78.64	-47.50	-17.61	86.47	13.64
Manufacturing	143.58	117.84	-25.76	-12.68	20.60	13.37
Retail & Wholesale Trade	119.81	92.76	-28.85	-13.39	49.48	21.29
Info & Professional Svcs	161.25	78.96	-20.02	-11.99	53.04	32.65
Health Care	176.52	42.50	-13.09	-13.01	83.60	9.72
Entertnmt, Food & Hotels	222.07	87.76	-16.19	-8.38	36.81	4.34
Other Svcs	117.88	78.98	-32.14	-10.87	64.03	3.10
Panel B: Top 1-0.1% Owners						
Overall	111.01	85.72	-6.65	-14.81	35.74	100.00
Agriculture & Forestry	316.70	89.30	-4.57	-5.80	21.06	1.94
Construction & Mining	67.04	82.09	11.39	-9.13	15.65	13.74
Manufacturing	110.40	126.51	-18.48	-17.48	9.44	10.81
Retail & Wholesale Trade	87.64	104.16	-16.31	-18.28	30.43	19.21
Info & Professional Svcs	128.18	80.42	0.96	-9.47	28.09	30.59
Health Care	164.12	45.46	-3.35	-14.27	72.15	16.08
Entertnmt, Food & Hotels	128.28	89.10	-13.58	-13.89	38.37	4.75
Other Svcs	77.55	87.16	-2.89	-21.52	37.25	2.75
Panel C: Top 0.1% Owners						
Overall	102.70	83.15	1.50	0.64	14.72	100.00
Agriculture & Forestry	254.54	90.39	-18.77	8.34	20.04	1.24
Construction & Mining	46.56	147.04	1.24	-10.10	-38.18	12.04
Manufacturing	95.65	110.08	-20.66	-10.65	21.23	19.67
Retail & Wholesale Trade	90.15	87.69	-2.73	-11.67	26.71	25.32
Info & Professional Svcs	146.28	71.30	11.49	12.35	4.86	32.29
Health Care	140.25	53.27	13.88	-24.03	56.87	4.66
Entertnmt, Food & Hotels	122.60	76.19	11.13	-19.48	32.16	3.61
Other Svcs	94.43	118.44	-13.42	-25.15	20.13	1.13

Notes: This table decomposes the share of growth in business income by profitability and scale metrics. The growth rate for profits and each of its profitability and scale components is $g^x = 100 * (\frac{x_{14}}{x_{01}} - 1)$, where x is the variable in question. The log growth of profits can be decomposed into $log(1 + g^{\Pi}) = log(1 + g^{\pi}) + log(1 + g^{L/Owner}) + log(1 + g^{Owner/Firms}) + log(1 + g^{Firms})$. We calculate $100 * log(1 + g^{(\cdot)})/log(1 + g^{\Pi})$, the percent contribution of each component to growth in profits.

For Online Publication

A Data Appendix

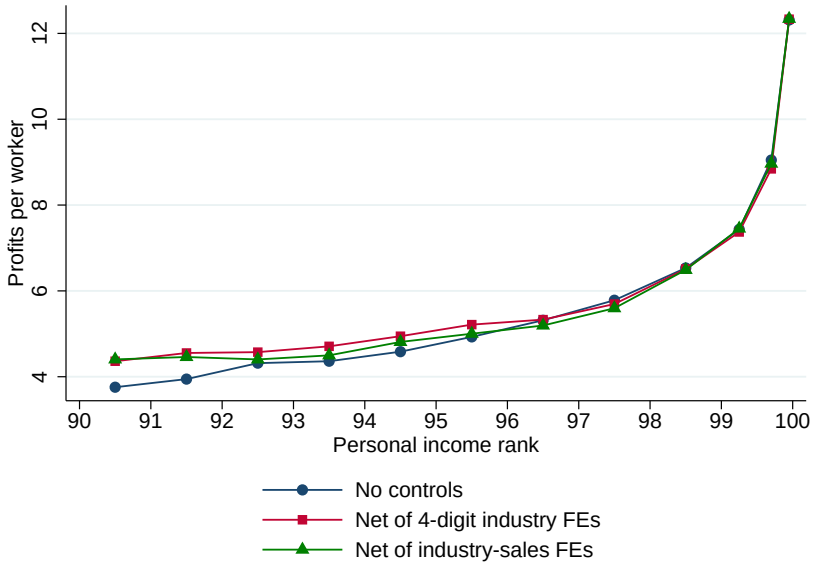
Figure A.1: Income Inequality for the Top 1-0.1% versus the Top 0.1%



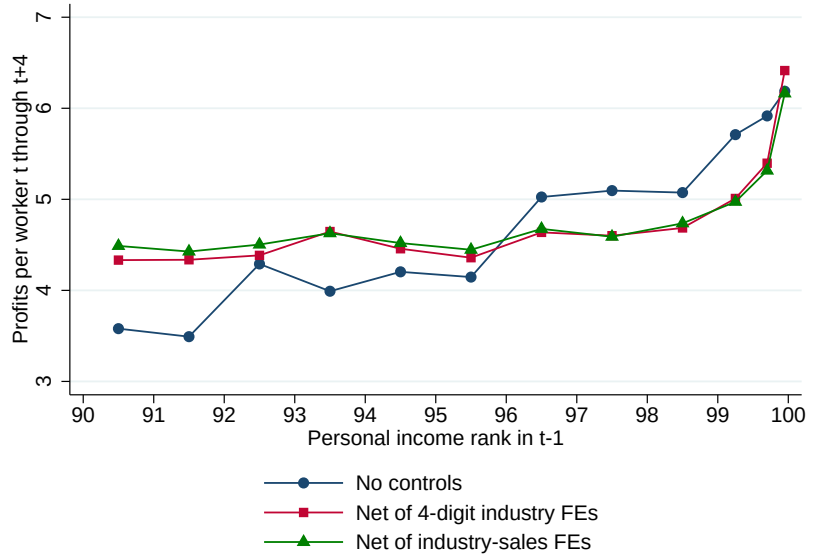
Notes: Panel A uses data from Piketty and Saez (2003) to decompose the share of AGI earned by the top 1% into shares earned by the top 1-0.1% and top 0.1%, respectively, into components from labor income, business income, and other capital income (i.e., interest, rents, royalties, estates, and trusts) since 1990. Panel B decomposes business income into income from different business entity types: S-corporations, partnerships, and C-corporations (in the form of dividends).

Figure A.2: Alternative Measures of Profitability by Owner Income Rank

A. All Firms, with Profit and Scale Apportionment



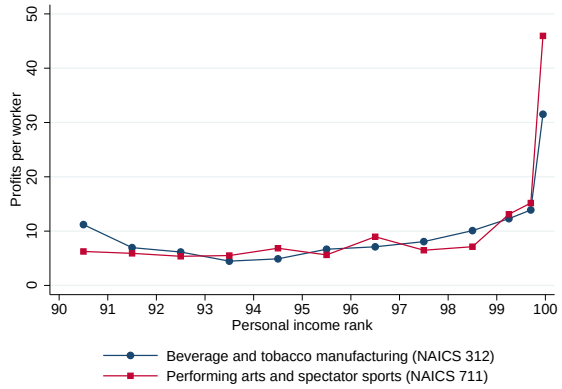
B. Startups, Five-Year Profitability



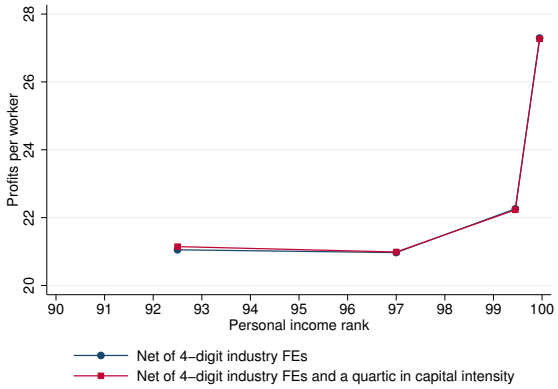
Notes: This figure plots alternative specifications to the 2014 series in Figure 6, reproduced here in Panel A's Net-of-4-digit-industry-FEs series. The No-controls series in Panel A plots profits per worker by owner income rank in 2014, computed as total profits divided by total workers at firms with an owner in that personal income bin. Industry-revenue fixed effects denote interactions between four-digit industry fixed effects and fixed effects for ventiles of personal sales. Controls are taken out by regressing profits per worker at the owner-firm level weighted by firm sales, computing residuals, and adding back a constant so that the sum of residualized profits per worker times the number of workers equals total profits in the sample. Panel B replicates Panel A when apportioning each firm's profits and workers to its owners according to ownership share.

Figure A.3: Top-Owned Firms Superior Profitability Is Not Due to Higher Capital Intensity

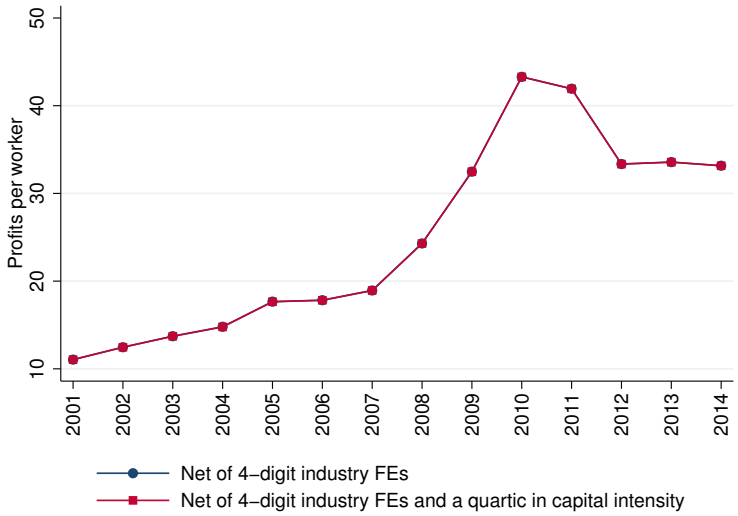
A. Profitability by Owner Income Rank in Two Sample Industries



B. Profitability by Owner Rank Controlling for Capital Intensity



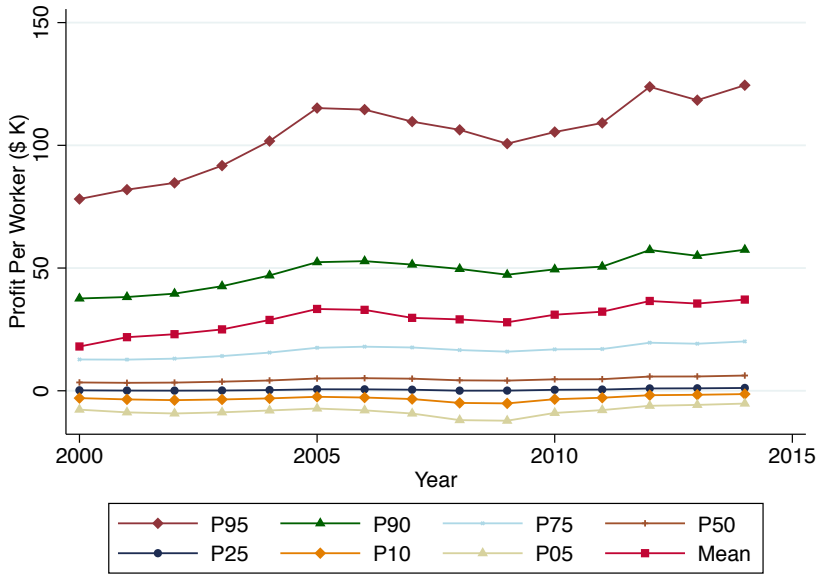
C. Top 0.1% Profitability Controlling for Capital Intensity by Year



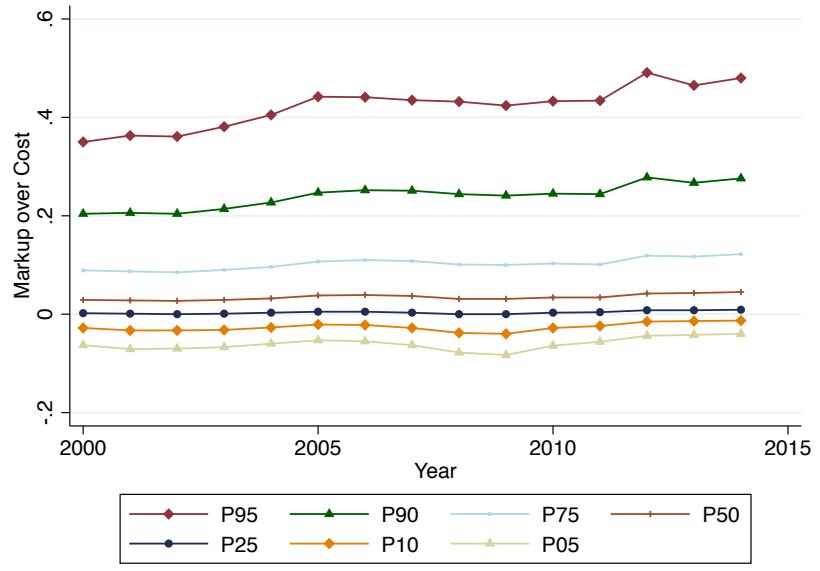
Notes: Panel A repeats the 2014 within-industry profitability series of Figure 6A for two large industries with different capital intensities: the highly capital intensive Beverage and tobacco manufacturing industry (NAICS 312) and the lightly capital intensive Performing arts and spectator sports industry (NAICS 711). See the notes to 6A for additional detail. Panel B repeats the 2014 within-industry series of Figure 6A in the sample of S-corporation owners whose firms can be matched to capital stock information in the SOI S-corporation sample. One series controls only for industry fixed effects while the second series controls additionally for capital intensity, equal to the firm's capital stock divided by its costs, winsorized at the 99th percentile. Panel C plots the time series of top-0.1% profitability in the sample of owners whose firms can be matched to the SOI sample, controlling for industry fixed effects and additionally for capital intensity in a pooled regression using all years.

Figure A.4: The Distribution of S-Corporation Profitability by Year

A. Firm-level Percentiles of Profits Per Worker

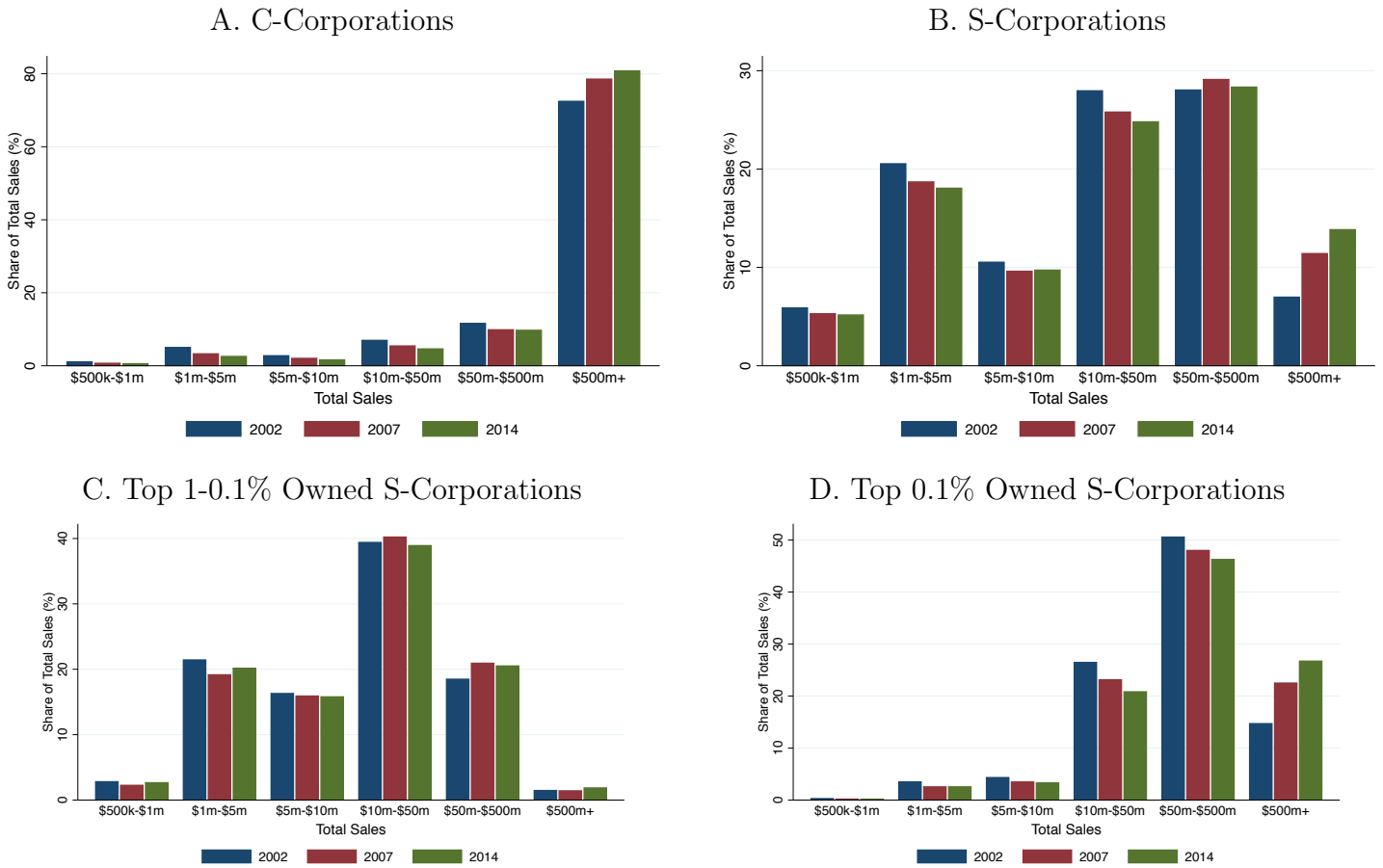


B. Firm-level Percentiles of Markups Over Cost



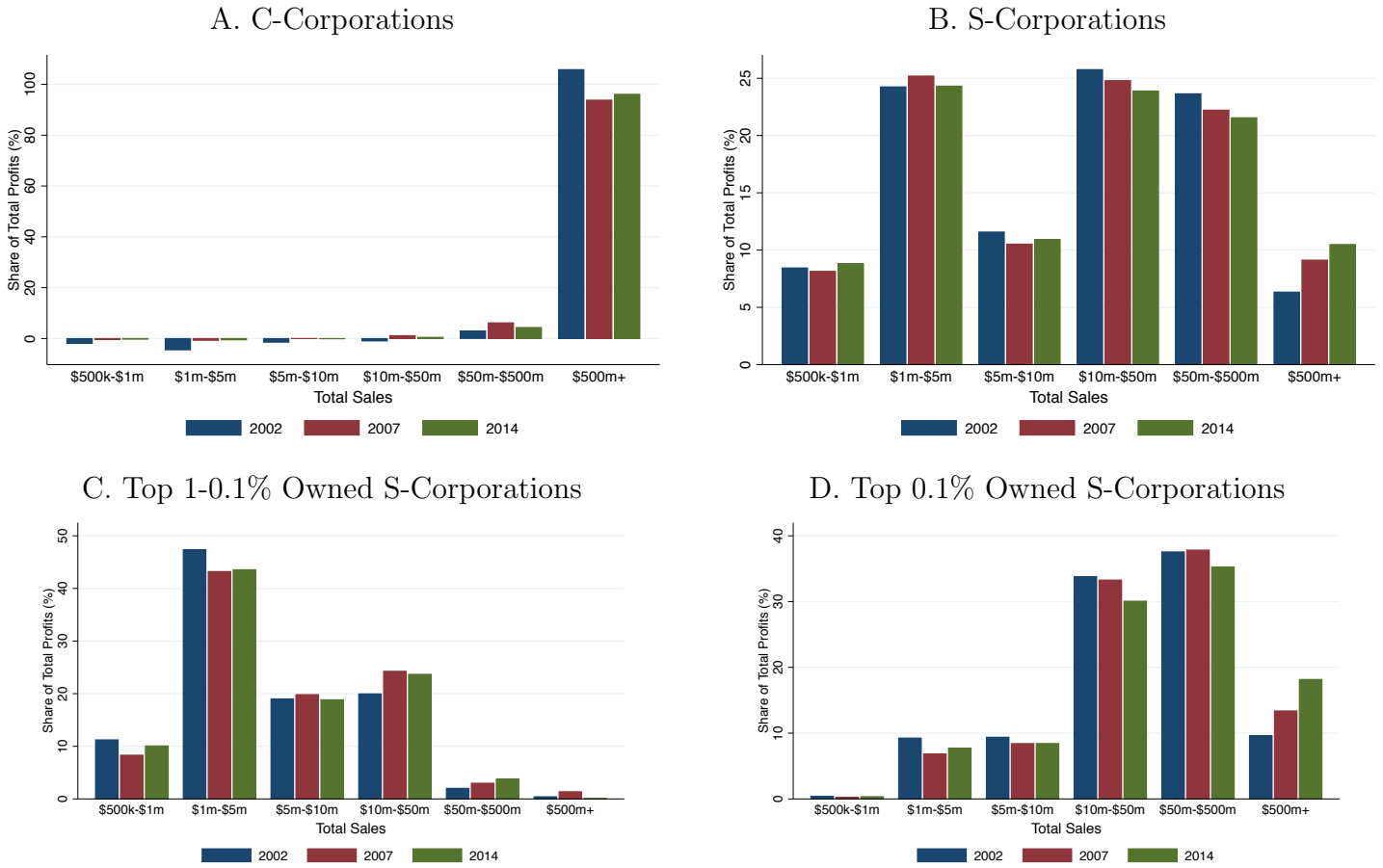
Notes: This figure plots how percentiles of two measures of S-corporation profitability have evolved for all S-corporations. Panel A plots aggregate S-corporation profits per worker (measured as the number of W-2s). Panel B plots aggregate markups over costs.

Figure A.5: Distribution of Firms Sales by Corporate Form and Ownership Status



Notes: Panel A, B, C and D show the distribution of firms by share of total sales across time using the statistics of income corporate sample for A and B and the linked owner data for C and D. Panel A shows the distribution of C-Corporations by sales in 2002, 2007 and 2014. Panel B is similar and plots the distribution of S-Corporations by sales for the same set of years. Panel C shows the distribution of top 1-0.1% owned S-Corporations in 2002, 2007 and 2014 by sales. Panel D is similar and shows the distribution of top 0.1% owned S-Corporations, for the same set of years. Panel A and B show that the share of sales attributed to high sales C- and S-Corporations increased between 2002 and 2014. Panel C shows that the share of sales remained stable across the different sales bins for top 1-0.1% owned S-Corporations. Panel D shows an increase in the share of total sales for large top 0.1% owned S-Corporatons.

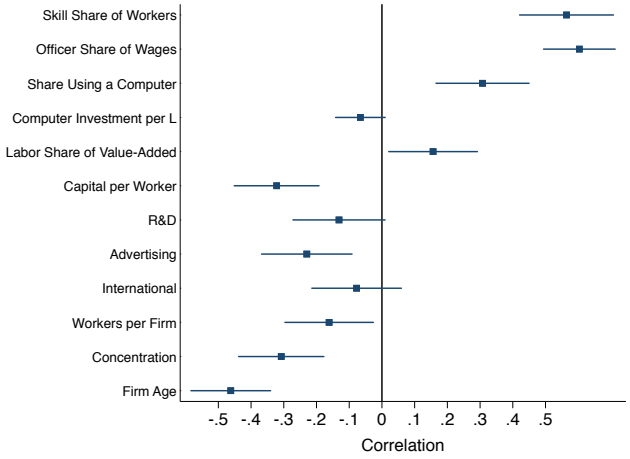
Figure A.6: Distribution of Firms by Corporate Form and Ownership Status



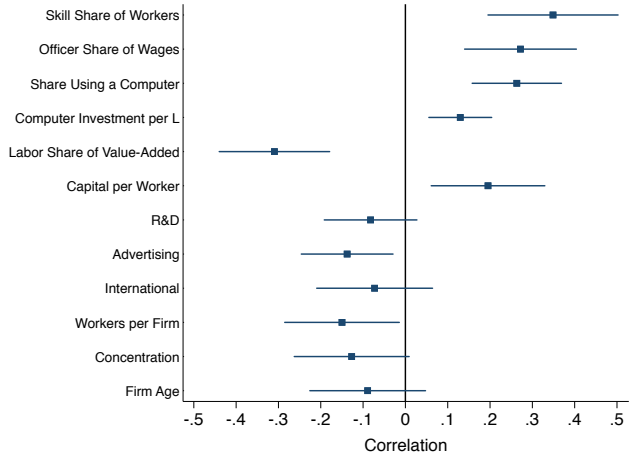
Notes: Panel A, B, C and D show the distribution of firms by share of total profits across time using the statistics of income corporate sample for A and B and the linked owner data for C and D. Panel A shows share of profits of C-Corporations by sales group in 2002, 2007 and 2014. Panel B is similar and plots share of profits of S-Corporations by sales for the same set of years. Panel C shows the distribution of top 1-0.1% owned S-Corporations in 2002, 2007 and 2014. Panel D is similar and shows the distribution of top 0.1% owned S-Corporations, for the same set of years. Panel A shows that the share of profits attributed to high sales C-Corporations declined slightly over the years. Panel B shows the opposite for S-Corporations: the share of profits attributed to large S-Corporations increased between 2002 and 2014. Panel C shows that the share of profits remained stable across the different sales bins for top 1-0.1% owned S-Corporations. Panel D shows an increase in the share of total profits for large top 0.1% owned S-Corporatons.

Figure A.7: Correlates of S-Corporation Profits and Profitability across Industries

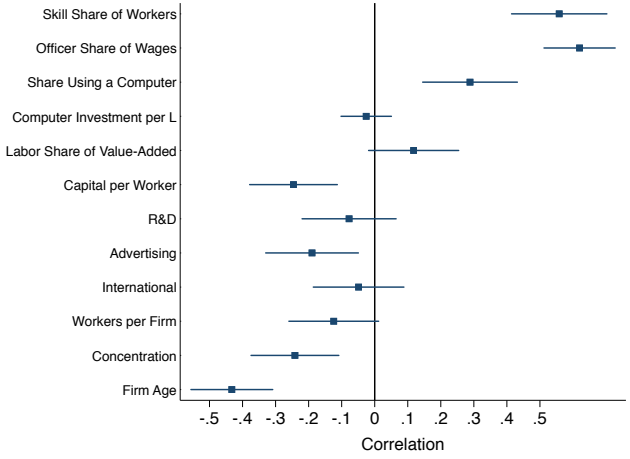
A. Top 1-0.1% Profits



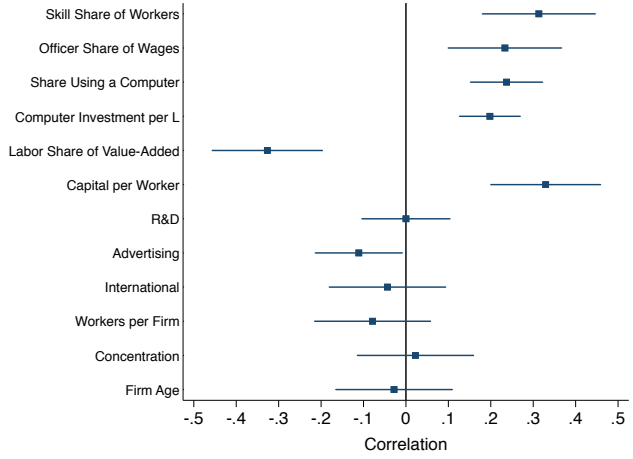
B. Top 0.1% Profits



C. Growth in Top 1-0.1% Profits



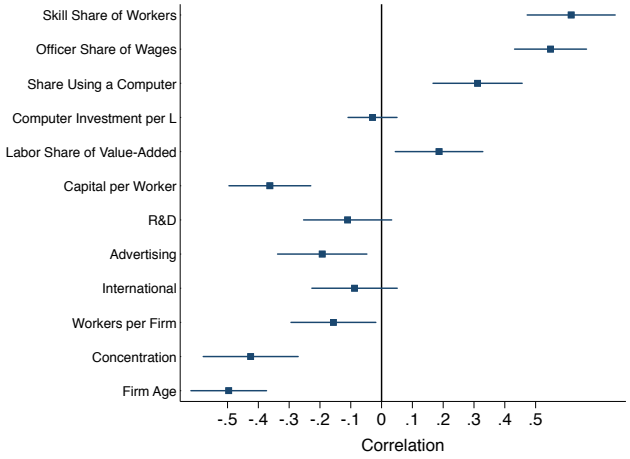
D. Growth in Top 0.1% Profits



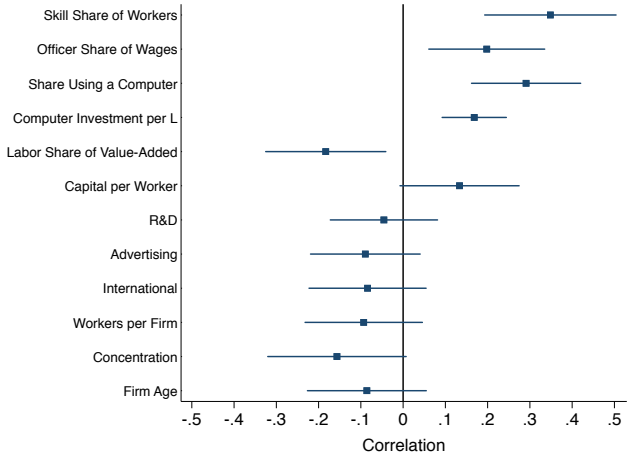
Notes: This figure presents correlations among top owned firms. Panel A and C show correlations for Top 1-0.1% owned S-Corporations. Panel B and D show correlations for Top 0.1% owned S-Corporations. (A) and (B) total S-Corporation profits, (C) and (D) profit growth and several industry-level characteristics, defined below. **Total profits** are the 2000-2014 average level of profits in 2014 dollars. **Top profits** are total profits among firms with top 0.1% owners. **Profit growth** is the difference between the average level of profits in 2010-2014 and the average level in 2000-2004. **Top 0.1% growth** is profit growth among firms with top 0.1% owners. **Aggregate markups** is the 2000-2014 average of aggregate profits divided by the 2000-2014 average of aggregate sales. **Aggregate profits per worker** is the 2000-2014 average of aggregate profits divided by the 2000-2014 average of aggregate W-2 payees. **Markup dispersion** is the 2000-2014 average of markup dispersion each year, measured as the 95th percentile of the markup distribution minus the median. **Profits per worker dispersion** is the 2000-2014 average of profits per worker dispersion each year, measured as the 95th percentile of the profits per worker distribution minus the median. **Skill share** is the 2000-2014 average share of workers in a 4-digit industry who have at least some college in the CPS. **Officer share** is the share of labor compensation (the sum of salaries and wages paid to employees, employee benefit programs such as health insurance, and contributions to pension and profit-sharing plans) that accrues to officers. Specifically, on Form 1120S it is line 7 divided by the sum of lines 7, 8, 17, and 18. For **labor share**, the numerator is total labor payments, including officer compensation, and the denominator is gross profits plus non-labor cost of goods sold plus total labor payments For both officer share and labor share, we use the sales-weighted average of this variable for all S-corporations in the IRS SOI corporate sample between 2000 and 2014, weighted to represent the population. **Capital per worker** is total book value of depreciable assets less accumulated depreciation divided by aggregate W-2 payees. Capital is measured as the average for all S-corporations in the IRS SOI corporate sample betweeen 2000 and 2014, weighted to represent the population. Aggregate W-2 payees is measured directly for the population of S-corporations. **R&D** and **advertising** are the industry's average share of total R&D expenditures and total advertising expenditure in Compustat between 2000 and 2014. **International** is the 2000-2014 average of total foreign net income reported by S-corporations on Schedule M3 of their tax return divided by the 2000-2014 average of total S-corporation profits. **Workers per firm** is the 2000-2014 average of aggregate S-corporation W-2 payees divided by the 2000-2014 average number of S-corporations. **Concentration** is the sum of the sales shares of the four largest S and C corporations relative to total S + C industry sales, averaged over the years 2000-2014. **Firm age** is the average age of all S-corporations in that industry, averaged over the years 1999-2013.

Figure A.8: Correlates of S-Corporation Profits and Profitability across Industries

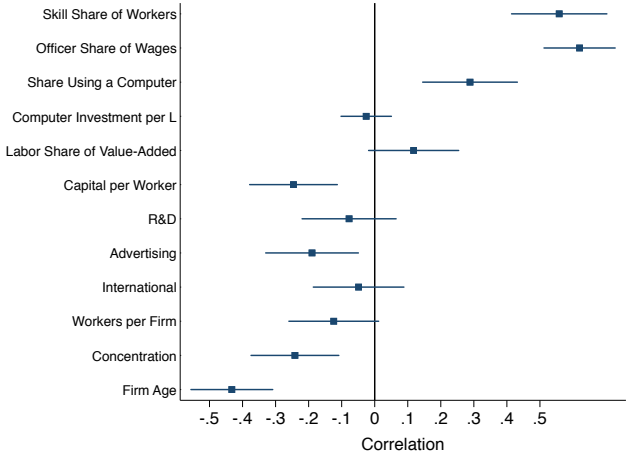
A. Top 1-0.1% Profits (Net of Transformers)



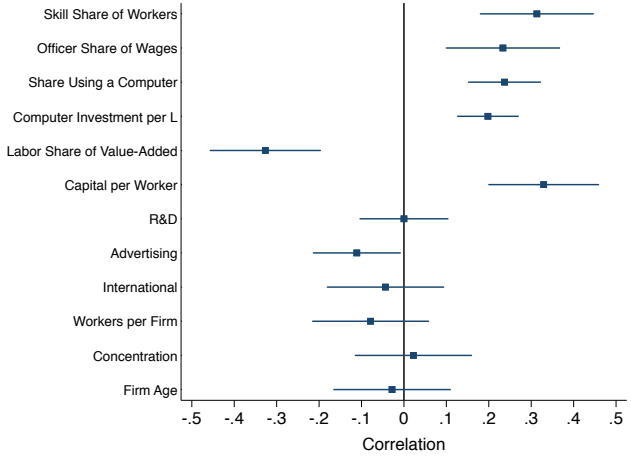
B. Top 0.1% Profits (Net of Transformers)



C. Growth in Top 1-0.1% Profits



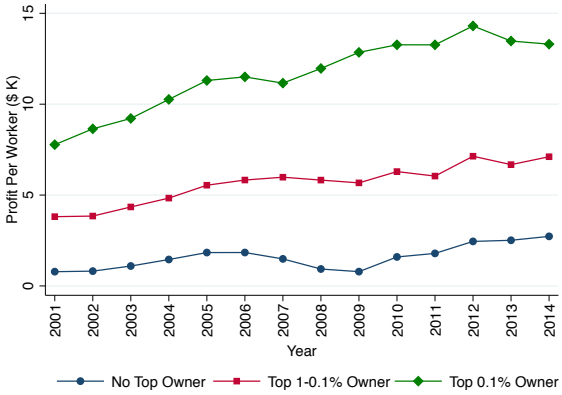
D. Growth in Top 0.1% Profits



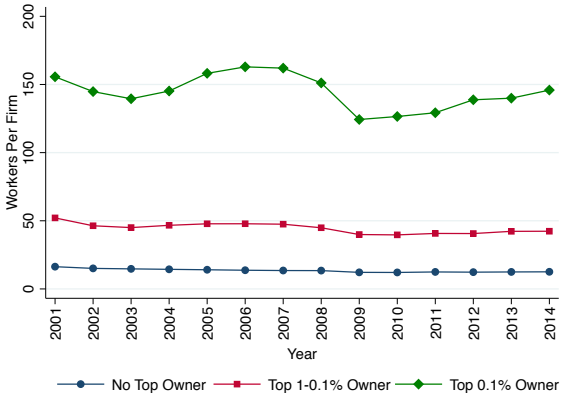
Notes: This figure presents correlations among top owned firms. Panel A and C show correlations for Top 1-0.1% owned S-Corporations. Panel B and D show correlations for Top 0.1% owned S-Corporations. (A) and (B) total S-Corporation profits, net of transformer's profits, (C) and (D) profit growth and several industry-level characteristics, defined below. **Total profits** are the 2000-2014 average level of profits in 2014 dollars. **Top profits** are total profits among firms with top 0.1% owners. **Profit growth** is the difference between the average level of profits in 2010-2014 and the average level in 2000-2004. **Top 0.1% growth** is profit growth among firms with top 0.1% owners. **Aggregate markups** is the 2000-2014 average of aggregate profits divided by the 2000-2014 average of aggregate sales. **Aggregate profits per worker** is the 2000-2014 average of aggregate profits divided by the 2000-2014 average of aggregate W-2 payees. **Markup dispersion** is the 2000-2014 average of markup dispersion each year, measured as the 95th percentile of the markup distribution minus the median. **Profits per worker dispersion** is the 2000-2014 average of profits per worker dispersion each year, measured as the 95th percentile of the profits per worker distribution minus the median. **Skill share** is the 2000-2014 average share of workers in a 4-digit industry who have at least some college in the CPS. **Officer share** is the share of labor compensation (the sum of salaries and wages paid to employees, employee benefit programs such as health insurance, and contributions to pension and profit-sharing plans) that accrues to officers. Specifically, on Form 1120S it is line 7 divided by the sum of lines 7, 8, 17, and 18. For **labor share**, the numerator is total labor payments, including officer compensation, and the denominator is gross profits plus non-labor cost of goods sold plus total labor payments For both officer share and labor share, we use the sales-weighted average of this variable for all S-corporations in the IRS SOI corporate sample between 2000 and 2014, weighted to represent the population. **Capital per worker** is total book value of depreciable assets less accumulated depreciation divided by aggregate W-2 payees. Capital is measured as the average for all S-corporations in the IRS SOI corporate sample betweeen 2000 and 2014, weighted to represent the population. Aggregate W-2 payees is measured directly for the population of S-corporations. **R&D** and **advertising** are the industry's average share of total R&D expenditures and total advertising expenditure in Compustat between 2000 and 2014. **International** is the 2000-2014 average of total foreign net income reported by S-corporations on Schedule M3 of their tax return divided by the 2000-2014 average of total S-corporation profits. **Workers per firm** is the 2000-2014 average of aggregate S-corporation W-2 payees divided by the 2000-2014 average number of S-corporations. **Concentration** is the sum of the sales shares of the four largest S and C corporations relative to total S + C industry sales, averaged over the years 2000-2014. **Firm age** is the average age of all S-corporations in that industry, averaged over the years 1999-2013.

Figure A.9: Rising Profitability Explains Most Top S-Corporation Income Growth

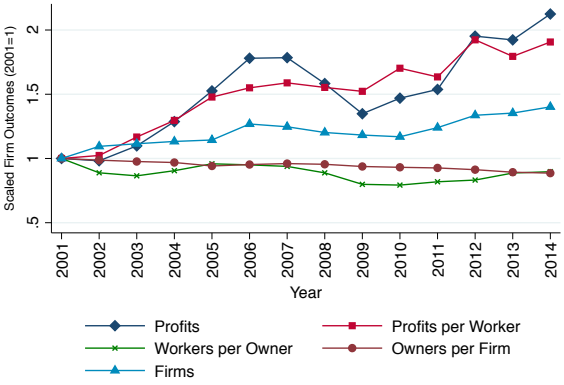
A. Profitability Differences are Diverging



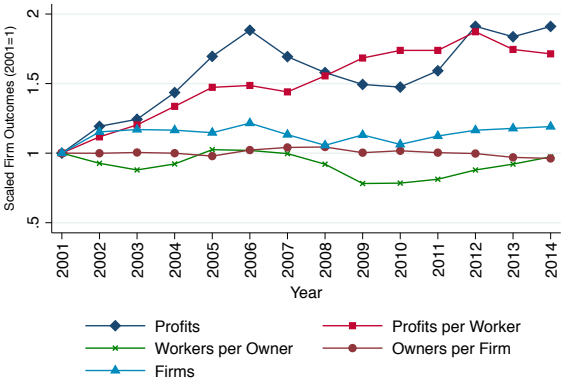
B. Firm Size Differences are Not



C. Decomposition of Top 1-0.1% Profit Growth

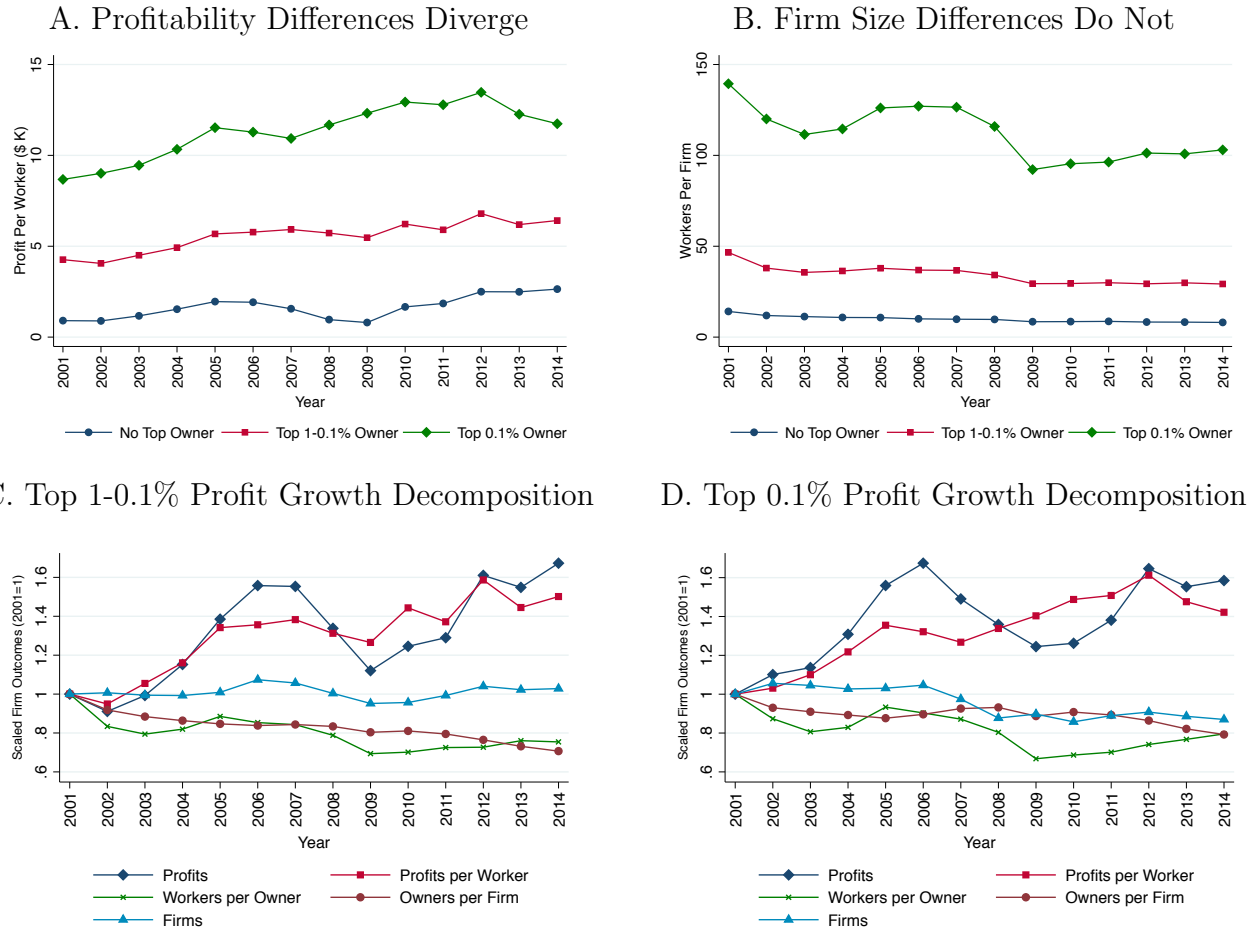


D. Decomposition of Top 0.1% Profit Growth



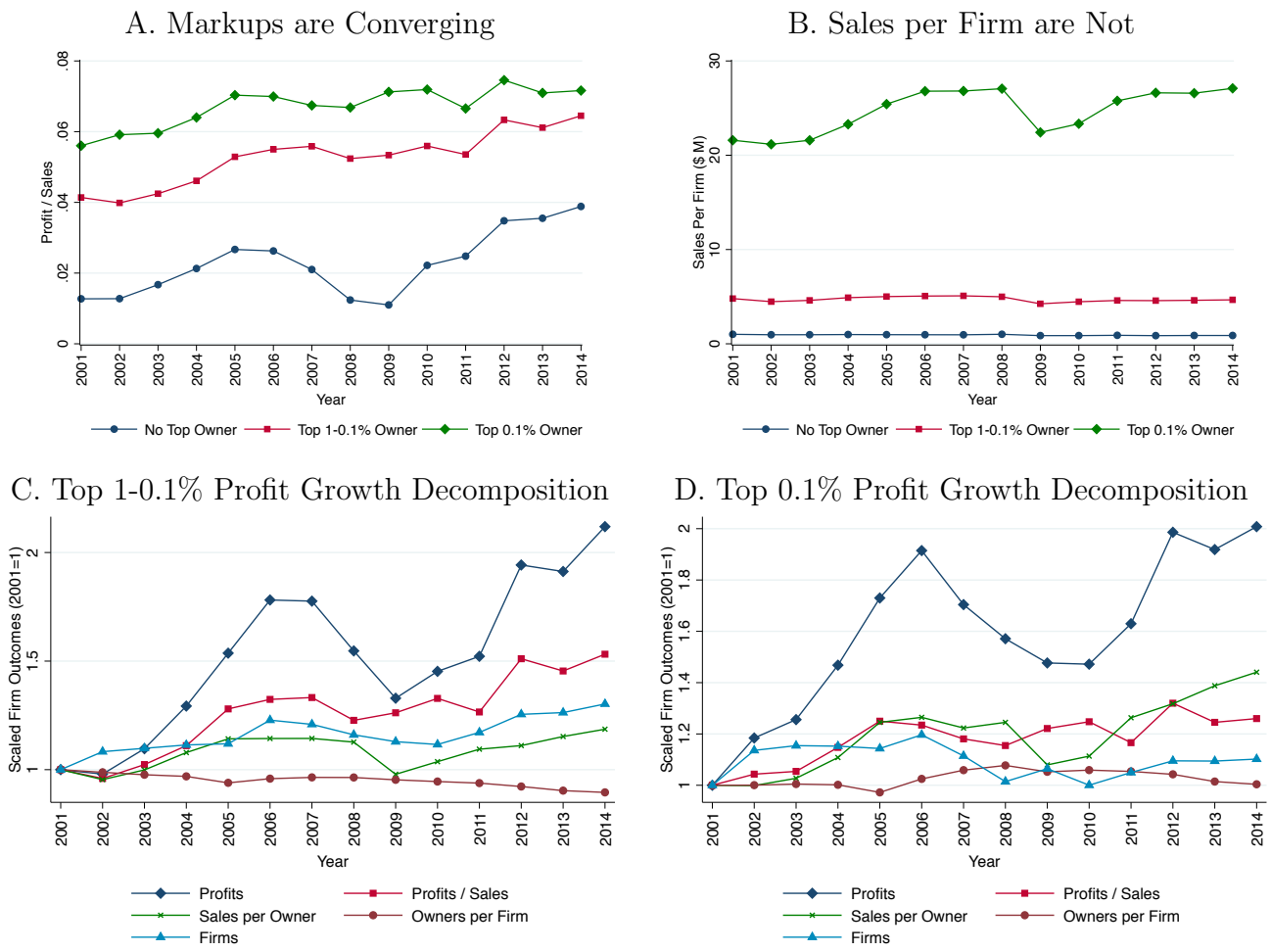
Notes: Panel A, C and D are the same as in Figure 8. Panel A plots aggregate profits per worker in thousands of dollars by year and owner type. Panel B plots workers per firm by year and ownership. Panel C decomposes the growth in S-corporation profits of firms with top 1-0.1% owners into a scale (number of workers per owner, number of owners per firm and number of firms) and a profitability (profits per worker) component. Panel D decomposes the growth in S-corporation profits of firms with top 0.1% owners into the same components as Panel C. Labor is the the sum of total W-2 payees and 1099 recipients (contractors).

Figure A.10: Organizational Form Changes don't Explain S-Corporation Income Growth



Notes: Panel A, B, C and D show the counterfactual series of S-Corporation profitability and scale, which assumes that S-Corporations' share of total corporate sales stayed constant. The "fixed share" is the average -Corporation activity share from 1993 to 1996. Counterfactual profits, profitability indicators and scale were calculates by multiplying the actual variable by the constant share of total sale. See Figure 10 for further explanation. Panel A plots counterfactual profits per worker in thousands of dollars by year and owner type. Panel B plots workers per firm by year and ownership. Panel C decomposes the growth in S-corporation profits of firms with top 1-0.1% owners into counterfactual scale and profitability components. Panel D decomposes the growth in S-corporation profits of firms with top 0.1% owners into the same components as Panel C.

Figure A.11: Rising Profits to Sales Ratio Explains Most Top S-Corporation Income Growth



Notes: Panel A plots markup, calculated as the ratio of aggregate profits to aggregate sales, by year and owner type. Panel B plots sales per firm by year and ownership. Panel C decomposes the growth in S-corporation profits of firms with top 1-0.1% owners into a scale (sales per owner, number of owners per firm and number of firms) and a profitability (profits over sales) component. Panel D decomposes the growth in S-corporation profits of firms with top 0.1% owners into the same components as Panel C. Labor is calculated as total number of W-2 payees.

Table A.1: Industrial Composition of S-Corporation Profits (Total vs. Top 1-0.1% vs. Top 0.1%, Apportioned 2014)

	Top 0.1% Owners			Top 1-0.1% Owners			All S-Corps	
Industry (NAICS)	Rank	Profits	Share of All	Rank	Profits	Share of All	Rank	Profits
Management of cos/enterprises (5511)	1	10100	1.018	13	2000	0.091	3	14250
Other financial investment actvty (5239)	2	8270	0.893	19	1700	0.145	6	9961
Automobile dealers (4411)	3	5930	0.853	17	1850	0.204	10	8348
Other professional/technical svc (5419)	4	4780	0.389	2	4980	0.314	2	15440
Oil/gas extraction (2111)	5	3970	1.633	26	1140	0.438	15	6811
Misc. durable goods merch whlsl (4239)	6	3920	0.654	14	1930	0.262	16	6783
Offices of physicians (6211)	7	3730	0.287	1	9270	0.546	1	16660
Other heavy constr (2379)	8	3700	0.75	29	1020	0.215	21	5427
Computer sys design/related svc (5415)	9	3580	0.399	8	2800	0.29	7	9386
Other specialty trade cntrctr (2389)	10	3490	0.372	4	4210	0.33	4	13300
Management/techncl consulting svc (5416)	11	3350	0.479	11	2260	0.271	11	8306
Other fabricated metal prod mfg. (3329)	12	3270	0.653	16	1870	0.269	17	6458
Other miscellaneous mfg. (3399)	13	3250	0.705	18	1700	0.249	20	5772
Legal svc (5411)	14	2900	0.332	5	3560	0.352	5	10030
Misc. nondrbl gds merch whlsl (4249)	15	2770	0.672	22	1450	0.228	26	4815
Activities related to real estate (5313)	16	2500	0.737	20	1580	0.373	23	5384
Nonresidential building constr (2362)	17	2400	0.607	12	2140	0.343	24	5339
Plastics product mfg. (3261)	18	2300	0.808	36	820	0.21	33	3390
Building equipment cntrctr (2382)	19	2120	0.347	6	2850	0.329	9	8429
Restaurants (7225)	20	2110	0.356	10	2750	0.425	14	7974
Insurance agencies/brokerages (5242)	21	2020	0.293	7	2810	0.315	8	8628
Architectural/engineering svc (5413)	22	1960	0.287	9	2780	0.369	13	8040
Building material/supp dealers (4441)	23	1930	0.665	37	770	0.264	34	3290
Nondepository credit intrmd (5222)	24	1800	0.722	54	510	0.194	45	2490
Machinery/supply merch whlsl (4238)	25	1780	0.553	24	1270	0.336	30	3747
Residential building constr (2361)	26	1740	0.596	23	1440	0.267	19	6122
Other miscellaneous store retailers (4539)	27	1570	0.524	30	1000	0.32	31	3578
Electric goods merch whlsl (4236)	28	1560	0.697	46	620	0.227	43	2514
Indie artists, writers, performers (7115)	29	1520	0.606	47	590	0.2	38	2875
Employment svc (5613)	30	1460	0.575	45	630	0.265	46	2395

Notes: This table presents statistics on the level and growth of S-corporation profits by 4-digit industry, ranked by size. The first column shows the 2000-2014 average level of profits in 2014 dollars. The second column shows the difference between the average level of profits in 2010-2014 and the average level in 2000-2004. For example, offices of physicians, which is NAICS code 6211, earned $11.4 billion 2014 dollars in the average year between 2000-2014 and saw an increase of $8.488 billion in profits in 2014 dollars in 2010-2014 relative to the period 2000-2004 on average.

Table A.2: Industrial Composition of S-Corporation Profits (S-Corp vs Partnerships, Apportioned 2014)

	Top 0.1% Owners				Top 1-0.1% Owners			
Industry (NAICS)	S Rank	S Profits	P Rank	P Profits	S Rank	S Profits	P Rank	P Profits
Management of cos/enterprises (5511)	1	10100	4	4280	13	2000	8	1740
Other financial investment actvty (5239)	2	8270	1	33800	19	1700	3	6600
Automobile dealers (4411)	3	5930	14	1050	17	1850	22	560
Other professional/technical svc (5419)	4	4780	8	2500	2	4980	7	1970
Oil/gas extraction (2111)	5	3970	3	4660	26	1140	5	3520
Misc. durable goods merch whlsl (4239)	6	3920	20	722	14	1930	32	358
Offices of physicians (6211)	7	3730	10	1270	1	9270	2	6930
Other heavy constr (2379)	8	3700	57	209	29	1020	51	200
Computer sys design/related svc (5415)	9	3580	25	633	8	2800	20	577
Other specialty trade cntrctr (2389)	10	3490	31	444	4	4210	23	526
Management/techncl consulting svc (5416)	11	3350	9	2060	11	2260	9	1570
Other fabricated metal prod mfg. (3329)	12	3270	42	335	16	1870	44	237
Other miscellaneous mfg. (3399)	13	3250	32	442	18	1700	26	497
Legal svc (5411)	14	2900	2	20900	5	3560	1	23700
Misc. nondrbl gds merch whlsl (4249)	15	2770	18	841	22	1450	40	259
Activities related to real estate (5313)	16	2500	5	3700	20	1580	10	1510
Nonresidential building constr (2362)	17	2400	45	316	12	2140	30	397
Plastics product mfg. (3261)	18	2300	54	220	36	820	64	136
Building equipment cntrctr (2382)	19	2120	56	218	6	2850	43	237
Restaurants (7225)	20	2110	22	698	10	2750	11	942
Insurance agencies/brokerages (5242)	21	2020	19	824	7	2810	13	816
Architectural/engineering svc (5413)	22	1960	27	536	9	2780	18	624
Building material/supp dealers (4441)	23	1930	106	76	37	770	57	166
Nondepository credit intrmd (5222)	24	1800	12	1240	55	510	17	640
Machinery/supply merch whlsl (4238)	25	1780	51	242	24	1270	47	229
Residential building constr (2361)	26	1740	16	978	23	1440	21	562
Other miscellaneous store retailers (4539)	27	1570	55	220	30	1000	61	144
Electric goods merch whlsl (4236)	28	1560	69	171	46	620	66	123
Indie artists, writers, performers (7115)	29	1520	50	245	47	590	83	83
Employment svc (5613)	30	1460	64	176	45	630	41	253

Notes: This table presents statistics on the level and growth of S-corporation profits by 4-digit industry, ranked by size. The first column shows the 2000-2014 average level of profits in 2014 dollars. The second column shows the difference between the average level of profits in 2010-2014 and the average level in 2000-2004. For example, offices of physicians, which is NAICS code 6211, earned $11.4 billion 2014 dollars in the average year between 2000-2014 and saw an increase of $8.488 billion in profits in 2014 dollars in 2010-2014 relative to the period 2000-2004 on average.

Table A.3: Industrial Composition of S-Corporation Profits (Transformers, 2014)

	Industry (NAICS)	Transformer Profits ($M)	Total Profits ($M)	Transformer Share	2000-14 S-Corp Profits Share	2000-14 S-Corp Sales Share
1	Offices of physicians (6211)	7390	16660	0.444	1.022	0.34
2	Management of cos/enterprises (5511)	7120	14250	0.5	0.062	0.028
3	Legal svc (5411)	3980	10030	0.396	0.947	0.514
4	Insurance agencies/brokerages (5242)	3070	8628	0.356	0.545	0.31
5	Other specialty trade cntrctr (2389)	2980	13300	0.224	0.912	0.597
6	Building equipment cntrctr (2382)	2880	8429	0.342	0.862	0.576
7	Offices of dentists (6212)	2290	8198	0.28	0.99	0.627
8	Offices of other health practitioners (6213)	2090	6426	0.325	0.989	0.577
9	Computer sys design/related svc (5415)	1970	9386	0.21	-124.921	0.299
10	Other fabricated metal prod mfg. (3329)	1930	6458	0.299	0.32	0.28
11	General freight trucking (4841)	1720	4461	0.386	0.626	0.442
12	Other heavy constr (2379)	1510	5427	0.278	0.846	0.522
13	Architectural/engineering svc (5413)	1490	8040	0.185	0.722	0.356
14	Building foundation/exterior cntrctr (2381)	1460	5421	0.27	0.911	0.642
15	Nondepository credit intrmd (5222)	1420	2490	0.57	0.138	0.062
16	Electronic markets/agents and brokers (4251)	1380	1385	1.0	0.755	0.554
17	Accounting/bookkeeping svc (5412)	1260	4000	0.314	0.632	0.455
18	Misc. durable goods merch whlsl (4239)	1180	6783	0.174	0.662	0.378
19	Residential building constr (2361)	1120	6122	0.184	0.67	0.56
20	Misc. nondrbl gds merch whlsl (4249)	1060	4815	0.221	0.512	0.42
21	Nonresidential building constr (2362)	996	5339	0.186	0.809	0.608
22	Direct selling establishments (4543)	989	2868	0.345	0.578	0.469
23	Restaurants (7225)	849	7974	0.107	0.393	0.489
24	Other miscellaneous mfg. (3399)	808	5772	0.14	0.49	0.337
25	Other chemical product/preparation mfg. (3259)	740	1032	0.717	0.295	0.13
26	Indie artists, writers, performers (7115)	704	2875	0.245	1.002	0.801
27	Machinery/supply merch whlsl (4238)	702	3747	0.187	0.516	0.395
28	Hardware/plumbing merch whlsl (4237)	687	1818	0.378	0.567	0.376
29	Outpatient care centers (6214)	684	1011	0.677	0.409	0.176
30	Services to buildings/dwellings (5617)	679	3410	0.199	0.907	0.661

Notes: This table presents statistics on the level and growth of S-corporation profits by 4-digit industry, ranked by size. The first column shows the 2000-2014 average level of profits in 2014 dollars. The second column shows the difference between the average level of profits in 2010-2014 and the average level in 2000-2004. For example, offices of physicians, which is NAICS code 6211, earned $11.4 billion 2014 dollars in the average year between 2000-2014 and saw an increase of $8.488 billion in profits in 2014 dollars in 2010-2014 relative to the period 2000-2004 on average.

Table A.4: Industrial Composition of S-Corporation Profits (Top 1-0.1% Transformers, 2014)

	Industry (NAICS)	Transformer Profits ($M)	Total Profits ($M)	Transformer Share	2000-14 S-Corp Profits Share	2000-14 S-Corp Sales Share
1	Offices of physicians (6211)	4150	8980	0.462	1.022	0.34
2	Other specialty trade cntrctr (2389)	1310	4300	0.305	0.912	0.597
3	Offices of dentists (6212)	1220	4430	0.276	0.99	0.627
4	Legal svc (5411)	1160	3540	0.328	0.947	0.514
5	Insurance agencies/brokerages (5242)	1070	2680	0.4	0.545	0.31
6	Building equipment cntrctr (2382)	996	2780	0.359	0.862	0.576
7	Management of cos/enterprises (5511)	627	1180	0.531	0.062	0.028
8	Computer sys design/related svc (5415)	625	2680	0.233	-124.921	0.299
9	Offices of other health practitioners (6213)	621	1960	0.317	0.989	0.577
10	Other fabricated metal prod mfg. (3329)	565	1680	0.336	0.32	0.28
11	Architectural/engineering svc (5413)	502	2880	0.174	0.722	0.356
12	Electronic markets/agents and brokers (4251)	475	475	1.0	0.755	0.554
13	Other financial investment actvty (5239)	452	1500	0.301	0.306	0.281
14	Restaurants (7225)	437	2850	0.153	0.393	0.489
15	Other miscellaneous mfg. (3399)	424	1460	0.289	0.49	0.337
16	Nonresidential building constr (2362)	422	1920	0.22	0.809	0.608
17	Other professional/technical svc (5419)	420	4890	0.086	1.137	0.49
18	Building foundation/exterior cntrctr (2381)	419	1570	0.267	0.911	0.642
19	Misc. durable goods merch whlsl (4239)	377	1720	0.219	0.662	0.378
20	General freight trucking (4841)	373	905	0.412	0.626	0.442
21	Misc. nondrbl gds merch whlsl (4249)	348	1090	0.319	0.512	0.42
22	Direct selling establishments (4543)	348	863	0.403	0.578	0.469
23	Other heavy constr (2379)	299	983	0.304	0.846	0.522
24	Outpatient care centers (6214)	292	404	0.723	0.409	0.176
25	Nondepository credit intrmd (5222)	273	464	0.589	0.138	0.062
26	Residential building constr (2361)	258	1410	0.183	0.67	0.56
27	Machinery/supply merch whlsl (4238)	228	1150	0.198	0.516	0.395
28	Securities/commodity contracts brokerage (5231)	196	454	0.432	0.025	0.027
29	Other information svc (5191)	196	377	0.519	-1.249	0.088
30	Automobile dealers (4411)	195	1460	0.133	0.729	0.678

Notes: This table presents statistics on the level and growth of top 1-0.1% owned S-corporation profits by 4-digit industry, ranked by size. The first column shows the 2000-2014 average level of profits in 2014 dollars. The second column shows the difference between the average level of profits in 2010-2014 and the average level in 2000-2004.

Table A.5: Industrial Composition of S-Corporation Profits (Top 0.1% Owned Transformers, 2014)

	Industry (NAICS)	Transformer Profits ($M)	Total Profits ($M)	Transformer Share	2000-14 S-Corp Profits Share	2000-14 S-Corp Sales Share
1	Management of cos/enterprises (5511)	6840	12870	0.531	0.062	0.028
2	Other financial investment actvty (5239)	2350	7815	0.301	0.306	0.281
3	Offices of physicians (6211)	1970	4266	0.462	1.022	0.34
4	Other fabricated metal prod mfg. (3329)	1240	3695	0.336	0.32	0.28
5	Other heavy constr (2379)	1170	3835	0.304	0.846	0.522
6	Other specialty trade cntrctr (2389)	1160	3815	0.305	0.912	0.597
7	Nondepository credit intrmd (5222)	1100	1862	0.589	0.138	0.062
8	Other miscellaneous mfg. (3399)	1070	3684	0.289	0.49	0.337
9	Misc. nondrbl gds merch whlsl (4249)	1030	3240	0.319	0.512	0.42
10	Legal svc (5411)	1000	3048	0.328	0.947	0.514
11	Insurance agencies/brokerages (5242)	940	2350	0.4	0.545	0.31
12	Misc. durable goods merch whlsl (4239)	928	4244	0.219	0.662	0.378
13	Computer sys design/related svc (5415)	898	3861	0.233	-124.921	0.299
14	Building equipment cntrctr (2382)	874	2438	0.359	0.862	0.576
15	Automobile dealers (4411)	864	6482	0.133	0.729	0.678
16	Nonresidential building constr (2362)	620	2823	0.22	0.809	0.608
17	Electronic markets/agents and brokers (4251)	577	576	1.0	0.755	0.554
18	General freight trucking (4841)	563	1366	0.412	0.626	0.442
19	Depository credit intrmd (5221)	512	1648	0.311	0.115	0.055
20	Other chemical product/preparation mfg. (3259)	505	678	0.744	0.295	0.13
21	Support actvty for mining (2131)	483	1267	0.381	0.228	0.141
22	Electric goods merch whlsl (4236)	456	1695	0.269	0.448	0.203
23	Hardware/plumbing merch whlsl (4237)	450	1156	0.39	0.567	0.376
24	Plastics product mfg. (3261)	450	2573	0.175	0.754	0.353
25	Other professional/technical svc (5419)	443	5157	0.086	1.137	0.49
26	Direct selling establishments (4543)	423	1051	0.403	0.578	0.469
27	Machinery/supply merch whlsl (4238)	406	2047	0.198	0.516	0.395
28	Petroleum merch whlsl (4247)	404	1018	0.397	0.252	0.385
29	Architectural/engineering svc (5413)	392	2251	0.174	0.722	0.356
30	Restaurants (7225)	377	2457	0.153	0.393	0.489

Notes: This table presents statistics on the level and growth of top 0.1% owned S-corporation profits by 4-digit industry, ranked by size. The first column shows the 2000-2014 average level of profits in 2014 dollars. The second column shows the difference between the average level of profits in 2010-2014 and the average level in 2000-2004.

Table A.6: Decomposition of Profit Growth by State, Top 1-0.1% Owners

		Share of Profit Growth (%)				
State	Profit Growth Rate	Profitability	Workers per Owner	Owners per Firm	Firms	% Total Profits (2014)
Overall	120.68	80.19	-11.51	-14.62	45.94	100.00
AK	119.89	50.01	-21.34	-3.75	75.09	0.38
AL	124.86	58.19	-1.57	-3.42	46.80	1.33
AR	155.50	72.10	-3.83	-25.51	57.24	0.88
AZ	130.88	76.97	-31.54	-14.35	68.92	1.66
CA	183.50	74.13	-31.28	-13.95	71.10	12.35
CO	123.08	73.59	-11.89	-15.58	53.88	2.51
CT	172.88	98.51	8.00	-11.46	4.96	0.90
DE	75.80	190.51	-108.36	-17.09	34.95	0.28
FL	86.12	87.48	-21.34	-17.14	51.00	8.42
GA	100.51	53.30	12.06	-14.34	48.98	3.30
HI	113.90	51.77	13.73	-19.26	53.76	0.25
IA	185.36	77.31	-21.70	-10.26	54.65	1.20
ID	201.18	44.15	6.14	-9.49	59.20	0.64
IL	80.27	95.91	-13.49	-16.07	33.65	4.37
IN	51.45	126.57	-14.60	-35.64	23.67	2.19
KS	141.89	86.29	-24.97	-16.26	54.94	1.10
KY	45.93	125.11	-43.29	-13.82	32.00	1.06
LA	142.80	84.32	-37.51	-10.21	63.40	1.77
MA	66.40	67.72	16.76	-16.81	32.33	2.29
MD	87.33	84.05	-12.34	-14.87	43.16	1.73
ME	78.75	48.97	39.66	-9.37	20.74	0.39
MI	113.27	86.21	-2.38	-19.70	35.87	2.81
MN	121.67	75.75	4.00	-13.58	33.84	2.48
MO	128.22	78.79	-0.83	-15.98	38.02	1.80
MS	143.14	47.35	31.05	-24.17	45.77	0.65
MT	181.95	44.42	6.55	-15.83	64.86	0.48
NC	116.94	70.97	2.11	-16.12	43.04	2.69
ND	466.14	54.49	-12.62	-7.84	65.97	0.64
NE	216.37	54.22	4.64	-16.40	57.54	0.85
NH	105.30	72.28	34.41	-9.95	3.27	0.17
NJ	59.83	140.35	-9.94	-21.36	-9.05	2.34
NM	93.29	88.00	-23.14	-12.31	47.45	0.46
NV	130.58	79.60	-23.92	-16.49	60.80	1.02
NY	67.41	100.52	-2.26	-17.18	18.92	4.80
OH	95.06	119.29	-32.10	-14.21	27.03	3.42
OK	146.22	72.78	-11.52	-24.67	63.41	1.55
OR	233.35	77.41	-12.20	-12.24	47.03	1.34
PA	122.87	94.12	-4.71	-12.05	22.63	3.90
RI	30.17	190.46	-75.78	-22.75	8.07	0.38
SC	71.50	69.68	-6.88	-18.58	55.78	1.17
SD	187.67	61.15	-1.12	-11.41	51.38	0.54
TN	193.03	71.19	14.43	-8.80	23.18	0.42
TX	255.55	59.76	-1.02	-13.46	54.71	7.77
UT	262.24	38.11	11.27	-14.24	64.86	1.25
VA	116.57	68.08	1.13	-13.56	44.35	2.46
VT	127.28	118.76	-33.82	3.85	11.21	0.22
WA	162.73	71.03	-20.92	-6.36	56.25	2.68
WI	104.49	64.56	7.14	-11.97	40.27	1.98
WV	76.54	100.36	-5.80	-21.68	27.12	0.33
WY	179.99	67.70	-32.07	-2.86	67.23	0.38

Notes: See Table 4 for a description of the calculations.

Table A.7: Decomposition of Profit Growth by State, Top 0.1% Owners

		Share of Profit Growth (%)				
State	Profit Growth Rate	Profitability	Workers per Owner	Owners per Firm	Firms	% Total Profits (2014)
Overall	107.43	72.74	2.45	-4.84	29.65	100.00
AK	229.13	39.88	-6.41	9.60	56.93	0.26
AL	77.62	16.05	33.78	9.63	40.54	0.95
AR	141.65	43.36	-7.17	-6.70	70.51	0.70
AZ	25.64	362.11	-332.38	-16.53	86.81	1.04
CA	78.77	68.26	-32.06	-5.42	69.22	12.46
CO	62.25	67.31	8.14	-12.51	37.05	1.76
CT	98.84	123.76	-6.80	2.78	-19.74	1.55
DE	70.01	-319.39	418.72	18.29	-17.61	0.33
FL	64.67	78.95	8.22	-25.39	38.22	6.15
GA	93.49	85.02	-15.73	3.24	27.47	2.62
HI	155.36	69.99	37.85	-38.90	31.06	0.17
IA	168.33	56.67	-2.79	7.20	38.91	0.99
ID	219.23	44.66	30.66	-11.10	35.77	0.48
IL	51.85	137.14	-42.10	7.26	-2.31	5.12
IN	87.39	3.66	109.90	-31.88	18.32	1.97
KS	156.00	75.24	-19.73	9.28	35.21	1.22
KY	43.55	48.68	55.24	-0.01	-3.91	0.72
LA	165.56	25.16	-11.20	22.19	63.85	1.86
MA	308.95	77.52	27.77	-14.70	9.40	3.38
MD	5.40	-190.80	182.74	-98.75	206.81	1.33
ME	19.91	211.78	-27.59	-17.64	-66.55	0.21
MI	141.12	49.05	24.39	-4.02	30.58	3.38
MN	74.98	141.84	-65.38	10.57	12.98	2.55
MO	-620.35					1.90
MS	72.99	123.87	-88.05	17.23	46.95	0.50
MT	294.39	71.43	-30.13	-1.95	60.64	0.36
NC	93.47	96.69	-21.39	-7.70	32.41	2.01
ND	861.41	48.95	-4.59	-1.77	57.41	0.76
NE	151.91	71.59	-42.50	7.50	63.41	0.84
NH	96.93	117.24	26.51	0.55	-44.31	0.14
NJ	48.29	146.92	-4.70	-13.87	-28.35	3.06
NM	113.40	86.43	-26.63	19.52	20.68	0.54
NV	58.39	114.95	-14.73	-30.00	29.77	1.13
NY	96.95	101.28	24.67	-19.64	-6.30	6.92
OH	91.17	71.15	18.15	-8.38	19.09	3.33
OK	171.94	32.52	24.21	-12.38	55.65	2.07
OR	117.32	67.44	-3.37	-11.14	47.07	0.91
PA	102.96	82.84	8.25	-1.88	10.80	3.73
RI	40.65	89.49	-64.68	70.85	4.34	0.25
SC	76.68	0.45	141.52	-67.17	25.20	0.63
SD	379.15	54.81	7.10	-6.69	44.77	0.57
TN	234.40	113.00	-29.43	2.86	13.57	0.69
TX	227.57	71.97	-15.31	-8.58	51.92	8.94
UT	83.80	29.14	-12.65	-3.85	87.36	0.88
VA	62.00	59.40	-7.46	6.56	41.50	1.70
VT	62.30	70.02	63.26	-14.64	-18.64	0.11
WA	120.71	57.24	-9.98	6.18	46.56	2.02
WI	231.27	41.36	29.01	7.79	21.83	4.15
WV	62.47	84.45	-161.66	115.77	61.44	0.24
WY	99.51	89.46	-2.87	-85.78	99.19	0.41

Notes: See Table 4 for a description of the calculations. Top 0.1% owned S-Corporations in Missouri witnessed decreases in all components of the profit decomposition. Log calculations dropped negative growth rates for this segment of the sample.

Table A.8: Profit Components in 2001 levels

Industry	Profits ($ B)	Profitability	Workers per Owner	Owners per Firm	Firms	% Total Profits
Panel A: All Owners						
Overall	164.41	4.04	8.82	1.76	2,617,276	100.00
Agriculture & Forestry	0.61	0.73	5.43	2.31	66,042	0.37
Construction & Mining	31.19	6.65	8.39	1.63	343,756	18.97
Manufacturing	21.18	5.15	14.58	2.22	127,226	12.88
Retail & Wholesale Trade	37.89	4.50	9.13	1.74	531,713	23.04
Info & Professional Svcs	48.65	4.62	6.20	1.79	947,504	29.59
Health Care	13.71	5.04	10.96	1.54	161,267	8.34
Entertnmt, Food & Hotels	5.14	0.72	18.62	1.93	198,881	3.13
Other Svcs	5.24	2.55	6.81	1.53	197,326	3.19
Panel B: Top 1-0.1% Owners						
Overall	52.41	4.59	12.76	2.41	371,092	100.00
Agriculture & Forestry	0.41	2.03	8.18	3.44	7,127	0.78
Construction & Mining	9.21	7.60	15.23	2.17	36,758	17.58
Manufacturing	5.56	4.53	16.99	3.13	23,080	10.60
Retail & Wholesale Trade	11.49	5.24	14.54	2.32	64,849	21.92
Info & Professional Svcs	14.86	4.60	8.34	2.47	156,939	28.36
Health Care	6.80	7.28	12.43	1.85	40,606	12.98
Entertnmt, Food & Hotels	2.28	1.18	28.06	2.74	25,175	4.36
Other Svcs	1.58	3.59	16.39	2.12	12,682	3.02
Panel C: Top 0.1% Owners						
Overall	94.52	9.85	25.24	3.13	121,344	100.00
Agriculture & Forestry	0.67	5.20	16.30	3.87	2,044	0.71
Construction & Mining	15.73	15.43	29.24	2.88	12,113	16.65
Manufacturing	19.26	13.94	37.20	4.10	9,052	20.38
Retail & Wholesale Trade	25.52	10.81	37.78	2.76	22,596	27.00
Info & Professional Svcs	25.12	9.07	15.65	3.14	56,356	26.58
Health Care	3.72	6.98	27.81	3.08	6,211	3.93
Entertnmt, Food & Hotels	3.10	2.81	35.81	3.45	8,954	3.28
Other Svcs	1.11	4.22	35.32	2.80	2,675	1.18

Notes: This table follows the decomposition of profits into its elements as defined in Table 4. Table A shows the levels of profitability and scale metrics in 2001.

Table A.9: Profit Components in 2014 levels

Industry	Profits ($ B)	Profitability	Workers per Owner	Owners per Firm	Firms	% Total Profits
Panel A: All Owners						
Overall	391.33	8.21	7.16	1.57	4,229,305	100.00
Agriculture & Forestry	6.81	6.00	5.75	2.12	93,047	1.74
Construction & Mining	53.28	10.14	6.51	1.48	544,473	13.61
Manufacturing	52.20	14.70	11.56	1.98	155,289	13.34
Retail & Wholesale Trade	83.39	9.32	7.27	1.56	787,528	21.31
Info & Professional Svcs	127.87	9.85	5.12	1.60	1,586,521	32.68
Health Care	38.05	7.79	9.49	1.35	381,061	9.72
Entertnmt, Food & Hotels	17.02	2.05	15.21	1.74	314,153	4.35
Other Svcs	12.13	4.83	5.32	1.41	335,617	3.10
Panel B: Top 1-0.1% Owners						
Overall	112.03	8.74	12.18	2.16	487,626	100.00
Agriculture & Forestry	2.18	8.74	7.87	3.14	10,126	1.95
Construction & Mining	15.38	11.60	16.07	2.07	39,787	13.73
Manufacturing	11.99	11.79	14.81	2.75	24,973	10.70
Retail & Wholesale Trade	21.53	10.08	13.13	2.07	78,583	19.22
Info & Professional Svcs	34.29	8.96	8.45	2.28	198,443	30.61
Health Care	18.07	11.38	11.92	1.62	82,230	16.13
Entertnmt, Food & Hotels	5.34	2.48	25.20	2.44	34,995	4.77
Other Svcs	3.09	6.07	16.36	1.88	16,552	2.76
Panel C: Top 0.1% Owners						
Overall	191.60	17.73	25.51	3.15	134,643	100.00
Agriculture & Forestry	2.38	16.33	12.85	4.30	2,634	1.24
Construction & Mining	23.06	27.07	29.38	2.77	10,468	12.04
Manufacturing	37.69	29.19	32.38	3.82	10,438	19.67
Retail & Wholesale Trade	48.52	19.00	37.12	2.56	26,828	25.32
Info & Professional Svcs	61.86	17.25	17.36	3.51	58,878	32.29
Health Care	8.93	11.13	31.41	2.50	10,225	4.66
Entertnmt, Food & Hotels	6.91	5.17	39.14	2.95	11,582	3.61
Other Svcs	2.17	9.27	32.30	2.37	3,058	1.13

Notes: This table follows the decomposition of profits into its elements as defined in Table 4. Table A shows the levels of profitability and scale metrics in 2014.

B Model Appendix

B.1 Firm Scale and Profitability

B.1.1 Determinants of Firm Scale

Firm scale for firm j is determined by equating marginal revenue and marginal costs. After cost minimization, cost is $c_j = b_j y^{\frac{1}{\alpha_L+\alpha_K}}$ and the firm problem (abstracting from fixed costs) is:

$$\max_y \pi(y) = B'_j y^{1+\frac{1}{\eta}} - b_j y^{\frac{1}{\alpha_L+\alpha_K}} \tag{8}$$

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$$\underbrace{\left(1+\frac{1}{\eta}\right) B'_j y^{\frac{1}{\eta}}}_{\text{MR}} = \underbrace{\frac{1}{\alpha_L+\alpha_K} b_j y^{\frac{1}{\alpha_L+\alpha_K}-1}}_{\text{MC}}$$

$$\Rightarrow y^* = \left[\left(1+\frac{1}{\eta}\right)\frac{B'_j}{b_j \frac{1}{\alpha_L+\alpha_K}}\right]^{\frac{\eta}{\eta(\frac{1}{\alpha_L+\alpha_K}-1)-1}} \tag{9}$$

where $b_j = (AT_j^{\alpha_T})^{\frac{-1}{\alpha_L+\alpha_K}} \left(\frac{w}{\alpha_L}\right)^{\frac{\alpha_L}{\alpha_L+\alpha_K}} \left(\frac{r}{\alpha_K}\right)^{\frac{\alpha_K}{\alpha_L+\alpha_K}} (\alpha_L+\alpha_K)$. Thus, profits are:

$$\pi(y^*) = B'_j \left(\left[\left(1+\frac{1}{\eta}\right)\frac{B'_j}{b_j \frac{1}{\alpha_L+\alpha_K}}\right]^{\frac{\eta}{\eta(\frac{1}{\alpha_L+\alpha_K}-1)-1}}\right)^{1+\frac{1}{\eta}} - b_j \left(\left[\left(1+\frac{1}{\eta}\right)\frac{B'_j}{b_j \frac{1}{\alpha_L+\alpha_K}}\right]^{\frac{\eta}{\eta(\frac{1}{\alpha_L+\alpha_K}-1)-1}}\right)^{\frac{1}{\alpha_L+\alpha_K}} \tag{10}$$

We can also expression profits as a share of sales: $\pi_j = \left[1 - \left(\frac{1}{\eta}+1\right)(\alpha_L+\alpha_K)\right] Sales_j$, where $Sales_j = B_j^{\gamma_0} (A_j T_j^{\alpha_T})^{\gamma_1} \gamma_2$.[36]

[36]The first order conditions for each factor show that factor payments will be a fixed share of sales (e.g., $\alpha_L \left(\frac{1}{\eta}+1\right)\frac{p_j y_j}{L_j} = w \Rightarrow \alpha_L \left(\frac{1}{\eta}+1\right) Sales_j = wL_J$). Note that $\gamma_0 = \frac{-1}{\eta-(\alpha_L+\alpha_K)(\eta+1)}$, $\gamma_1 = \frac{(\alpha_L+\alpha_K)(\eta+1)}{\eta-(\alpha_L+\alpha_K)(\eta+1)} = (\alpha_L+\alpha_K)(\eta+1)(-\gamma_0)$, and $\gamma_2 = \left[\left[\left(\left(\frac{\alpha_L}{w}\right)^{\alpha_L}\left(\frac{\alpha_K}{r}\right)^{\alpha_K}\right)^{\frac{1}{\alpha_L+\alpha_K}} \frac{1}{(\alpha_L+\alpha_K)}\right]\left(1+\frac{1}{\eta}\right)(\alpha_L+\alpha_K)\right]^{\gamma_1}$.

B.1.2 Determinants of Firm Profitability

Firm profitability μ_j is the ratio of profits to revenue is determined by demand elasticity and output elasticities α_K and α_L:

$$\mu_j = \frac{\pi_j(y^*)}{p_j y_j^*} = 1 - \left(\frac{1}{\eta} + 1\right)(\alpha_L + \alpha_K) \tag{11}$$

More broadly, firms are more profitable when the gap between prices and average total costs is large. Costs are $c_j = b_j y^{\frac{1}{\alpha_L+\alpha_K}}$, so average costs are $c_j = b_j y_j^{\frac{1}{\alpha_L+\alpha_K}-1}$. Hence, the gap between prices and average total costs is $B_j' y^{\frac{1}{\eta}} - b_j y_j^{\frac{1}{\alpha_L+\alpha_K}-1}$. Additionally, equation 8 abstracted from fixed costs, but they are easily added to redefine costs as $wL_j + rK_j + F_j$. With fixed costs, the gap between price and average total cost can grow as fixed costs are spread over larger quantities, which can increase firm profitability.