Comments on "Human Capitalists" by Eisfeldt, Falato, Xiaolan

Prepared for the 2022 issue of *NBER Macro Annual*

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June 2022

Aside from giving us a terrific title, Eisfeldt, Falato, and Xiaolan have written an important and provocative paper. They demonstrate a mastery of accounting intricacies and deftly deploy this knowledge to motivate compelling reduced form empirical analysis and transparent structural estimation.

The basic premise of the paper is straightforward: stock-based compensation has increased in importance over time and its measurement in the national accounts has not kept up. Accordingly, we are missing a large and increasing share of labor income in the national accounts.

This missing labor income implicates a panoply of central questions in contemporary economics. Among the key results, correcting for this mischaracterized income accounts for 1/3 of the labor share decline in manufacturing and all of the decline for non-production workers. In the structural estimation, this correction recovers the complementarity of skill and capital, explored in Krusell et al. (2000) and a rich subsequent literature. In addition, the model-implied estimates point toward substitution between wages and stock-based compensation; in other words, this compensation is better thought of as a component of the marginal product of labor rather than bargaining rents.

These are important and fascinating results. I see the paper as a major contribution with ample room for follow-on work. My comments will focus (1) on drawing some connections between these findings and other patterns in the data, (2) on providing additional data and calculations to support the basic premise of the paper, and (3) on using the paper's results to reinterpret other puzzles. In short, I see the paper as being even better than the authors do and congratulate them on this contribution.

The Rise of Pass-Through Business Income

One reason I am excited about this research agenda is that it complements and reinforces some ideas I've explored in recent years. This work began with (Cooper et al., 2016), which documents the dramatic rise of business activity in the pass-through sector since the late 1980s and connects this evolution to the beneficial tax treatment afforded such activity. In Smith et al. (2019), we find that much of the capital income of pass-through business owners should be better thought of as compensation to owner-manager human capital, broadly defined. Accounting for this mischaracterized labor income transforms our view of the typical top-1% earner. Smith et al. (Forthcoming) dollar-weights this result and shows that pass-through growth can account for approximately 1/3 of the decline in the corporate sector labor share.

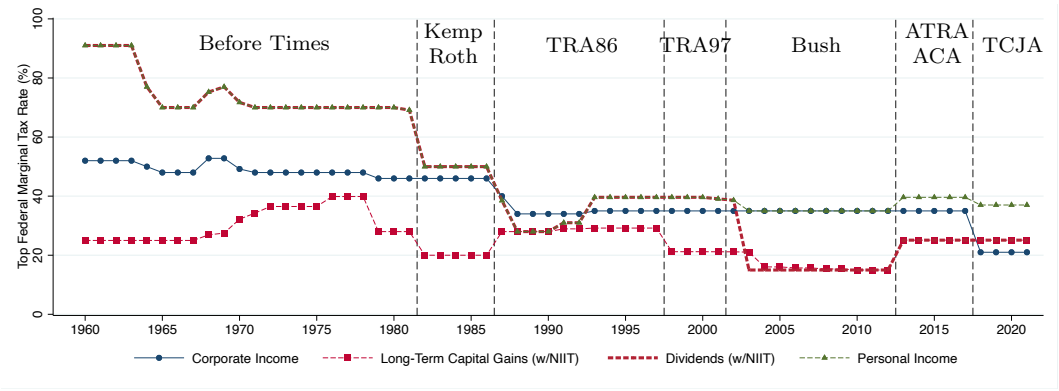
Both our pass-through story and the human capitalist story share a common ancestor in the tax reforms of the 1980s. The key to understanding these trends is recognizing the evolving tax incentives to compensate labor over the post-war period. Figure 1 plots the top federal marginal tax rates from 1960 to 2021 for corporate income, long-term capital gains, dividends, and personal income. I label the epoch between 1960 until the 1981 Kemp-Roth tax cuts as the *Before Times* and then label subsequent epochs using their antecedent tax changes.[1]

Consider first the incentives faced by entrepreneurs. In the Before Times, the tax code encouraged you to leave money in your firm, to consume in pretax dollars through your firm, and to generate paper losses to offset economic income whenever possible. With the tax changes in the 1980s came the incentive for traditional C-corporations to shift owner-manager compensation from corporate income to wages and bonuses to avoid the double tax on corporate income and distributions. For those entrepreneurs electing pass-through form, the lower personal income rates in the 1990s and 2000s encouraged substitution to profits rather than wages to avoid payroll, Medicare, and ACA tax surcharges.

It has always been appealing for entrepreneurs to recognize income to the extent possible as long-term capital gains. However, that incentive is stronger in recent decades because of lower corporate tax rates—which reduce the cost of leaving money in the firm—and lower interest rates—which raise the value of the option to defer. These incentives

[1]These are the Kemp-Roth tax cuts in 1981, the Tax Reform Act of 1986, the Tax Reform Act of 1997, the Bush tax cuts in 2002, the Obama tax increases in 2012, and the Tax Cuts and Jobs Act in 2017.

Figure 1: A Brief History of Tax Policy in the United States



Source: Tax Policy Center.

also apply to entrepreneurs in many countries across the developed world (Kopczuk and Zwick, 2020).

Now consider the incentives for firms to compensate top employees. In the Before Times, the tax code encouraged you to take your pay through non-cash perquisites or to defer pay through generous pension and life insurance arrangements. The same tax changes in the 1980s that encouraged owner-managers to take more pretax pay also encouraged employees to take more pay in the form of wages, bonuses, and stock. After the Clinton and Bush tax cuts, the attractiveness of stock compensation increased further due to lower long-term gains rates.

Thus, one strength of the paper is that the time series narrative nicely follows from the historical record of tax incentives for stock compensation. And this narrative comports with and extends existing evidence on entrepreneurial income. As a final note, these forces are especially important at the top. For example, they contribute to the sharp increase in top income inequality right around the Tax Reform Act of 1986 (TRA86) in the top 1% share of fiscal income (Figure 2). The series show sharp jumps in both the wage income and business income series from 1986 to 1988, which reflect the change in incentives for owner-managers and top workers.[2] One avenue for future research would be to explore the connection between rising stock compensation and top income inequality more closely.

[2]Some of this increase comes mechanically from changes in the loss limitation regime in TRA86 (Auten and Splinter, 2019).

Paid in Promises

The paper's main premise requires two conditions: (1) stock compensation has grown over time and (2) it is not properly recorded as labor income in the national accounts and other data sets. The case for the former condition is strong, but how true is the latter? If stock compensation appears on Form W-2 and is therefore captured in the BEA's labor income measures, then perhaps the paper's claims are overstated.

To evaluate this concern, I spent some time with the tax code, SEC filings, and practitioner reports. There are many ways in which employees are "paid in promises," in that they trade off current cash compensation for claims on future profits. First, there are non-qualified stock options (NSOs), which are recorded on Form W-2 when exercised and then treated subsequently as stock. Second, there are incentive stock options (ISOs), which are only ever recorded as capital gains. Third, there are restricted stock units (RSUs), which are recorded on Form W-2 when vested and then treated as stock. Last, there are various non-stock approaches, such as allowing special access to company stock via pension arrangements, ESOPs, and profit sharing plans.

My reading of the institutional details yielded several observations in favor of the idea that this compensation is not fully recorded in BEA labor income. First, early employees and founders of companies who receive stock options can reduce the share of income that appears as W-2 and thus reduce their total tax burden by converting their options in advance of vesting, via what's called an 83(b) election. This alternative is especially attractive to higher income and wealth recipients who can afford paying taxes early upon option exercise.

Second, review of public company stock plans in financial filings supports the idea that companies retain flexibility in whether they offer NSO, ISO, or RSU compensation. For example, in Paypal's IPO filing (SEC Form S-1), the firm lists 60.5M shares of common stock outstanding and 11.0M shares of stock reserved for outstanding and future option grants.[3] This option pool thus accounts for 18% of the fully diluted outstanding share pool, a significant potential ownership claim for the company's top workers.

Importantly, the option pool allows issuance of all three kinds of stock grants listed above. My understanding is that some combination of compensation advisers, HR, and employees negotiate the best fit compensation arrangement subject to these stock plans.

[3] https://www.sec.gov/Archives/edgar/data/1103415/000091205702023923/a2082068zs-1.htm

That best fit arrangement often involves focusing on ways to reduce ordinary income tax burdens (i.e., Form W-2 income) to the extent possible. At the same time, there are fewer options for avoiding W-2 income in more mature firms, when the stock is already quite valuable and the price is not growing quickly. Note this flexibility in the choice of option and difficulty in tracking what's granted support the paper's focus on reserved shares, as it smartly avoids these accounting issues.

Third, stock option compensation is very much a standard practice in high-growth private companies. According to a survey conducted by the National Association of Stock Plan Professionals in 2019, 90% of Silicon Valley companies grant options and 80% of these companies grant the tax-favored ISO form, compared to just 20% of public companies. Thus, for this slice of the population, the missing labor income issue is especially important.

Fourth, company stock remains a favorite asset class. Figure 3 presents data from the Survey of Consumer Finances for the population of non-business owners. I partition the data into total income groups: bottom 90%, P90-99, P99-99.9, and the top 0.1%. Ownership of company stock is rare in the bottom 90%, but rises to more than 50% for top 1% earners. Stock options appear to be more common for those outside the top 0.1%, with approximately 20% of top decile earners reporting some stock option ownership. For those that own stock, it accounts for between 40% and 60% of their total stock portfolios (excluding pensions) and between 20% and 40% of their non-housing wealth. Remarkably, even in the wake of Enron and the Dotcom era, it appears that company stock has increased in prevalence for these groups (with some survey noise for the top 0.1% group).

Finally, and perhaps part of the explanation for the prior fact, the value of stock as a currency has increased substantially since the 1980s (Figure 4). This trend reflects a combination of discount rate declines, reduced tax burdens, and other factors. For companies with the ability to pay in stock, this trend favors doing so relative to paying in cash.

Overall, this institutional deep dive suggests there are many reasons to believe the basic premise that much of this compensation is missing from BEA labor income, with increasing importance over time. I suspect the 30–40% assumption in the current paper may be conservative relative to the truth.

A Top-Down Test

Consider an alternative validation exercise for the paper's 1/3-of-the-labor-share result. Whereas the authors pursue a bottom-up, constructive approach for estimating the share of labor income that's missing, I will use aggregate data and the assumption that labor owns 10% of corporate equity to check the plausibility of their result "from the top down."

Table 1 presents data for 2017 from Smith et al. (Forthcoming) from the national accounts and our adjusted series. The latter adjusts corporate sector value added and employee compensation for the missing labor share due to the rise of pass-through business. Depending on the series, these aggregates suggest that if we want to account for 100% of the reduction in the labor share since the early 1980s, we need to find between $414B and $556B in "missing" labor compensation. These amounts, which equal 20% and 34% of profits, are too large relative to the 10% ownership share. However, if we only want to account for one-third of the reduction, then we only need to find 7–11% of corporate profits, right in line with the bottom-up ownership share.

Table 1: Cumulative Labor Share Decline with and without Manufacturing

Scenario	Raw BEA	SYZZ-Adjusted
Corporate GVA ($B)	11,090	12,161
Employee Comp ($B)	6,420	7,235
Corporate Profits in GVA ($B)	1,650	2,119
Labor Share	57.9%	59.5%
Target Labor Share	62.9%	62.9%
"Missing" Labor Comp ($B)	556	414
Labor Share of Profits for 100% of Missing	33.7%	19.5%
Labor Share of Profits for 1/3 of Missing	11.2%	6.5%

Source: Author calculations from Smith et al. (Forthcoming), Table 1.

We can use other data to benchmark this 10% number. If workers own 10% of corporate profits via stock compensation, then this ownership amounts to $165B in 2017. From aggregate IRS tabulations, $165B equals 9.6% of the $2.7T in total W-2 income for those with more than $100K in wages. If we distribute the $165B across the top 10%

of Compustat employees, of which there are 4.2 million, this ownership implies an additional $40K in pay. This ownership is 20% as large as total fiscal dividend and capital gains income, which is around $900B. It is less than 5% of total wage income of the top 10%, which equals $3.2T, and 15% if we assume that public company workers account for one-third of these workers.

The takeaway from all of these calculations is that the aggregate magnitudes required by this story are eminently plausible. Better data could help us determine whether they turn out to be too low.

The Human Capitalist Story Helps on Many Fronts

As a final comment, the reason I am so excited about this paper is that the human capitalist story helps explain many outstanding puzzles in macro labor.

First, the labor share decline in the US was concentrated in the 2000s. This time series fact neatly aligns with the rise in the value of missing labor compensation for human capitalists (e.g., Figure 1 in the paper).

Second, with the exception of those countries emerging either partly or fully from the Soviet Union, the US labor share decline was sharper than elsewhere (Figure 5). Given the size and depth of the stock market in the US and the large number of workers at public companies, the human capitalist story provides a mechanism that is uniquely American.

Third, the decline of the labor share features a central role played by superstar firms (Autor et al., 2020). Given such firms are typically public companies with the opportunity to pay their workers in stock, the human capitalist story applies especially to superstars.

Fourth, Koh, Santaeulàlia-Llopis and Zheng (2020) document the rising importance of intangible capital in the secular trend away from labor. Human capitalists produce many intangible capital assets (e.g., software). A rising role for intangible capital would naturally entail more compensation to its producers. Given the dynamic considerations in incentivizing such producers to work hard, deferred compensation and stock-based pay are natural responses to the agency problems that pervade these settings.

Fifth, the trend in the college premium in the US flattened in the late 1990s and has remained approximately constant over the past twenty years Finkelstein et al. (2022). If college workers are increasingly paid in stock as human capitalists and the college premium misses that income, then the trend may not have flattened after all.

Finally, the trend in the corporate sector labor share is driven by trends in manufacturing (Figure 6). In contrast to our pass-through story, the human capitalist story applies well to large, capital-intensive firms in manufacturing. Although, it is worth noting that the manufacturing contribution comes along with a massive decline in the number of manufacturing workers and in the manufacturing sector's share of domestic employment and capital. These trends do not appear within the scope of the human capitalist story to explain. Thus, there remains space to learn more about the manufacturing decline and its singular contribution to trends in the labor share.

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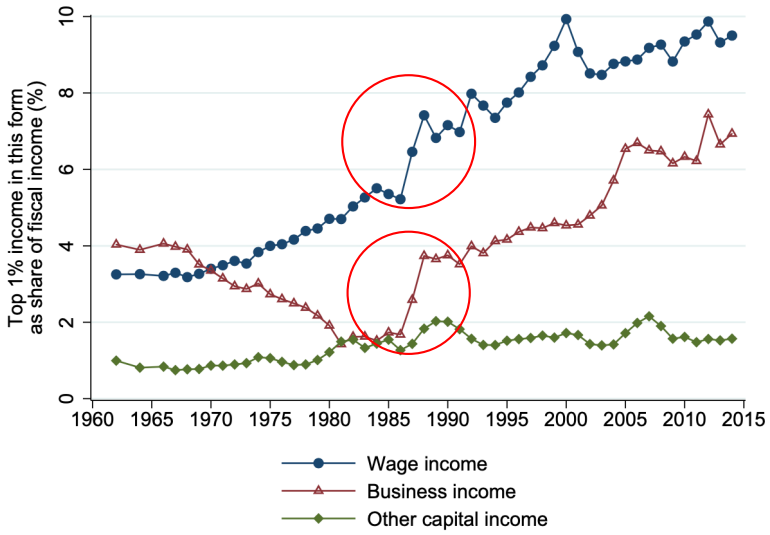
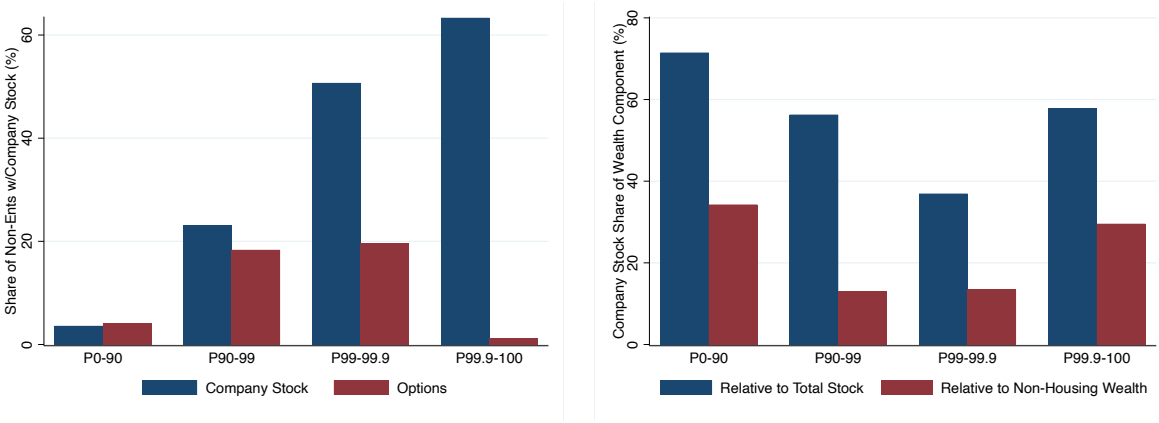
Figure 2: Top 1% Wage and Business Income Jumps Sharply around TRA86



Source: Smith et al. (2019).

Figure 3: Company Stock in the Portfolios of Non-Business Owners

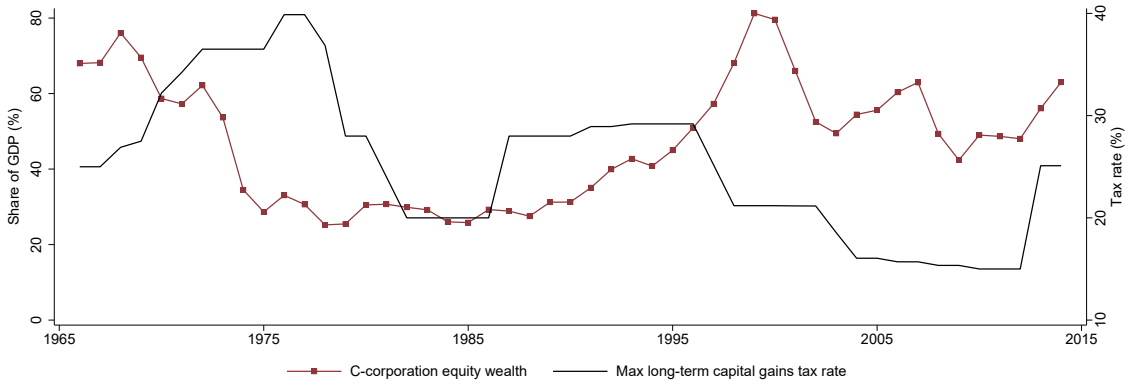
A. Company Stock Ownership in 2019



B. Company Stock Ownership over Time

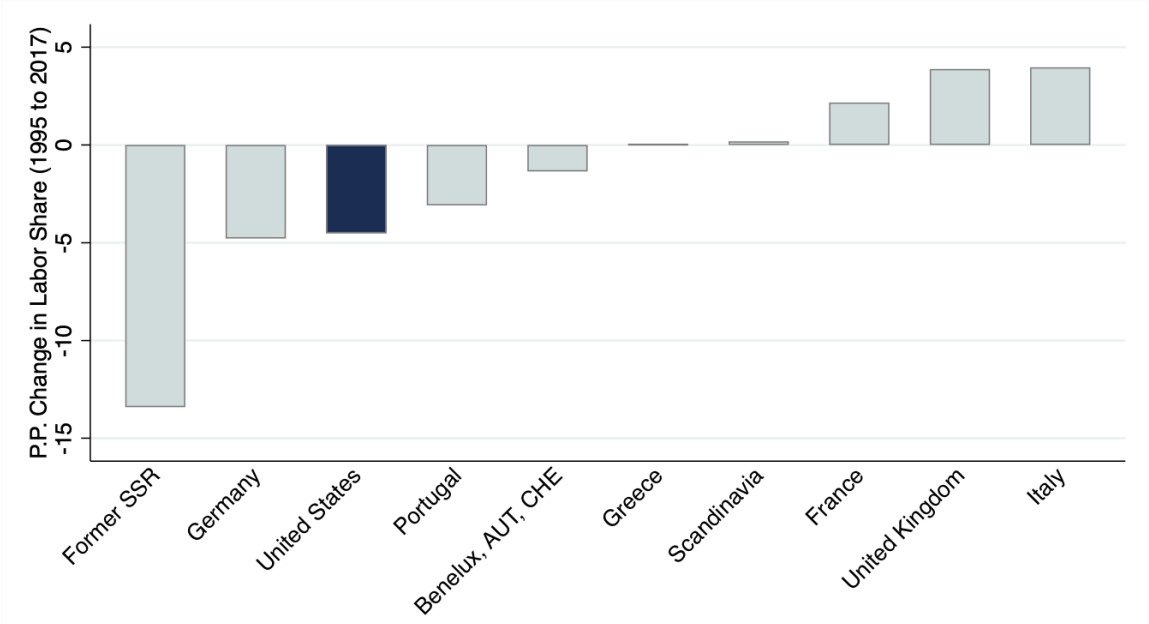
Source: Author calculations using the Survey of Consumer Finances. Groups are defined based on total income.

Figure 4: Total C-Corporation Wealth and Long-Term Capital Gains Tax Rates



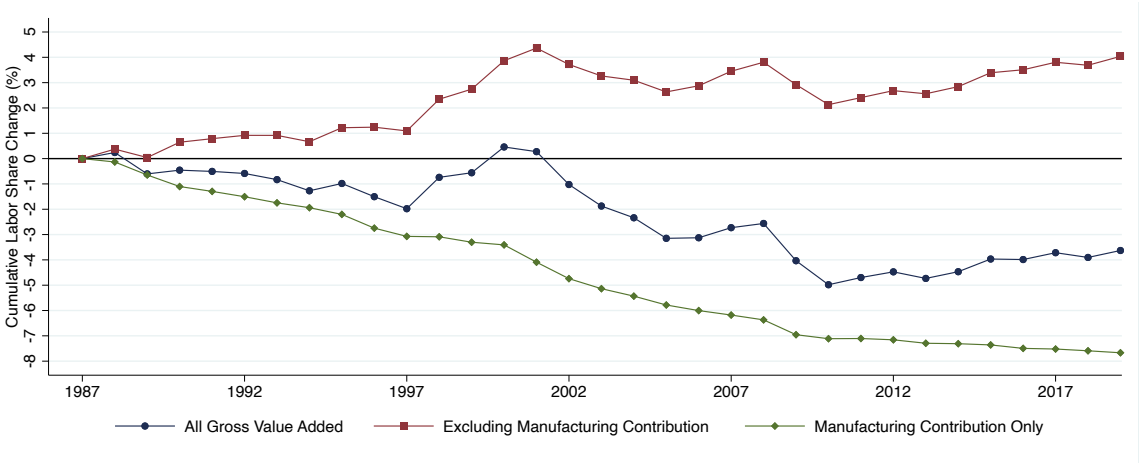
Source: Sarin et al. (Forthcoming).

Figure 5: The Labor Share Decline in the U.S. versus the OECD



Source: Smith et al. (Forthcoming), Appendix Figure A.7.

Figure 6: Cumulative Labor Share Decline with and without Manufacturing



Source: Smith et al. (Forthcoming), Appendix Figure A.6.