

The Rise of Pass-Throughs and the Decline of the Labor Share*

Matthew Smith, US Treasury Department
Danny Yagan, UC Berkeley and NBER
Owen Zidar, Princeton and NBER
Eric Zwick, Chicago Booth and NBER

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Preliminary

Abstract

This paper studies the coevolution in the United States of the fall in the corporate sector labor share and the rise of the share of business activity organized in tax-preferred, pass-through form. We find that reallocating activity to the form it would have taken prior to the Tax Reform Act of 1986 accounts for 30% of the decline in the corporate sector labor share between 1978 and 2017. Our adjustments attribute 15% of the decline to labor income recharacterized as profits among S-corporations within the corporate sector. The remaining 15% is due to the rise in labor-intensive business activity that elects partnership rather than corporate form. In our adjusted series, the labor share decline in the United States is primarily a manufacturing sector phenomenon that was offset—fully until 2000 and partly since then—by the rise of services.

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1 Introduction

In the past forty years in the United States, the share of corporate sector value added accruing to labor fell from 64 percent to 57 percent (Figure 1A). This period coincided with a striking rise in the share of business activity organized in pass-through form (Figure 1B). This paper shows that these trends are related.

Why would growth of the pass-through sector, which now accounts for the majority of business income, matter for the corporate sector labor share? The simple answer is taxes. First, entrepreneurs have flexibility to characterize their income as labor payments or as profits. They typically choose the label that minimizes taxes subject to the law. In recent years, that label has been profit for a growing number of firms. Second, the composition of corporate sector firms has changed: many labor-intensive firms are now organized outside the corporate sector as tax-preferred partnerships. The joint quantitative importance of these factors for the decline in the labor share is not well known.

The historical turning point for the rise of pass-throughs is the Tax Reform Act of 1986 (TRA86). TRA86 lowered personal income tax rates substantially and raised the tax burden on non-pass-through C-corporations. As a result, by organizing business activity in pass-through form, entrepreneurs avoid C-corporation taxes and benefit from lower effective tax rates. Subsequent changes in payroll taxation and in the legal treatment of pass-throughs further magnified the benefits of pass-through form, accelerating the pace of this sector's growth.

We take two steps to quantify the contribution of the pass-through sector to the decline of the labor share. First, we reclassify a portion of S-corporation value added as labor income. Using data on 148K firms that switch from C-corporation to S-corporation form between 2001 and 2010, we estimate that reported labor payments fall sharply in the switching year by 2.2% of sales, which are offset by a corresponding increase in reported profits. Estimates that account for heterogeneous effects by firm size imply that 1.4% of aggregate S-corporation sales can be thought of as recharacterized labor income.

This behavior implies the decline in labor payments captures a reporting response, as owner-managers compensate themselves in the tax-preferred form of S-corporation profits. Had these firms remained C-corporations, owner-managers would have likely continued to pay themselves via labor income to avoid payout and corporate tax. Reclassifying 1.4% of aggregate S-corporation sales increases the corporate sector labor share by 1.0 percentage points in 2017.

The second adjustment we make is to reincorporate partnership activity into the corporate sector. Since 1980, partnership net income has grown from zero to approximately 35

percent of total business profits. This rise occurred as the corporate sector in the national accounts shrank from 60 percent to 56 percent of GDP and the non-corporate business sector—which includes partnership activity—grew from 13 to 17 percent of GDP (Figure 1C). Partnership activity comprises mainly capital-light activity in the form of financial, legal, and consulting services. These businesses have higher labor shares than the businesses that have remained in corporate form. Treating these partnerships as C-corporations both reverses the recent decline of corporate sector value added relative to GDP and increases the corporate sector labor share by 1.0 percentage points in 2017.

Together, these two adjustments imply the decline in the labor share is overstated by 30% (i.e., 2.0 of the 6.6 percentage point decline). The extent of understated labor income has grown over time in line with the pass-through sector’s expansion. Our preferred measure of the corporate sector labor share declined from 63.6% in 1978–1982 to 59.0% in 2013–2017. It also increased by 1 to 2 percentage points in the late 1990s.

Which industries contribute the most to this revision? The three most important industries are Professional, Scientific, and Technical Services (541), Outpatient Healthcare (621), and Other Financial Services (523), which respectively contribute 30%, 14%, and 11% of the labor share adjustment in 2017. Firms in these industries include law firms, consultancies, doctors’ and dentists’ offices, and financial service firms such as hedge funds and private equity funds. Our results align with and build on those in Elsbey, Hobijn and Şahin (2013): the rise of services essentially offsets the decline in manufacturing until 2000, and then only partly offsets manufacturing in more recent years.

Section 2 discusses institutional background and our data. In Section 3, we analyze corporate form switchers to estimate the recharacterized wage share for S-corporations. Section 4 presents the effects of our S-corporation and partnership adjustments on the aggregate corporate sector labor share. We discuss our findings in light of prior work in Section 5. Section 6 concludes.

2 Institutional Background and Data

2.1 Institutional Background

The way entrepreneurs report their income depends on the tax rules. This section describes the business tax environment as of 2017.¹ We focus on the three types of formal business: C-corporations, S-corporations, and partnerships. C-corporations and S-corporations are both included in the corporate sector, whereas partnerships and sole proprietorships are not. We

¹We discuss the 2017 tax reform in the conclusion.

exclude sole proprietorships from our analysis because they have not exhibited clear trends over the past forty years.

C-corporations pay the corporate income tax and their taxable shareholders pay dividend taxes on distributed profits. C-corporations can retain earnings to delay this second layer of tax. In contrast, S-corporations do not pay the corporate tax, and they cannot defer the distribution of profits, which are deemed to be distributed and taxable when earned. The tax rate that applies to S-corporation profits is the individual income tax rate for each of its owners based on their pro-rata allocation of the firm’s profits.

Owner-managers have leeway in whether they report their income for tax purposes as wages or as profits. We show in this paper that this fact substantially affects the measurement of changes in the U.S. corporate sector labor share. TRA86 made S-corporation form tax superior to C-corporation form for eligible firms. Ever since, the share of business activity in S-corporation form has risen while the share in C-corporation form has fallen.

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. Specifically, since wages are deductible, owner-managers of C-corporations can avoid the corporate tax plus dividend tax when they report their share of profits as wages. Their wage income faces personal income tax as well as payroll and social insurance taxes. In contrast, S-corporation owner-managers do not pay payroll and social insurance taxes when they report their share of profits as business income.

In 2017, for example, the tax rate for C-corporation profits is 35 percent at the entity level and 15–23.8 percent (including the 3.8 percent surtax on net investment income) for taxable dividends depending on a taxpayer’s income bracket. The top marginal income tax rate for wage earnings is 39.6 percent. The payroll tax rate is 12.4 percent for the first \$118.5K of wage earnings. The more relevant marginal incentives for top earners are the uncapped social insurance taxes of 2.9 percent for Medicare and 0.9 percent for the Affordable Care Act surcharge. Thus, a high-income C-corporation owner-manager saves 7.1 percent—equal to $(35 + .238 \times (100 - 35)) - (39.6 + 3.8)$ —on the margin by paying herself as wages; a high-income S-corporation owner-manager saves 3.8 percent in payroll and social insurance taxes by paying herself in profits on the margin. Comparing corporate forms, the lowest rate for a C-corporation owner-manager is 43.4, which exceeds the 39.6 rate for an S-corporation owner-manager. This wedge encourages firms to organize as S-corporations and label owner-manager income as profits.²

²An S-corporation owner-manager’s W2 compensation is required to be “reasonable” and reflect the value of market services. In practice, the IRS rarely adjusts S-corporation owner tax liabilities. Auten, Splinter and Nelson (2016) discuss tax-motivated shifting among S-corporation owners, and Nelson (2016) describes how rules governing S-corporations have evolved over time.

A related change in the organization of business activity is the growth of partnerships. Following TRA86 and a series of state law changes permitting partnerships to receive limited liability protection, many service sector firms that might have otherwise chosen C-corporation form instead organized as partnerships. This option appealed especially to firms, such as large law firms and consultancies, with too many owners to receive pass-through tax treatment as S-corporations.³

2.2 Data

Administrative data. Our event studies use de-identified administrative tax data from the population of C-corporations and S-corporations, made available through collaboration with the U.S. Treasury Office of Tax Analysis. We use a sample of firms that switch from C-corporation to S-corporation form between 2001 and 2010 to study the role of corporate form changes for trends in the aggregate labor share in the U.S. We focus on 2001–2010 to study outcomes in a four-year window around the switching event. During this time, between 3 and 5 percent of all C-corporations, approximately 70K firms, switch each year. Wage payments equals Salaries and wages plus Compensation of officers as listed on the business income tax return.⁴

We use the population of individual-owned partnerships to compute partnership income shares by industry. See Smith, Yagan, Zidar and Zwick (2019) for additional discussion of these data.

We supplement these population-level data with the Integrated Business Data aggregates from the Statistics of Income (SOI) sample of corporate income tax returns from 1980 to 2012. We also produce additional collapses from an SOI corporate sample extract covering the years from 1994 to 2015.

Macroeconomic data. Aggregate data on corporate and non-corporate sector value added and labor compensation come from NIPA Tables. Gross value added of corporate business is from Table 1.14, line 1. Corporate sector compensation of employees is from Table 1.14, line 4. US GDP comes from Table 1.1.5, line 1.

Non-corporate sector value added components come from Table 1.13. National income for sole proprietors and partnerships is from Table 1.13, line 19. Compensation of workers within this sector is line 20. Proprietors' income is line 23. This table uses a national income,

³As of 2017, firms with more than 100 owners, with non-U.S.-individual owners, or with more than one class of stock cannot be S-corporations. Financial firms such as venture capital and private equity firms usually organize as partnerships because they have non-individual investors as limited partners.

⁴We cannot directly study changes in owners' wage payments because C-corporations are not linked to owners.

net of depreciation, concept to measure sectoral activity within and outside the corporate sector. We supplement this table with depreciation information for sole proprietorships and partnerships from Table 7.5, line 8, to derive a gross value added concept comparable to the concept for the corporate sector. We use the BEA post-tabulation adjustments for corporate-owned partnerships in Table 7.14, line 3, to adjust for double counting of partnership income in the SOI aggregates.

3 Recharacterized Labor within the Corporate Sector

Following Smith, Yagan, Zidar and Zwick (2019), we estimate how wages and profits evolve after a firm’s choice to reorganize from C-corporation form to S-corporation form with an event study framework:

$$Y_{it} = \sum_{k \in \{-5+, -4, -3, -2, 0, 1, 2, 3, 4, 5+\}} \gamma_k \mathbf{1}(t = k) + \alpha_i + \delta_t + \varepsilon_{it}, \quad (1)$$

where Y_{it} is either total wage payments or profits as a fraction of contemporaneous firm sales, γ_k are the coefficients of interest on event time indicators, α_i are firm fixed effects, and δ_t are calendar-year fixed effects. The full analysis sample includes 148K firms that switch corporate form between 2000 and 2010, that have maximum sales greater than \$100,000 in 2014 dollars, and that exist for at least 4 years before and after the switch event.

Figure 2A suggests that a nontrivial share of S-corporation profits would have been reported as labor payments if the firms organized as C-corporations. The graph shows an immediate divergence between profits and wages in the year of the switch. Wage payments fall sharply in the switching year by 2.2% on average relative to sales, and this decline in wage payments is offset by an average profit margin increase of 1.7%. In words, nearly two percent of sales are suddenly paid as profits instead of wages upon switching to S-corporate form.⁵

Figures 2B and 2C present subsample analyses focusing on the decline in labor payments when firms switch. Figure 2B plots effects for the five largest industries (NAICS 2-digit) in terms of S-corporation value added in 2014. Each industry shows a large decline in labor payments after switching. However, firms in white-collar services, such as law, consulting, and medicine, show much larger effects. These firms have relatively few non-owner workers,

⁵We estimate effects relative to firm sales rather than measures of value added to minimize the impact of accounting changes on the scaling variable and to permit loss firms to enter the sample. Aggregate gross value added (proxied by profits plus labor comp plus depreciation and interest deductions) and aggregate surplus (profits plus labor comp) equal 28.4% and 26.6%, respectively, of aggregate sales among S-corporations in 2014.

which raises the share of activity eligible for tax-motivated relabeling.

Figure 2C plots effects for firms divided into groups based on mean firm sales. We partition firms based on pre-period mean sales with boundaries at \$100K, \$500K, \$1M, \$10M, and \$100M in 2014 dollars. Scope for relabeled labor income is greater among smaller firms, as effect sizes monotonically decrease with firm size. Yet this fact does not imply these effects are irrelevant for aggregate purposes. Effect sizes exceed 2% of sales even among firms with \$1M to \$10M in sales and are meaningful (1.02% of sales) for firms in the \$10M to \$100M size group. Only the largest firms show no relabeling response upon switching. Firms with less than \$10M and firms with \$10M to \$100M in average sales respectively account for 51% and 31% of total S-corporation value added in 2014.

Our goal is to use this evidence to estimate how much S-corporation activity would be recorded as labor income within the corporate sector if all S-corporations were instead C-corporations. To transform these event studies into a post-switch estimate of recharacterized wages, define $\bar{\gamma}$ to be the average of γ_k for the post period $k \in 0, 1, 2, 3, 4$ where total wage payments relative to firm sales is the outcome.

We report three averages: $\bar{\gamma}_E$, $\bar{\gamma}_I$, and $\bar{\gamma}_S$ for equal, industry, and size weights, respectively. We estimate $\bar{\gamma}_E$ from the full analysis sample to be 2.2% of sales. This estimate equally weighs all firms within the analysis sample. However, Figures 2B and 2C show that recharacterized labor varies considerably by firm size and industry. We therefore estimate variants of equation (1) that permit γ_k to differ by firm size or industry. Specifically, we estimate

$$Y_{it} = \sum_{k \in \{-5+, -4, -3, -2, 0, 1, 2, 3, 4, 5+\}} \sum_g \gamma_{k,g} \mathbf{1}(t = k, i \in g) + a_i + d_t + e_{it}, \quad (2)$$

where g corresponds to a sales bin (defined as in Figure 2) or a NAICS 2-digit industry. If we estimate the average post-period effect $\bar{\gamma}_I$ at the industry level and compute the weighted average over all industries using industry-level, S-corporation value added as weights, the final estimate is 2.0% of sales. Similarly, if we estimate the average post-period effect $\bar{\gamma}_S$ at the size-group level and compute the weighted average using size-group level, S-corporation value-added as weights, the final estimate is 1.4% of sales.

The lower size-weighted estimate follows from larger firms having smaller declines in labor compensation as a share of their sales. This empirical feature is important for applying these estimates to study aggregate quantities. Thus, we use the size-weighted estimate below to measure S-corporation recharacterized wages.

4 Labor Shares after Pass-Through Adjustments

How much would the corporate sector labor share have declined if all formal businesses were C-corporations? We answer this question in two steps. First, we estimate recharacterized wages of S-corporations. Second, we reincorporate partnerships into the corporate sector.

4.1 Recharacterized Wages in the Corporate Sector

How much would the corporate sector labor share have declined if all S-corporations were C-corporations? To answer this question, we combine labor share data from the BEA, 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 (1.4% of sales per the size-weighted estimate). We recompute the corporate sector labor share after adding recharacterized wages to the numerator, leaving the denominator unchanged.

Figure 3A displays the results. In 2017, our estimate implies that \$110B of aggregate S-corporation profits are recharacterized wages. As a result, the aggregate labor share is understated by 1.0 percentage points due to S-corporation recharacterized wages. How important is this adjustment for the decline in the labor share? Comparing the average from 1978 to 1982 versus the average from 2013 to 2017, the labor share fell from 63.6% to 57.0%, or 6.6 percentage points. Our counterfactual series after this adjustment shows a decline of 5.6 percentage points, 15% smaller than in the raw data.

To be clear, the empirical argument is (a) an increasing share of corporate activity is occurring in S-corporation form rather than C-corporation form; and (b) S-corporations report less wages and more profits for tax purposes. The legal services industry (NAICS 5411) offers a striking example of these dynamics for an important industry within the skilled service sector (see Appendix Figure A.2). Between 1994 and 2016, the total number of law firms increased steadily. Nearly all of this growth came via S-corporations, which rose from 25K in 1994 to 115K in 2016. In contrast, the number of C-corporations declined. Thus, the typical law firm went from being a C-corporation to being a pass-through.

In terms of activity shares, C-corporations accounted for 75–80% of corporate receipts in 1994, and that share steadily declined to below 40% in recent years.⁶ Moreover, owners pay themselves quite differently when organized as C-corporations versus S-corporations. Even in the early 1990s, when C-corporations accounted for the majority of corporate receipts,

⁶While there are relatively few law firm partnerships, these firms are among the largest within the industry. Including partnership receipts, C-corporations account for less than 20% of total receipts in 2014. The number of partnerships has been relatively steady in recent years, rising slightly from 25K in 2000 to 30K in 2014.

these firms accounted for less than 20% of law firm profits. Instead, firm surplus was distributed as labor compensation to avoid additional payout tax obligations for owners. The evolution of law firms toward S-corporation and partnership form implies that income previously characterized as corporate sector labor payments now appears as S-corporation profits or non-corporate partnership income, which we quantify in the next section.

4.2 Formal Business Activity Outside the Corporate Sector

How much would the corporate sector labor share have declined if partnerships remained as C-corporations? To answer this question, we first estimate how much partnership value added in the national accounts would have been in the corporate sector. Second, we decompose this value added into labor and capital components and incorporate them into our corporate sector calculations.

To quantify the size of partnership value added, we start with components of non-corporate business value added from the BEA. This series relies on partnership and sole proprietor tax filings plus adjustments to align definitions with national income concepts.⁷ We add national income from NIPA Table 1.13 to depreciation from NIPA Table 7.5 for sole proprietorships and partnerships, which delivers gross value added for sole proprietorships and partnerships of \$3.26T in 2017.

Within this amount, there are three components: (1) non-proprietors' labor compensation (e.g., W-2 wage payments to employees of partnerships) is clearly labor income and accounts for \$1.12T; (2) rental income, net interest, and depreciation are clearly capital income and account for \$0.64T; and (3) proprietors' income (i.e., non-W-2 payments to sole proprietors and partners) is a mix of labor and capital and accounts for \$1.50T. Ignoring the labor component of proprietors' income, we would estimate a labor share within this sector of 34% ($= 1.12/3.26$). Including all of proprietors' income would deliver a labor share of 80% ($= 2.62/3.26$). Our approach described below classifies 56% to 71% of proprietors' income as labor income, which implies a labor share of 60% to 67% ($= (1.12 + [.56 \text{ or } .71] \times 1.50)/3.26$).⁸

Second, we estimate and exclude sole proprietorship and partnership activity that would have remained outside the corporate sector under our counterfactual adjustment. To do this, we scale down the levels of gross value added and its components for sole proprietorships

⁷The largest adjustments in the BEA series include misreporting, reducing payments to corporate partners that appear in the corporate sector's account, and reducing partnership payments for payments made to other partnerships that would otherwise be double-counted. See Pearce (2014) and Cooper, McClelland, Pearce, Prisinzano, Sullivan, Yagan, Zidar and Zwick (2016) for a discussion of how tiered partnerships complicate measurement of aggregate partnership income.

⁸Relative to prior work, our approach is conservative and thus may understate the size of the partnership adjustment. For example, Piketty, Saez and Zucman (2018) assume the labor share of proprietors' income is 70%.

and partnerships. For example, based on published SOI aggregates, in 2012 sole proprietorships generated 33% of combined partnership and sole proprietorship income.⁹ For 2012, we therefore allocate 33% of sole proprietorship and partnership gross value added to sole proprietorships and exclude this activity from our adjustment. We compute this allocation share each year to account for different growth rates between the partnership and sole proprietorship sectors.¹⁰ We apply the same adjustment for labor compensation and proprietors' income. These latter flows have grown faster than the other components of proprietorship and partnership gross value added, so it is important to apply the adjustment separately by component.

Third, we further reduce partnership value added, labor compensation, and proprietors' income by allocating the 1986 share of GDP for each component to remain outside the corporate sector. This reduction ensures there is no difference between the adjusted and unadjusted corporate sector amounts in 1986. Subsequently, as the non-corporate sector grows relative to GDP and the partnership sector grows relative to the sole proprietorship sector, the amount of partnership value added to be reincorporated increases.

Fourth, we divide overall partnership value added into labor income and non-labor income using an estimate of the labor share of proprietors' income derived from tax data. We develop this estimate in a consistent fashion to the estimate from the S-corporation adjustment. This approach measures how much owner compensation would take the form of wages if partnerships were C-corporations. Because we focus specifically on labor share measurement, this figure will be lower than our estimate of the broad human capital share of pass-through income (75%) in Smith, Yagan, Zidar and Zwick (2019). Nevertheless, this approach more precisely addresses the paper's question: how much would BEA's measured labor share change if pass-through firms were instead C-corporations?

We draw on linked owner-firm data for the S-corporation sector. We estimate the S-corporation wage share each year as S-corporation owner wages plus estimated S-corporation recharacterized wages (=1.4% of S-corporation revenues) divided by total S-corporation owner payments, including both profits and owner wages. During the period when our linked data are available, this figure falls from 71% in 2001 to 56% in 2014, which reflects the entry of larger, somewhat more capital-intensive firms into the S-corporation sector over time. We use 71% for years prior to 2001 and 56% for years after 2014. The last step is to recompute the corporate sector labor share after adding total partnership labor income to

⁹To be precise, we use the net income excluding deficit series from SOI and subtract the post-tabulation adjustment from the BEA for corporate-owned partnerships. In 2012, proprietorships earn \$357B of net income, partnerships earn \$1.068T, and the BEA adjustment is -\$354B.

¹⁰The SOI releases stop in 2012, so we use the 2012 figure to compute allocation shares for the years 2013 to 2017.

the numerator and total partnership value added to the denominator.

Figure 3B displays the results. In 2017, our estimate adds \$860B of partnership labor income and \$1.27T of partnership value added to the corporate sector.¹¹ As a result, the aggregate labor share is understated by 1.0 percentage points due to the bias away from relatively labor-intensive partnership activity. Our counterfactual series after this adjustment shows a decline from 63.6% to 58.2%, or 5.4 percentage points. This decline is 18% smaller than in the raw data.

The graph shows that the partnership adjustment makes little difference until the late 1990s. In recent years, the labor share in the partnership sector exceeds the labor share in the corporate sector by more than ten percentage points. This fact reflects compositional differences across corporate form. Partnerships are now predominantly service sector firms, such as law firms, consultancies, and financial services, whereas the corporate sector includes more capital-intensive activity, especially among C-corporations. One exception is that the partnership sector does include a large amount of rental housing, which is relatively capital-intensive. However, combining the BEA data with our partnership-wage-share estimate, we see in recent years the labor share in the partnership sector increased from 57.1% in 1987 to 67.6% in 2017. This rise owes to a surge in the share of proprietors' income relative to interest, taxes, and depreciation, which matches the rise in partnership profits since the 1990s. The time series closely follows state-level legal reforms that extended limited liability to partnerships and the 2001 tax cuts that increased the tax advantage of pass-throughs.

4.3 Overall Effect of Pass-Through Growth on the Labor Share

Figure 3C combines the S-corporation and partnership adjustments. In 2017, the adjusted aggregate labor share exceeds the unadjusted labor share by 1.9 percentage points. Our counterfactual series after both adjustments shows a decline of 4.6 percentage points, 30% smaller than in the raw data.

By increasing the share of economic activity in the corporate sector, our adjustment also alters the trend in corporate gross value added relative to GDP. Instead of flattening and declining since the 1980s, the series continues the trend extending back to the 1950s of increasing corporate activity. In 2017, adjusted corporate sector value added is 63% of GDP, instead of 56% in the unadjusted series (see Appendix Figure A.1).

¹¹The labor share of the added activity is 68%, which exceeds 60% because labor compensation and proprietors' income grew faster than the other components of partnership value added.

5 The Rise of Services and the Fall of Manufacturing [Preliminary]

This section revisits prominent explanations for the decline in labor share in light of our findings. We focus on the specific timing and industrial composition of the decline and relate these patterns to alternative explanations. While our emphasis on the rise of pass-throughs does not preclude the importance of these alternatives, it does provide new evidence that can help guide future investigation.

5.1 The Timing of the Aggregate Labor Share Decline

Karabarbounis and Neiman (2014) (henceforth KN) argue that a declining price of investment goods explains approximately half of the global decline in the labor share since the early 1980s. Does the time series of the U.S. labor share decline line up with the time series of the U.S. investment price decline?

Figure 4 compares the adjusted and unadjusted labor shares from Figure 3C with the relative price of U.S. investment goods from KN. Even in the unadjusted series, the labor share decline was concentrated in the twenty-first century, whereas the investment price decline was concentrated in the twentieth century. Our adjusted labor share series magnifies the discrepancy: all of the decline in our series occurred in the twenty-first century. This fact suggests that a declining investment price cannot by itself explain the evolution of the U.S. labor share. In the next section, we present evidence that manufacturing exhibited a decline in its labor share in the 1980s and 1990s. Declining investment prices may therefore explain a large part of the decline in manufacturing’s labor share.

Autor, Dorn, Katz, Patterson and Van Reenen (2017) (henceforth ADKPV) argue that rising industrial concentration (i.e., a rise of “superstar firms”) explains a large share of the decline in the U.S. labor share. Does the time series of the U.S. labor share decline line up with the time series of the U.S. concentration rise?

ADKPV present the time series of concentration within six broad industries. In manufacturing, utilities and transportation, and wholesale trade, concentration rose especially strongly in the 21st century relative to the 20th century. However in finance, services, and retail trade, concentration rose especially strongly in the 20th century. Hence, the time series of rising concentration presents a mixed picture with respect to our labor share series’s twenty-first century decline.

Table 2 lists more papers in this burgeoning literature (the list is incomplete and in progress). Column 2 states a mechanism discussed in each paper that may drive labor share

declines. Column 3 states whether the paper presents direct evidence for the mechanism being stronger since 2000. Most of these papers do not focus specifically on whether their mechanism strengthened in the 2000s. Two exceptions are Barkai (2016) and Autor and Salomons (2018). Barkai (2016) finds evidence of rising markups in the 2000s. Autor and Salomons (2018) emphasize a rise in labor-substituting technology since the 1980s, note the acceleration in the labor share’s decline since 2000, but do not argue this mechanism can account for the acceleration.

5.2 Industry Heterogeneity

Table 1 decomposes the adjustment into relative contributions by three-digit industry for 2014, the most recent year for which we have detailed industry aggregates for S-corporations and partnerships. For S-corporations, we combine the 2-digit industry estimates from equation (2) with value added shares within the S-corporation sector at the 3-digit industry level. The goal is to attribute more of the aggregate effect to industries with a relatively high share of value added or with relatively high recharacterized wages estimates. For partnerships, we compute each industry’s share of aggregate partnership profits and attribute missing labor compensation and gross value added in proportion to that industry’s profit share. We then estimate missing wages relative to applying the corporate sector’s 2014 labor share to missing gross value added.

The three most important industries are Professional, Scientific, and Technical Services (541), Outpatient Healthcare (621), and Other Financial Services (523), which respectively contribute 27%, 14%, and 11% of the labor share adjustment in 2017. Thus, more than half of the adjustment can be thought of as coming from skilled service firms in capital-light industries. Firms in these industries would include law firms, consultancies, doctors’ and dentists’ offices, and financial service firms such as hedge funds and private equity funds. One may therefore interpret our results as reflecting the rise of the skilled service sector (Buera and Kaboski, 2012) and the tendency of service-sector firms to elect pass-through form and optimize payments to owners in response to recent tax policy.

To put the effect of our adjustments in context of the overall evolution of the labor share, we follow Elsbey, Hobijn and Şahin (2013) and construct a “shift-share” or “within-vs-across” decomposition of the labor share decline from 1987 to 2017 within broadly defined industrial sectors. We decompose the aggregate labor share decline:

$$\Delta\lambda_{1987-2017} = \sum_I (\omega_{I,1987} \Delta\lambda_{I,1987-2017} + \Delta\omega_{I,1987-2017} \lambda_{I,2017}) \quad (3)$$

where I is an industry, λ_I is an industry’s labor share of gross value added, and ω_I is an industry’s share of total gross value added. The first term is the “shift” or “within” component, which measures an industry’s contribution holding its share of activity constant while allowing its labor share to change. The second term is the “share” or “across” component, which measures an industry’s contribution due to its evolving share of activity while holding its labor share fixed at the most recent level.

Because the BEA industry data is not separately available for the corporate versus non-corporate sector, the figures do not quantitatively match the analysis in the rest of the paper. Nevertheless, the qualitative results are quite strong and unlikely to depend on this difference.

Figure 5A plots for each industry the combined effect, which equals the sum of an industry’s within and across components. For each industry, we plot a series without pass-through adjustments and a series that incorporates the effect of recharacterized S-corporation wages and excess wages within partnerships. These adjustments only affect an industry’s within component, as the BEA industry data already combine the corporate and non-corporate sectors.

Trends in the manufacturing sector are largely responsible for the overall decline in the economy-wide labor share. The raw data show a relative contribution from manufacturing of 7.5 percentage points, nearly double the 3.8 percentage point overall decline in this series. The rise in services mitigates the decline, tending to increase the overall labor share. Our adjustment amplifies the offsetting influence of service sector growth, further isolating the central role of manufacturing. Figure 5B presents the cumulative decline in the aggregate labor share versus a counterfactual decline that zeroes out the within and across contributions from manufacturing. In the absence of this force, the aggregate labor share would have *risen* by 4 percentage points.

Appendix Figure A.3 separates the combined effect into within and across components, plots separate decompositions for the period from 1987 to 2000 and from 2000 to 2017, and compares the BEA data to the industry data in EU KLEMS (used in Karabarbounis and Neiman (2014)). The decline in manufacturing features prominently in all series and time periods, with approximately equal contributions from the within and across effects, and accelerated in the more recent window. The rise of services essentially offsets the decline in manufacturing in the early window, consistent with the constancy of the labor share until 2000, and then only partly offsets manufacturing in more recent years.

Column 4 of Table 2 lists whether key papers in the literature on labor share decline emphasize the role of manufacturing specifically. Karabarbounis and Neiman (2014), Elsby, Hobijn and Şahin (2013), Acemoglu and Restrepo (2017), and Kehrig and Vincent (2018)

stress mechanisms that differentially affect manufacturing: investment prices, offshoring, robots, and hyper-productive establishments, respectively.

6 Conclusion

Our key finding is that adjusting for pass-through growth raises the corporate sector labor share by 2.0 percentage points and implies the decline is overstated by 30% when taking this adjustment into account. In our adjusted series, the labor share decline in the United States is primarily a manufacturing phenomenon that was offset—fully until 2000 and partly since then—by the rise of services.

Our goal is to quantify the importance of accounting for pass-through growth for the labor share, not to provide a comprehensive analysis of all forces affecting the labor share's measurement. For example, Guvenen, Mataloni Jr, Rassier and Ruhl (2017) find that transfer pricing arrangements cause the balance of payments to be distorted, as profits are shifted overseas to avoid U.S. corporate taxation. Similarly, Tørsløv, Wier and Zucman (2018) find that U.S. multinational firms shift overseas profits to tax havens and avoid repatriating them, and this shifting has grown over time. Both transfer pricing and profit-shifting into tax havens may lead the corporate sector labor share to be overstated. We note that these forces operate mainly within the large public companies and manufacturing companies that are most prevalent in C-corporation form. These forces further underscore the importance of taxation for distorting the measurement of the labor share.

The pass-through sector's growth over time has amplified the extent to which the corporate sector labor share is understated. Looking forward following the tax reform in 2017, firms will face new incentives to select the tax-minimizing corporate form and owner-manager compensation. As these incentives are codified and understood, understanding trends in the labor share will continue to require grappling with the nuances of the tax code.

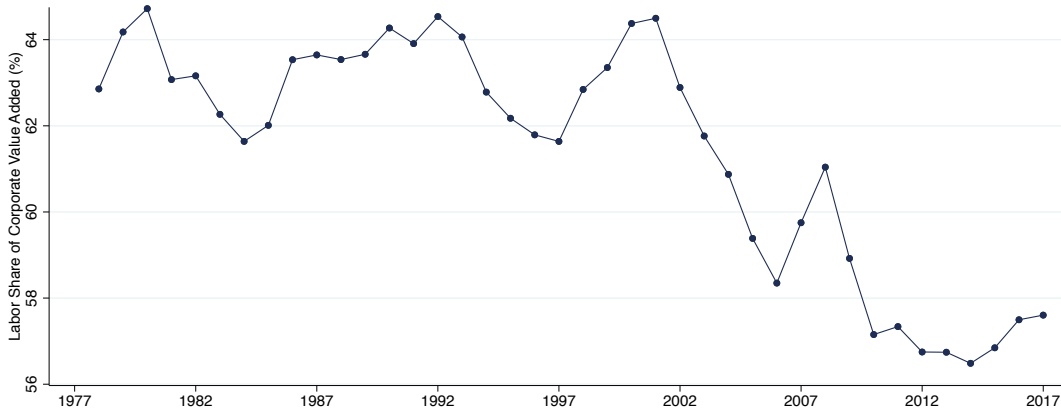
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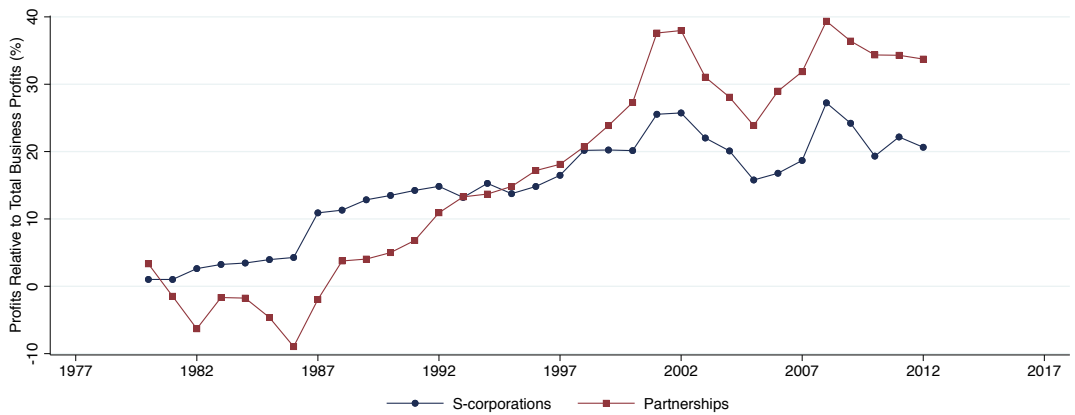
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Figure 1: The Evolution of Pass-Through and Corporate Activity in the United States

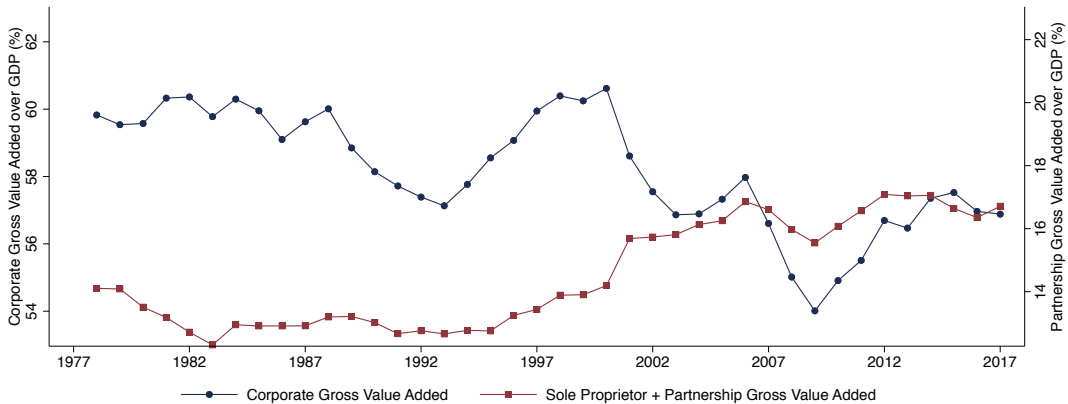
A. Corporate Sector Labor Share (1978–2017, BEA)



B. Business Activity in Pass-Through Form (1980–2012, SOI)

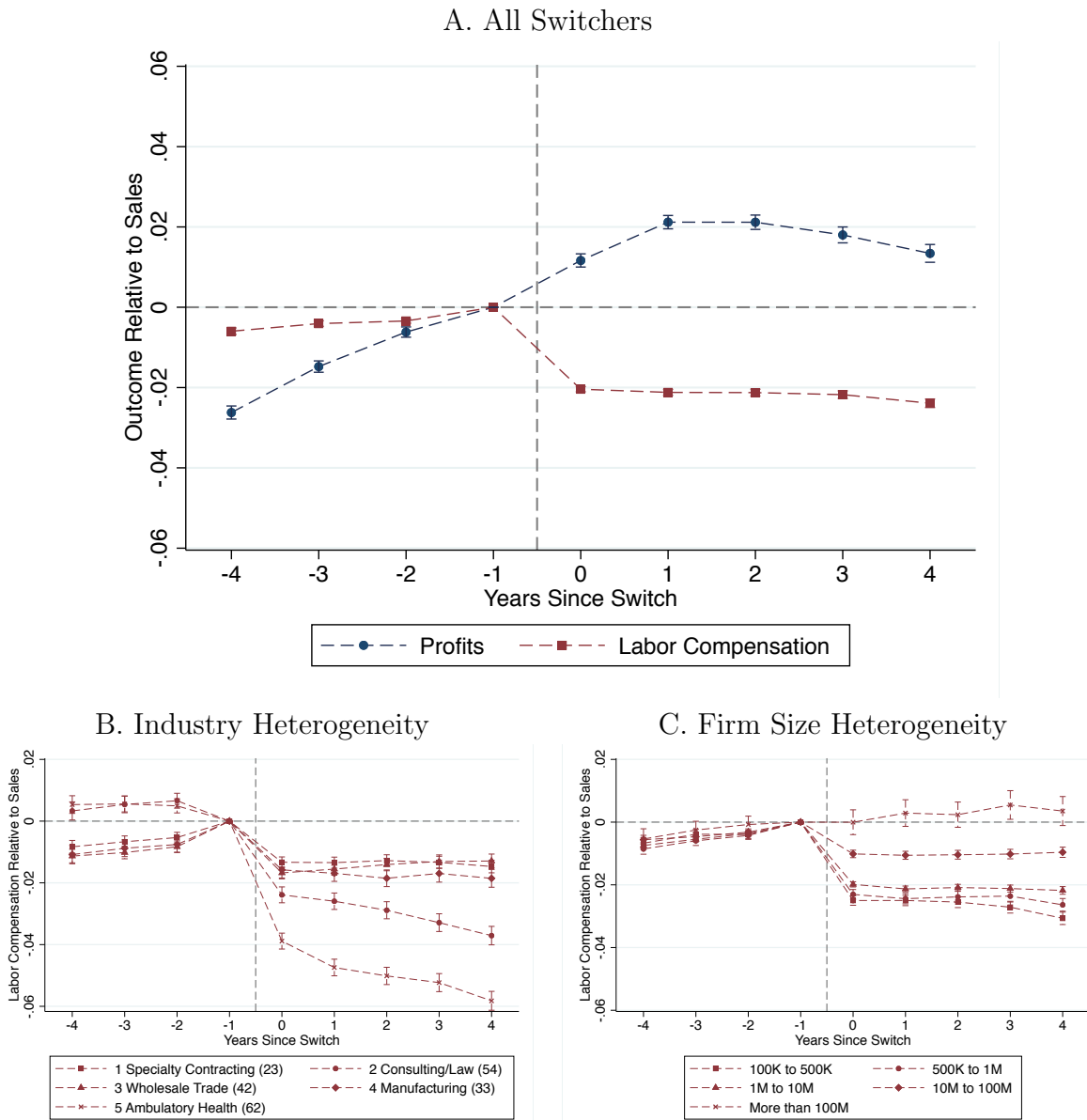


C. Corporate vs Non-Corporate Gross Value Added (1978–2017, BEA)



Notes: Panel (a) plots the labor share in the corporate sector defined as Corporate Sector Compensation of Employees over Corporate Sector Gross Value Added from the National Income and Product Accounts (NIPA) constructed by the Bureau of Economic Analysis. Panel (b) plots the share of profits earned by S-Corporations and Partnerships over aggregate profits earned by S-Corporations, Partnerships, C-Corporations, and Sole Proprietorships from the Statistics of Income database published by the U.S. Treasury. Panel (c) plots the Gross Value Added in the Corporate Sector over GDP from the NIPA tables.

Figure 2: Organizational Form Switches Reveal Recharacterized Wages



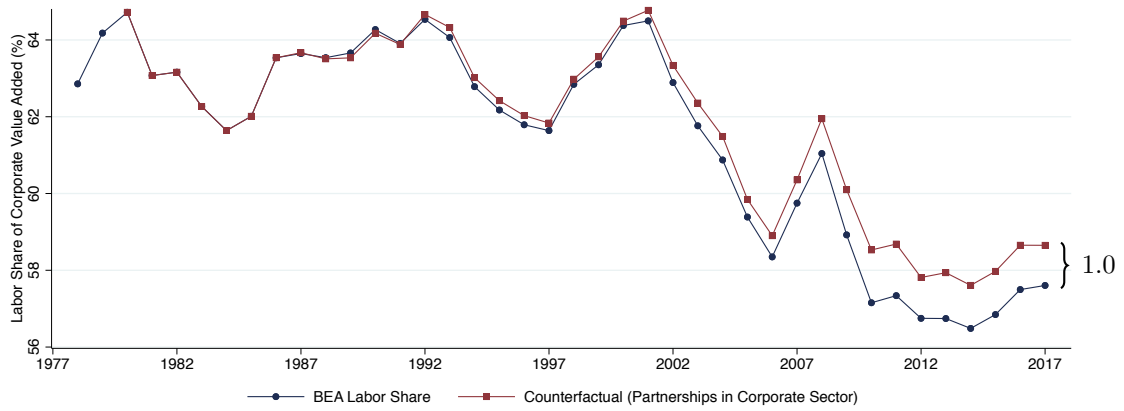
Notes: This figure presents event-study analyses examining how labor payments and profits change after a firm reorganizes from C-corporation form to S-corporation form. We run regressions as in equation (1) and plot the event-time coefficients, where the outcome variable is either total wage payments or profits over firm sales, and estimates include firm and calendar-year fixed effects. The sample includes switcher firms from between 2000 and 2010 with maximum sales greater than \$100K in 2014 dollars, which exist for at least four years before and after the switch event. Panel A plots the coefficients for firm-level profits and labor compensation for the full analysis sample. Panel B plots separate labor compensation coefficients for firms in the five largest (two-digit NAICS) industries in terms of S-corporation value added in 2014. Panel C plots separate labor compensation coefficients for firms in five firm-size buckets, as defined by average firm sales.

Figure 3: Adjusted Corporate Sector Labor Shares (1978–2017)

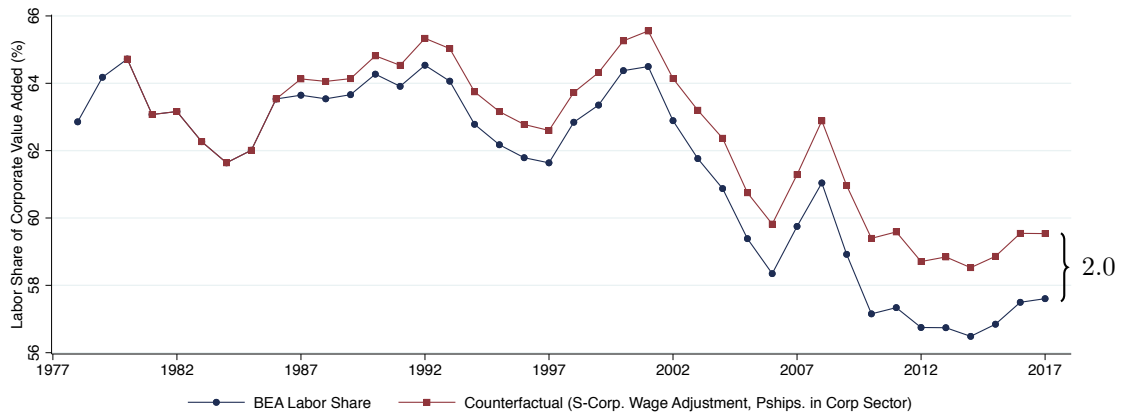
A. Adjusting for Recharacterized S-corporation Wages



B. Adjusting for Partnership Growth in Non-Corporate Sector

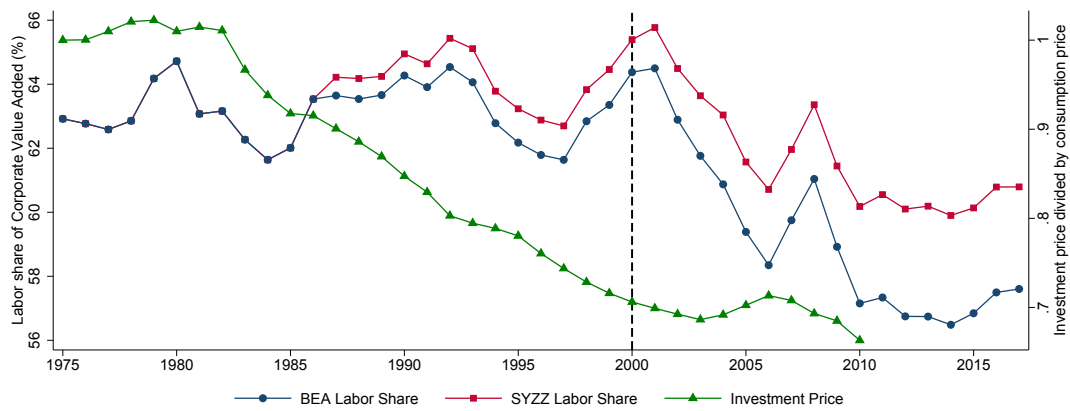


C. Combining Both Adjustments



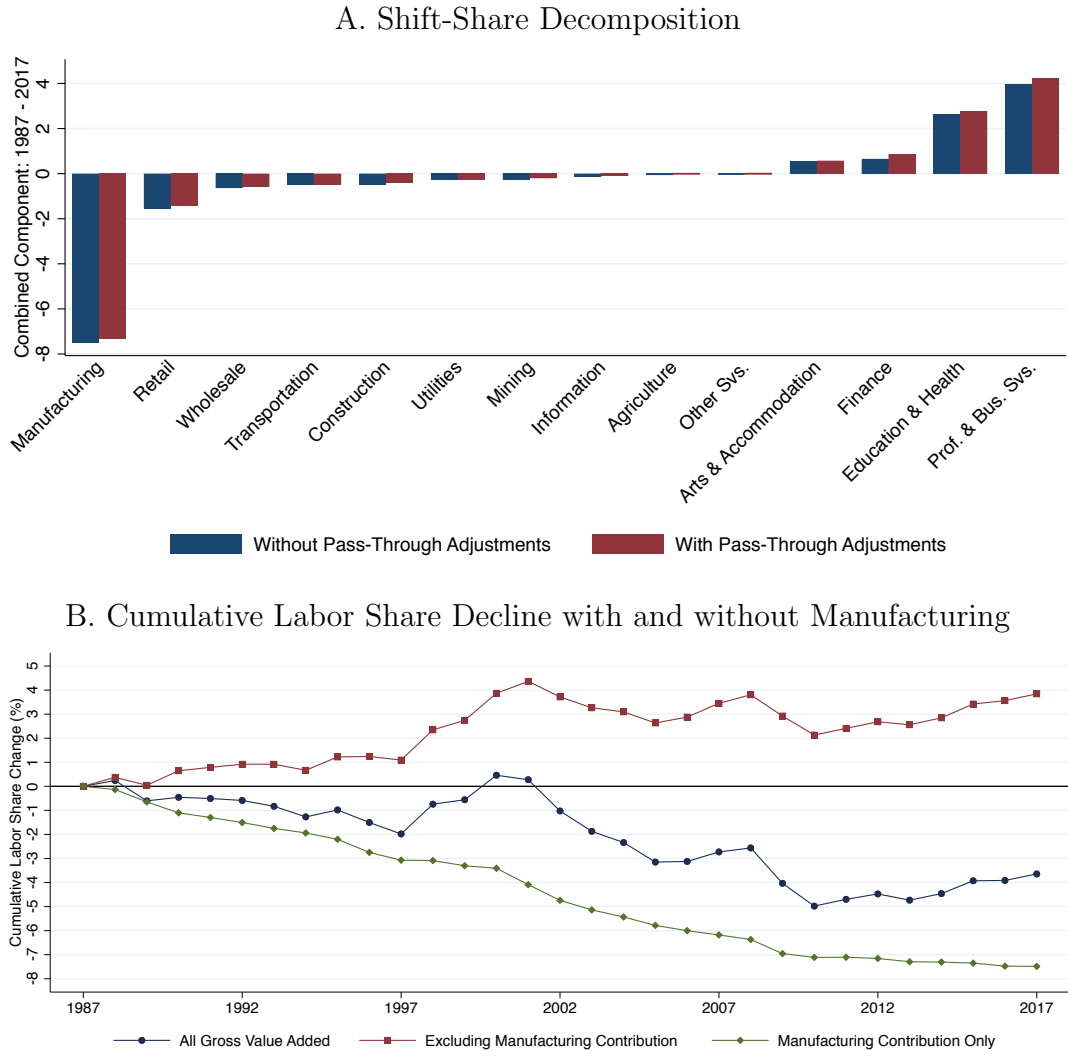
Notes: This figure presents adjusted estimates of the corporate sector labor share. Panel (a) presents an estimate of the corporate sector labor share after adjusting for the recharacterized wages of S-corporations. Panel (b) presents an estimate of the labor share after adjusting for businesses organized as partnerships. Panel (c) presents the estimated counterfactual labor share after combining both adjustments.

Figure 4: The Aggregate Labor Share Declined after the Investment Price Declined



Notes: This figure plots three series. The BEA Labor Share and SYZZ Labor Share (left axis) series are the same as those in Figure 3c. The third series (right axis) is the investment price series from Karabarbounis and Neiman (2014) and equals the U.S. domestic price of investment divided by the U.S. domestic price of consumption using Penn World Tables. The BEA Labor Share series and the Investment Price series are identical to those in Karabarbounis and Neiman (2014).

Figure 5: The Manufacturing Sector Drives the Labor Share Decline (1987–2017)



Notes: This figure presents evidence highlighting the role of the manufacturing sector in the decline of the labor share. Panel (a) presents the contribution of different industries to the decline in the labor share from 1987 to 2017. The bars in blue show the contributions in the raw data and the red bars show the contributions after adjusting both for the recharacterized wages of S-corporations and for businesses organized as partnerships. Panel (b) presents the cumulative change in the labor share from 1987 to 2017, excluding our adjustments for the pass-through sector. The blue line show the cumulative decline in the labor share of all gross value added, the red line shows the cumulative change in the labor share after excluding any change due to the manufacturing sector, and the green line shows the cumulative contribution from the manufacturing sector.

Table 1: Industry Composition of Labor Share Adjustments (2017, \$B)

| | NAICS | Industry Name | Combined | S-corporation | Partnership |
|--------------|-------|------------------------|--------------|---------------|--------------|
| 1 | 541 | Prof. & Tech. Services | 62.6 | 20.5 | 42.1 |
| 2 | 621 | Outpatient Healthcare | 31.3 | 20.3 | 11.1 |
| 3 | 523 | Other Financial | 26.5 | 3.3 | 23.2 |
| 4 | 211 | Oil & Gas Extraction | 8.2 | 0.3 | 7.9 |
| 5 | 238 | Specialty Trade | 7.2 | 5.3 | 1.9 |
| 6 | 423 | Durables Wholesalers | 5.9 | 4.0 | 1.9 |
| 7 | 561 | Admin. & Support | 5.2 | 3.6 | 1.6 |
| 8 | 424 | Nondurable Wholesalers | 5.0 | 2.7 | 2.3 |
| 9 | 517 | Broadcasting | 4.9 | 0.3 | 4.6 |
| 10 | 531 | Real Estate | 4.6 | 3.6 | 1.0 |
| 11 | 441 | Vehicle Dealers | 4.2 | 3.1 | 1.2 |
| 12 | 524 | Insurance Carriers | 4.1 | 2.9 | 1.2 |
| 13 | 111 | Crop Production | 3.3 | 0.6 | 2.7 |
| 14 | 522 | Banking | 3.2 | 1.6 | 1.6 |
| 15 | 623 | Nursing & Res. Care | 3.1 | 3.1 | 0.0 |
| 16 | 236 | Construction | 3.1 | 2.0 | 1.1 |
| 17 | 325 | Chem. Manufacturing | 2.6 | 0.5 | 2.2 |
| 18 | 332 | Metal Manufacturing | 2.3 | 1.7 | 0.6 |
| 19 | 324 | Petrol Manufacturing | 2.2 | 0.1 | 2.1 |
| 20 | 722 | Restaurants | 2.2 | 1.1 | 1.1 |
| Total | | | 233.6 | 108.5 | 125.1 |

Notes: Table 1 disaggregates the labor-share adjustments by three-digit NAICS industry, showing the adjustments by industry for the twenty industries with the largest combined labor-share adjustment. The Combined column presents the combined labor-share adjustment. The S-corporation column shows the contribution from S-corporation recharacterized wages. The Partnership column shows the contribution from reincorporating firms organized as partnerships with labor shares in excess of the corporate sector labor share.

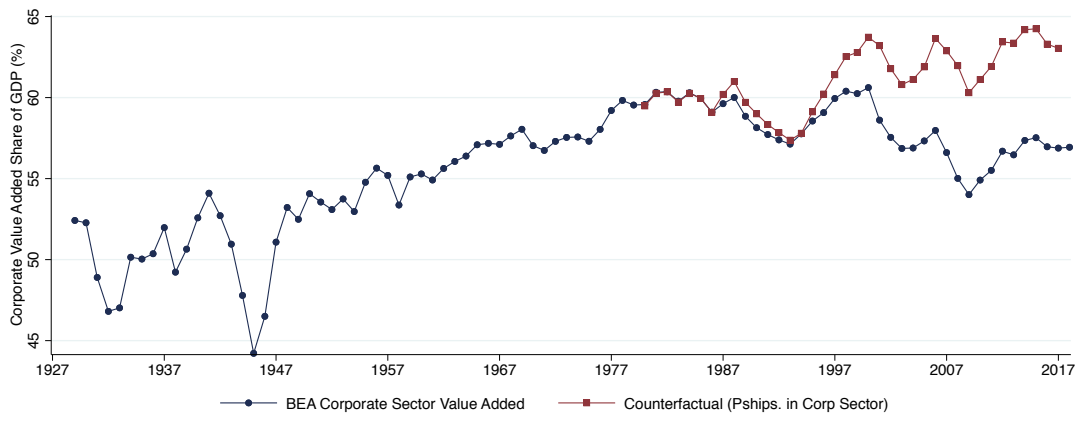
Table 2: Literature on Labor Share Decline (In Progress)

| Paper | Mechanism | Mainly in 2000s? | Mainly in mfg? |
|---|-------------------------------------|-------------------------|-----------------------|
| Karabarbounis and Neiman (2014) | Declining investment costs | No | Yes |
| ADKPV (2017) | Rising superstar firm concentration | Partly | No |
| Barkai (2016) | Rising markups | Yes | No |
| Rognlie (2016) | Rising housing value | Not analyzed | No |
| Elsby, Hobijn and Şahin (2013) | Rising offshoring | Not analyzed | Yes |
| Koh Santaaulalia-Llopis Zheng (2019) | Rising intellectual capital | Not analyzed | No |
| Acemoglu Restrepo (2019) | Rising robots | Not analyzed | Yes |
| Grossman, Helpman, Oberfield and Sampson (2017) | Slowing growth | Not analyzed | No |
| Autor and Salomons (2018) | Rising productivity | No | Yes |
| Kehrig Vincent (2018) | Rising “hyper-productive” share | Not analyzed | Yes |

A Appendix

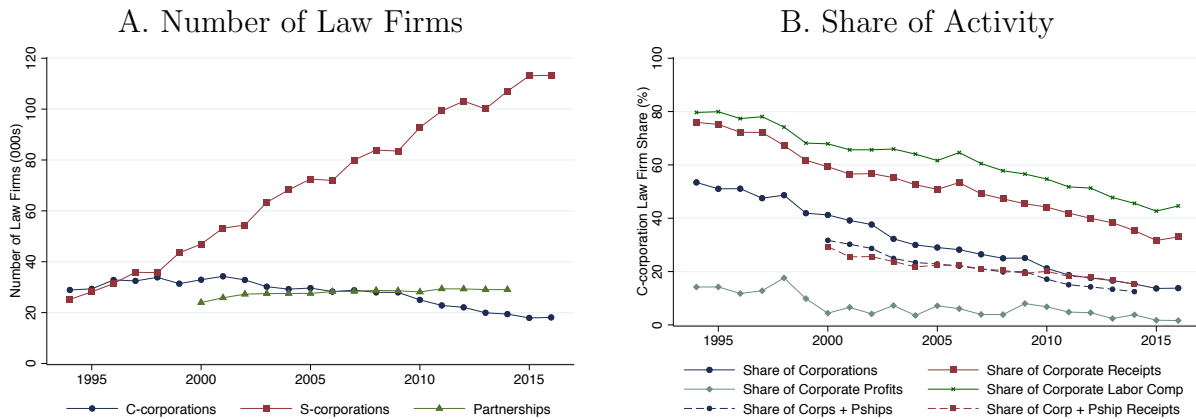
This appendix contains supplemental analysis.

Figure A.1: Adjusted Corporate Sector Value Added



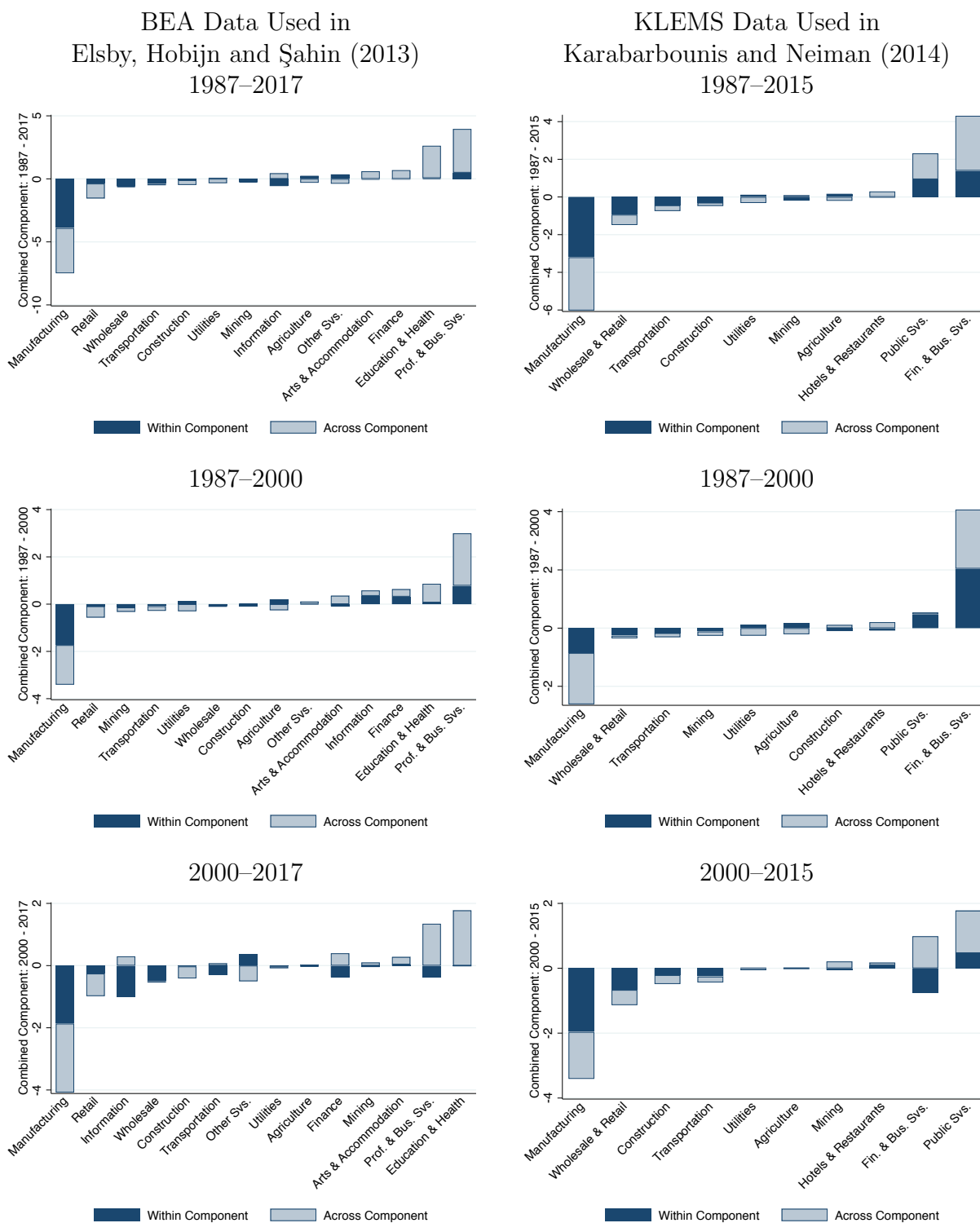
Notes: This figure plots value added in the corporate sector relative to GDP before and after our adjustment for businesses organized as partnerships.

Figure A.2: The Evolution of Organizational Form Choice for Lawyers



Notes: For tax years from 1998 onward, we use NAICS code 5411. For tax years prior to 1998, we use SOI Principal Business Activity code 8111.

Figure A.3: Sectoral Contributions to Labor Share Decline (All Value Added)



Notes: This figure shows the sectoral contributions to the change in the labor share, as in Figure 5, across different time periods and in different data sets. The figures in the left column show the contributions to the change in the labor share across sectors using BEA data as in Elsby, Hobijn and Şahin (2013). The figures in the right column show the contributions using the data from EU KLEMS as in Karabarounis and Neiman (2014). The figures in the top row show the contributions to the labor share change over the full sample, which is 1987 - 2017 using the BEA data and 1987 - 2015 using the EU KLEMS data. The second row shows the contributions from 1987 - 2000 in both datasets, while the bottom row shows the sectoral contributions from 2000 - 2017 in the BEA data and from 2000 - 2015 in the KLEMS data.