THE VALUE OF PRIVATE BUSINESS IN THE UNITED STATES *

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Abstract

Private companies account for almost half of aggregate sales and profits of the US economy, but valuing them is difficult due to lack of public market data. This paper uses two databases of private business transactions to estimates valuation ratios and aggregate wealth for the four major components of private business wealth: sole proprietorships, partnerships, S corporations, and private C corporations. Private businesses have large valuation discounts compared with public companies: 50-60% for S-corps, 80-90% for noncorporate businesses. We estimate aggregate private business wealth of $17.9 trillion in 2017, significantly more than the Financial Accounts estimates but less than the Survey of Consumer Finance.

Keywords: business valuation, wealth inequality, wealth tax
JEL Classification: E21

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1 Introduction

The rise in the number and economic importance of private businesses in the United States raises important measurement challenges from a macroeconomic and distributional standpoint. In 2017, private companies sold $16.0 trillion of goods and services and made pre-tax profits of $1.8 trillion, similar in magnitude to the $15.2 trillion in sales and $1.4 trillion in profits of public corporations. The rise of pass-through businesses[1], and decline in public corporations, has lead to a state in which one of the most important aspects of the macroeconomy and of household wealth is a highly opaque asset class, with no publicly released financial statements or market values from a stock exchange. The Financial Accounts (FA), the official compilation of wealth compiled by the Federal Reserve, values private companies largely using financial book values. While this may have made sense in the past, with the rise of intangible capital[2] there is an increasing divide between balance sheet statements and true economic value, which may lead these estimates to be inaccurate. The Survey of Consumer Finance (SCF), the main household survey of wealth in the US, values private businesses using self-reported values from private business owner/operators. While this estimate does not use book values, it relies upon a small sample of business owners, as well as the accuracy of business owners of knowing the market value of their companies. Business owners, while highly knowledgeable, may not have current up to date market transaction data for similar private businesses, and thus may not be in a position to accurately value their businesses.

Aside from their importance in aggregate measures of wealth, private businesses are also a crucial component of accurately measuring wealth inequality. Existing data sources, from either survey data or capitalized income tax data, estimate that the richest top 1% own 60-80% of all private business wealth. For the very top, private business wealth is a key asset class, making up a third to a half of the top .1%'s portfolio. Accurately measuring wealth inequality requires establishing the market value of private business wealth. In recent years, progressive politicians and economists have proposed two policies to combat wealth inequality: a wealth tax on families with wealth over $50 million, introduced by Senator Elizabeth Warren,[3] and a tax on unrealized capital gains, proposed by Senator Ron Wyden. The trickiest aspect of these plans is how to deal with private businesses: without a way to assess their market values, both plans will be difficult to implement.

In this paper, we use new data and new methods to this question in order to estimate the aggregate market value of private business wealth in the United States. To do so, we use two data sets on non-public transactions from Business Valuation Resources, a firm that specializes in valuing private firms. The first

[1] Documented in Smith et al. (2019).

[2] See, for example, Bhandari and McGrattan (2021) in a small business context or Corrado, Hulten and Sichel (2009) overall.

[3] https://www.warren.senate.gov/newsroom/press-releases/warren-jayapal-boyle-introduce-ultra-millionaire-tax-on-fortunes-over-50-million.

dataset, Bizcomps, includes data on transactions of sole proprietorships, and has never been used before. The second dataset, Dealstats, contains larger transactions of S corporations, partnerships, and C corporations, and has not been used to estimate aggregate business wealth. The data contains transaction level data from tens of thousands of business sales, including detailed data on income statements, balance sheets, and transaction values. To this data we wed the practical methodology, commonly used by valuation professionals, of estimating market value by comparison to similar businesses that have previously sold.[4]

We find that private companies are valued at moderate discounts to public corporations. For example, in 2017 the average ratio of a company's Enterprise Value to EBITDA (EV/EBITDA) for public firms, as measured by Compustat, was 13.6, while the same ratio for private S corporations was 6.6. Private company valuation ratios have much less of a pronounced trend than public companies, and display differences over the business cycle. Sole proprietorships show very little trend in valuation ratios over time.

We examine three determinants of firm valuations: legal form of organization, industry, and firm size. Across private firms, C corporations have the highest valuations, followed by partnerships, S corporations and sole proprietorships. There is a significant size premium, with larger companies selling at a premium, with the exception of sole proprietorships.

We compare transaction valuation ratios to self-reported ratios from the SCF. For corporate businesses and partnerships, valuation ratios are significantly higher than the SCF and follow divergent trends. For sole proprietorships, self-reported valuations are much higher than transacted valuations, providing evidence that these firm owners may overestimate the value of their business.

To estimate the aggregate value of private business wealth, we use the estimated valuation ratios to scale up aggregate data on sales, profits, and EBITDA from the IRS Statistics on Income. Our baseline estimate is an aggregate valuation for private corporations of \$17.9 trillion in 2017: \$6.5 trillion for S corporations, \$2.4 trillion for private C, \$8.5 trillion for partnerships, \$405.6 billion for sole proprietorships. This new time series on valuation serves as an independent estimate of the aggregate value of private business wealth, and can be in concert with other estimates from the FA, which uses mainly book values, and the Survey of Consumer Finance, which uses self-reported valuations.

Our estimates are substantially largely than the aggregates in the FA; for example, in 2017 our total for private businesses was almost triple the aggregate value of \$6.8 trillion from the FA. The biggest differences were for partnerships (\$8.5 trillion in 2017 compared with \$721.0 billion in the FA) and S corporations (\$6.5 trillion in 2017 compared with \$4.0 trillion in the FA). Our estimate

[4]Formally, in the private business valuation profession, this is known as the "market approach": see Pratt, Niculita et al. (2000), chapters 11 and 12, or Goedhart, Koller and Wessels (2015), chapter 16. The American Society of Appraisers Business Valuation Standards recognizes the "market approach" as one of the three pillars of business valuation. This is also recognized in the Institute of Business Appraisers 'Business Appraisal Standards'. For a recent paper using this approach, see Smith et al. (2020).

wealth totals are quite close to the SCF; although the SCF has lower valuation ratios, the higher reported revenue and profits lead to similar overall valuations.

The results of this paper have direct implications for the measures of wealth inequality, as well as revenue estimates under a wealth or capital gains tax. The higher valuations of private businesses increase the top 1% wealth share from 34.9% to 40.3% in 2017, and top .1% from 18.2% to 22.3%. A 1% on wealth of the top .1% would raise a mechanical $96.7 billion ($1058.7 billion over 10 years) from private businesses alone. A tax on unrealized capital gains for families in the top .1% would raise $922 billion from private business wealth alone over 10 years.

1.1 Literature

The closest paper to ours is Smith et al. (2020), who estimate private corporation valuations using a combination of (i) Compustat multiples for public firms (ii) private discounts from SDC platinum (iii) an additional discount reflecting the non-human capital contribution of pass-through specific profits. The main difference is the different data source for private transactions; SDC platinum is a small data set of 187 transactions that captures public company acquisitions of large private companies. The BVR data allows the computation of valuation ratios by granular legal form of organization, industry, and size cells.

Bhandari et al. (2020) use Pratt's stats, a previous version of Dealstats, to compare business yields (the inverse of valuation ratios) in the transaction data with the SCF, but do not estimate aggregate private business wealth. Two differences in our computation of valuation ratios are (i) the use of Bizcomps to compute valuation ratios for sole proprietorships (ii) the reweighting procedure we use. In computing aggregate valuation ratios we reweight the transaction data by industry, size cell, and legal form of organization to match aggregates from the IRS. This has a substantive effect on the estimate valuation ratios.

Our work is also related to the extensive literature on the 'private company discount', which broadly finds that private companies sell for discounts of 20-40% for similar public companies.[5] A subtle difference of our paper is that the previous literature is concerned with the *ceterus paribus* effect of being private on company valuations; i.e. finding private companies that look as similar as possible to pubic companies and comparing valuations. Since we are using our valuation ratios to gross up aggregate private business sales, we are rather concerned with average differences in valuations. We often find more substantial private company discounts of 50-90%, depending on firm size and legal structure.

[5] Koeplin, Sarin and Shapiro (2000) compares private transactions from SDC platinum with matched public transactions in Compustat, and finds private companies sell for a discount of 20-30%. Kooli, Kortas and L'her (2003) uses a database of private equity M&As, and finds discounts of 17-34%. De Franco et al. (2011) uses Pratt's stats and SDC platinum, restricted to public acquisitions of private targets, to estimate the private company discount, and finds a discount to 20-40%, similar to Officer (2007).

Our work is also related to the literature on the accuracy of equity valuation using multiplies. Liu, Nissim and Thomas (2002) finds that valuation of public companies using multiples is fairly precise using measures of forward earnings, while Kim and Ritter (1999) find the valuation of IPOS using forward P/E ratios has moderate predictive ability.

2 Data

We use two different data sets from Business Valuation Resources (BVR) to estimate valuation ratios: Dealstats, which collects transaction information from larger transactions, and Bizcomps, which has data from smaller sole proprietorships. BVR is a company that provides deal and market data to valuation professionals. It obtains its financial information from business brokers, broker associations, and transaction intermediaries. The benefits to brokers of submitting data is that they receive free access to all of the valuations in a year if they agree to submit data. BVR also obtains transaction information from SEC filings when public companies acquire private ones.

The company financials are either taken from financial statements or directly from tax returns. In practice business sales can be quite complicated, with transactions differing in the percent of the business that is sold and what is included in the sale price. To create an apples-to-apples comparison, BVR standardizes the transactions.[6]

Table 1 provides summary statistics, broken down by legal form of organization. There are 13,094 S corporations transactions, 6,734 for C corps, 6,326 for partnerships, and 14,087 for sole proprietorships. C corporations are the largest, with an average selling price of $34 million, followed by partnerships with an average price of $9.4 million, followed by S corps with average sale price of $4.1 million. Sole proprietorships are the smallest, selling for an average of $351,000. The larger C corporations likewise have higher sales ($22 million) and employees (14.7) than partnerships (sales of $6.4 million and 7.6 employees) and S-corps (sales of $3.9 million and 9.8 employees).

We multiply the valuation ratios to aggregate profit and sales data from the IRS, collected from business tax returns. The IRS Statistics on Income (SOI) has yearly data on the income statements and balance sheets of all US corporations, including pre-tax profits, EBITDA, sales, assets, book capital, and book equity. The data is aggregated into cells by legal form of organization, 2-digit NAICS industry, and firm sales bucket. As discussed below, we will construct valuation ratios in the transaction data by cell in order to estimate aggregate valuations. Table A.2 gives per/return summary statistics. BVR transactions have businesses that are larger on average than tax return data, with higher sales and profits per business.

One concern with using transaction data is that businesses that are sold may

[6]For details, see appendix A.1.

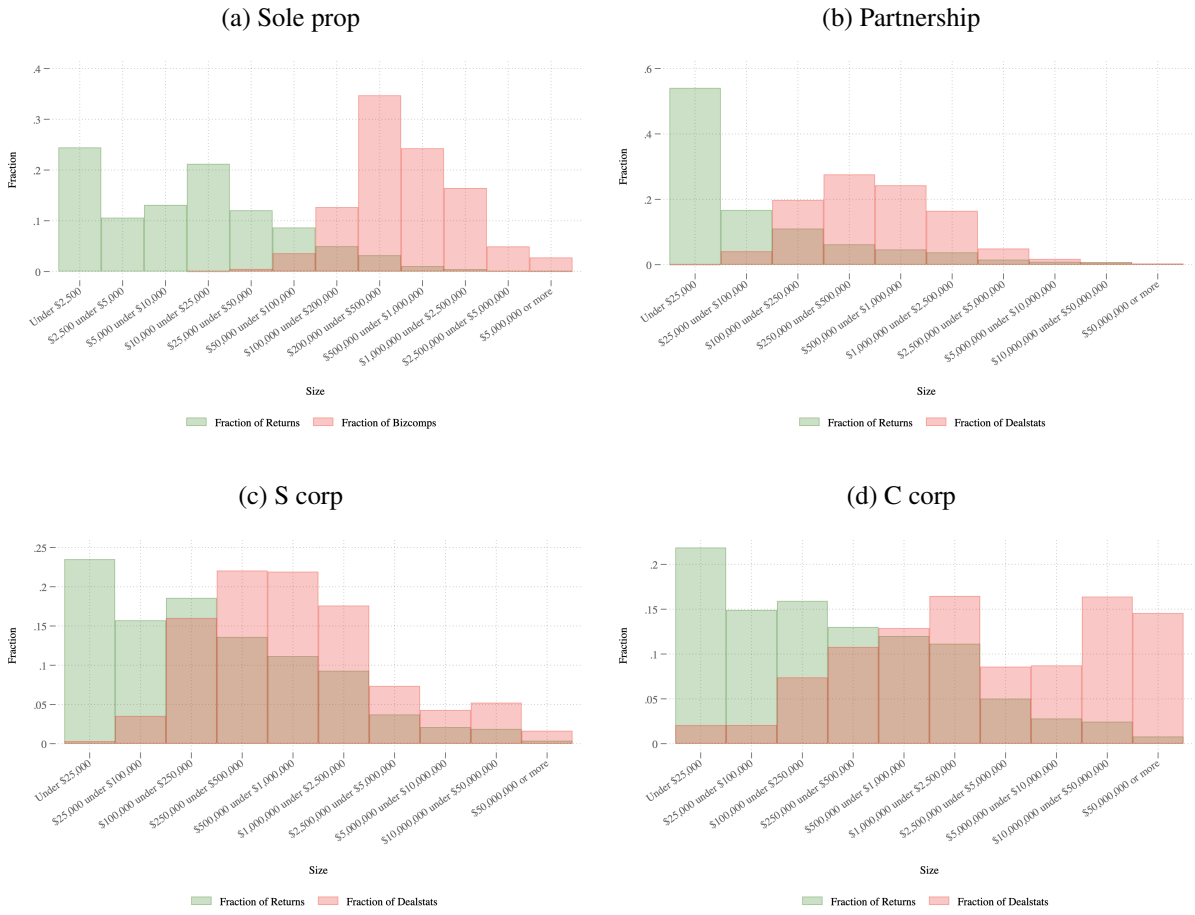
Table 1: BIZCOMPS/Dealstats Summary Statistics

	Bizcomps	*Dealstats*		
	Sole/part	C-Corporation	Partnership	S-Corporation
	Book Variables			
Net Sales	837.0	21466.1	6407.1	3882.2
	(1048.8)	(49128.4)	(27559.2)	(16143.1)
Sale Price	351.8	33912.9	9428.2	4042.1
	(456.9)	(81029.2)	(45815.7)	(22308.4)
Seller's Discretionary Earnings	161.5	282.3	183.7	236.6
	(167.1)	(395.4)	(311.8)	(355.5)
EBITDA	.	1401.4	818.7	426.5
	(.)	(6128.9)	(3908.2)	(1933.2)
Owners Compensation	.	122.6	55.9	77.1
	(.)	(168.1)	(88.8)	(105.6)
Inventory	22.9	2954.4	1710.2	742.7
	(58.5)	(8728.8)	(6716.7)	(3697.1)
Franchise	0.046	1.02	1.08	1.05
	(0.21)	(0.14)	(0.27)	(0.22)
Days to Sell	229.0	226.5	227.4	235.9
	(171.1)	(186.0)	(180.6)	(192.5)
Stock Transaction	.	0.44	0.099	0.099
	(.)	(0.50)	(0.30)	(0.30)
Asset Transaction	.	0.56	0.90	0.90
	(.)	(0.50)	(0.30)	(0.30)
Real Estate	.	23751.5	25428.1	21799.0
	(.)	(145419.7)	(150738.4)	(125826.2)
Real Estate Acquired	.	0.044	0.041	0.055
	(.)	(0.21)	(0.20)	(0.23)
	Valuation Ratios			
MV/Sales	0.52	0.98	0.67	0.64
	(0.32)	(1.00)	(0.66)	(0.57)
MV/SDE	2.14	3.22	2.70	2.97
	(1.32)	(2.42)	(1.89)	(2.06)
MV/EBITDA	.	9.13	5.37	5.94
	(.)	(7.80)	(6.05)	(6.18)
MV/Earnings Before Taxes	.	9.92	5.45	6.21
	(.)	(8.79)	(6.60)	(6.73)
	Employment Variables			
Number of Employees	8.2	13.8	7.6	9.7
	(8.6)	(22.3)	(12.3)	(15.1)
Full-time	6.2	.	.	.
	(6.8)	(.)	(.)	(.)
Part-time	4.9	.	.	.
	(6.2)	(.)	(.)	(.)
Observations:	14087	6734	6326	13094

Notes: Data from Business Valuation Resources. Table values are means, with standard deviations in parentheses.

not be representative of the universe of firms. This could happen if businesses that are sold are fundamentally different than businesses that are not for sale, or if BVR transactions were non-representative of businesses that sold. Figure 1 compares the sales distribution of the transaction data from BVR to the IRS. In general, the businesses that are sold are larger than the typical business, and are concentrated in the upper tails of the distribution. Sole proprietorships have the largest discrepancy; while most tax returns report sales under $50,000, transactions report sales that are almost always greater than $50,000.[7]

Figure 1: Comparison of firm size, BVR vs IRS



Notes: Data from BVR and IRS SOI.

Figure A.1 compares the industry composition of BVR and IRS data. The figure shows the fraction of transactions that are in each 2-digit NAICS industry minus the fraction of businesses in the tax data. There are significant differences in industry composition. C corporation transactions are overweight manufac-

[7] As discussed in section 5.1, part of this discrepancy is due to the fact that many sole proprietorship tax returns are independent contractors or gig economy workers and not businesses.

turing and finance compared with tax returns, and underweight construction. S corporation transactions are overweight restaurants and manufacturing, and underweight construction and real estate. Partnerships are underweight real estate. Sole proprietorships are overweight restaurants and underweight construction.

To the extent that valuations ratios differ across industries or the firm size distribution, we will have to adjust our estimates of aggregate private business wealth to account for the fact that the transaction data is not representative of aggregate business data. We do so by estimating valuation ratios within industry-size cells. If average firm valuations are approximately constant within the cells, this method will produced an unbiased estimate of aggregate firm valuations.

3 Methodology

There are a number of factors why private companies are valued differently than their public company counterparts. The most obvious difference is in their liquidity;[8] whereas public stocks can be sold on open exchanges, selling private companies is a long and complicated process of matching buyer to seller; in our data, it takes over 200 days on average to sell a business. A second factor is differences in the risk of a private company, both in terms of the standard correlation with overall market, as well as potentially non-insurable idiosyncratic risk of business ownership.[9] Another potential difference is in the growth rate of the firm: from the logic of a standard Gordon growth model, differences in firm growth rates should be associated with different valuations. Another difference can result from the fact that part of the profits and sales of private businesses are embodied in the human capital of the owners, and thus are non-transferrable when the business is sold.[10] There are also differences in the tax treatments of pass-through businesses that may affect firm value. Finally, differences in accounting practices may also lead to different observed valuations.

The basis of our valuation methodology is closely related to "market approach', one of the most common methods used by business appraisers.[11] There are two steps to this process of valuing a business (i) finding similar private transactions, known as comparables (ii) scaling the market prices of comparable assets to a common variable to generate standardized prices that are comparable. The analogy in valuing a home would be standardizing the price per square foot, or the number of bedrooms; in valuing businesses we standardize the price per amount of profits of sales. All things equal, a smaller house should sell for less, and in the context of equities a stock with lower earnings should sell for less. The standardized scaling ratio for business transactions are known as valuation

[8] See, for example, the literature on the 'discount for lack of marketability' (Longstaff (1995)).

[9] See, for example, De Nardi and Villamil (2009), Peter (2019) and Robinson (2012).

[10] See the arguments in Smith et al. (2019).

[11] For details, see see Pratt, Niculita et al. (2000) , Aswath Damodaran (Damodaran (2016)) and the McKinsey company (see Goedhart, Koller and Wessels (2015)).

ratios.

In order to estimate valuations for individual firms, it is common for industry practitioners and academic studies to compute centralized tendencies of firm-specific observed valuation ratios: $\beta_t^{f,obs} = \frac{MV_t^f}{\text{scale}_t^f}$, where scale_t^f is a *scaling* variable like profits or sales.[12] If we had a random sample of firms in our transaction data, we could estimate a single mean[13] of β_t^f and use it to scale up aggregate profits and sales from the IRS. However, as discussed above, our transaction data is not a random sample of firms; transactions are over or underweight certain industries, and tend to be larger than average. For this reason, we will estimate valuation ratios by industry and firm size cells, and then multiply these totals to the IRS data on aggregate sales and profits for the same cells.

In essence, we are estimating firm valuation using comparables from private companies within the same industry, legal structure, size cell, and year.[14] We estimate the cell specific valuation ratios by regressing valuation ratios on dummy variables for legal form of organization, industry, size, and year. We run regressions of the form

$$\beta_{ligt}^{f,obs} = \alpha_l + \delta_g + \theta_t + \gamma_i + \epsilon_{ft} \tag{1}$$

Here α_l are legal form of organization fixed effects, δ_g are size group fixed effects, γ_i are industry fixed effects and θ_t are year fixed effects. We then take the predicted valuation ratios $\widehat{\beta_{ligt}}$ at the cell level as our main measure of valuation ratios. To allow the effects of industry, legal form, and size to change over time, we interact each of the dummy variables with three time period dummies.

For each legal structure, we focus on the valuation ratios that are most commonly used by practitioners. For sole proprietorships, we use two valuation ratios: (i) enterprise value to seller's discretionary earnings (SDE) (ii) enterprise value to sales. SDE differs from firm profits in that it also includes the firm's payments to the owner. This is a necessary adjustment since firms have leeway in paying the owners in profits versus in wages or other benefits.[15] For private C corps, S corps, and partnerships, we use EV/EBITDA and EV/Sales.

To test the performance of our methodology in-sample, for each firm in our transaction data we estimate valuations using the predicted valuation ratio by

[12] Agrrawal et al. (2010) reviews the academic literature on how valuation ratios are summarized, and finds no consistent methodology between simple means, medians, and geometric means. Kim and Ritter (1999) value IPOS use medians and geometric means of comparable firm P/Es. Cheng and McNamara (2000) study the value of public firms, and uses median valuation ratios. Lie and Lie (2002) uses the simple arithmetic mean, while Liu, Nissim and Thomas (2002) uses the harmonic mean.

[13] Or other centralized tedency such as median, mode, etc.

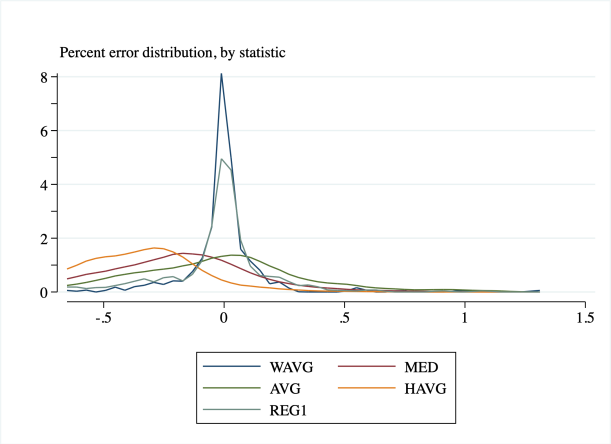
[14] The legal structures we consider are sole proprietorship, partnerships, S-corporations, and private C corporations.

[15] According to BVR, SDE is the most common ways small businesses are valued in practice. SDE is defined as adding net income before taxes plus amortization, depreciation, interest, owner's compensation, owner's benefits, on-business related expenses, and onetime-only expenses.

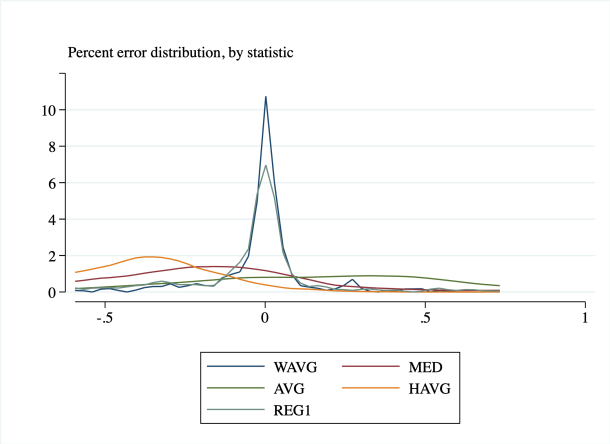
cell, leaving out the firm when computing its own valuation ratio. We then aggregate the data to the industry level, and estimate percentage errors between estimated aggregate firm values and actual firm values. We compare the performance of the ratio of means statistic with other common methods of aggregating firm specific valuation ratios: means, medians, harmonic average, and the coefficient from regressing market value on the scaling variable. Figure 2 shows the percent error distribution for S corporations, using sales as a scaling variable. Of all of the statistics the ratio of means performs the best, with a mean absolute percentage error of 11%.

Figure 2: Valuation methodology: percent error by statistic

(a) Sales



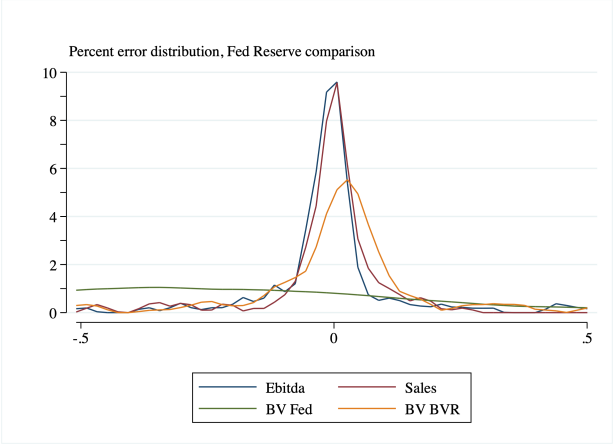
(b) Ebitda



Notes: Data from BVR.

We also test the performance of our methodology in-sample by comparing our method to that used by the Financial Accounts, who uses public company data from Compustat to construct valuation ratios of market value to book value. We use the same valuation ratios as the Financial Accounts, and apply them to the firm specific book values in our sample to generate predicted valuations. We then estimate prediction errors as the difference between predicted and actual market values at the industry-year level. Figure 3 (a) shows the errors for our methodology are much more concentrated around 0 than using the Federal Reserve's methodology. The mean percent absolute error for EBITDA is 8.7% using our method, compared with 36% using the Financial Accounts methodology.

Figure 3: Valuation methodology: comparison with Federal Reserve



Notes: Data from BVR and the Federal Reserve.

To estimate aggregate private business wealth, we multiply our constructed valuation ratios to the relevant base in the IRS tax data cell-by-cell. For example, in 2014 the IRS SOI data shows 559,023 S corporations with NAICS 23, construction companies, with total sales of \$980.6 billion. Using Dealstats, we estimate an average market price to sales ratio of 0.81 in 2014. Our estimation for the aggregate value of construction companies is then given by \$794.3 trillion $= 0.81 \times 980.6$.

For private C corporations, since the data from the IRS contains both private and public corporations, in order to estimate the valuations of private companies only we have to net out any public corporation variable that is contained in the sample. To do so, we use data from Compustat and CRSP to calculate aggregate profits, sales, and all other variables by industry, year, and legal structure cell.[16] We then subtract these aggregates from the IRS totals, and the residual are the aggregate tax returns from private companies.

A problem with applying our valuation methods to data on sole proprietorship tax returns is that many tax returns from 'sole proprietorships' do not represent marketable businesses: they may also be independent contractors, freelancers, other gig economy workers, or other self-employed individuals.[17] In order to properly value sole proprietorships that are marketable businesses, we need to carve out these workers from the tax data. We will carve out marketable businesses from independent contractors using data from the SCF, County Business Patterns, and Economic Census.[18]

[16] While most public companies are "C" corporations, there are a few notable exceptions.

[17] See, for example, Bhandari et al. (2020) and Abraham et al. (2017).

[18] See discussion in section 5.1.

4 Valuation ratios

We begin our analysis by an examination of the relationship between observed valuation ratios $\beta_t^{f,obs} \equiv \frac{MV_t^f}{\text{scale}_t^f}$ and three factors: (i) industry (ii) legal form of organization (iii) firm size. We estimate the following model

$$\beta_t^{f,obs} = \upsilon + \alpha^s \mathbb{1}\{\text{S corp}\} + \alpha^p \mathbb{1}\{\text{Partnership}\} + \sum_{d=1}^{10} \delta_d \mathbb{1}\{\text{Size decile = d}\} + \theta_t + \gamma_i + \epsilon_{ft} \tag{2}$$

Here γ_i are industry fixed effects and θ_t are year fixed effects. We run the regression for two scale variables: $EV/EBITDA$ and $EV/Sales$. To estimate the relationship with firm size, each year we rank firms into deciles by the number of employees.

Table 2 columns (1) and (2) displays the results for Dealstats, showing that S corporations and partnerships are valued at a discount compared with private C corporations, with a lower $EV/EBITDA$ of 1.2 and 1.7, respectively, although their $EV/Sales$ ratios are comparable. There is a positive relationship between firm size and firm valuations: being in the top decile of size is associated with an increase in $EV/EBITDA$ of 1.3 and EV/SA of .11 compared with being in the 5th decile. The positive relationship between size and valuations is robust to different measures of firm size. Appendix table A.3 displays regression results for $EV/EBITDA$ and firm size deciles, where firms are ranked by sales, and for $EV/Sales$, with firms ranked by EBITDA. In both cases, there continues to be a strong relationship between size and valuation.[19] Columns (3) and (4) display results for Bizcomps, and show that for smaller sole proprietorships there is no longer a clear relationship between firm size and valuation ratios.

Appendix figure A.2 reports regression coefficients for industry fixed effects, and shows there is a moderate to large amount of variation of valuation ratios across industries. Construction, accommodation, and food services tend to have lower valuations, while information, finance, and professional services have higher valuations.

The regression results show a robust relationship between firm valuations and size, industry, and legal form of organization. They motivate our methodology of adjusting for these characteristics when estimating aggregate firm valuations.

[19] We note two exercises we do not perform: regression $EV/EBITDA$ ratios on firm size ranked by $EBITDA$, or on firm size ranked by EV; in both of these cases, the same variable would be on the left and right hand side of the regression and would show a spurious correlation due to either measurement error or random variation in valuations.

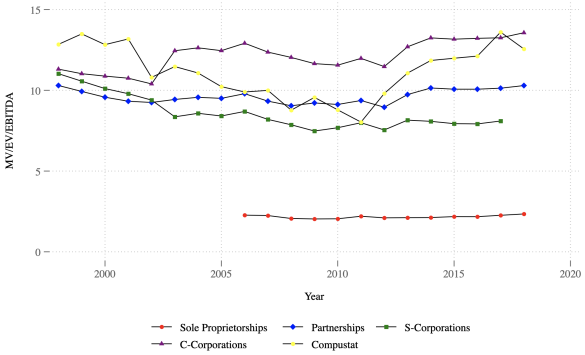
Table 2: Dealstats and Bizcomps, valuation factors

	(1)	(2)	(3)	(4)
	Deal EB	Deal SA	Biz SDE	Biz Sa
Size dec 1	-1.168***	0.140***	-0.118	0.0246
	[0.232]	[0.0313]	[0.0904]	[0.0192]
Size dec 2	-0.740***	0.0425**	-0.0444	0.00766
	[0.218]	[0.0197]	[0.0638]	[0.0149]
Size dec 3	-0.377	0.0216	-0.365*	0.00383
	[0.242]	[0.0196]	[0.185]	[0.0316]
Size dec 4	-0.154	0.0239	-0.102	0.000851
	[0.208]	[0.0163]	[0.0647]	[0.0176]
Size dec 5	0	0	0	0
	[.]	[.]	[.]	[.]
Size dec 6	0.587**	-0.00183	-0.0100	0.0108
	[0.248]	[0.0133]	[0.102]	[0.0147]
Size dec 7	0.913***	0.0232	-0.203*	-0.0181
	[0.309]	[0.0154]	[0.104]	[0.0124]
Size dec 8	0.477*	0.00513	-0.0628	-0.0198*
	[0.251]	[0.0153]	[0.0736]	[0.0116]
Size dec 9	1.244***	0.0439*	0.106	0.00935
	[0.294]	[0.0249]	[0.120]	[0.0186]
Size dec 10	1.314***	0.106***	-0.163**	-0.00440
	[0.283]	[0.0403]	[0.0702]	[0.0181]
Part	-1.721***	-0.00850		
	[0.262]	[0.0212]		
S corp	-1.234***	-0.0190		
	[0.283]	[0.0170]		
N	12200	18459	10850	11279
r2	0.0522	0.0122	0.00410	0.00527
dep_mean	5.350	0.590	2.300	0.540
cluster	Naics 3	Naics 3	Naics 3	Naics 3

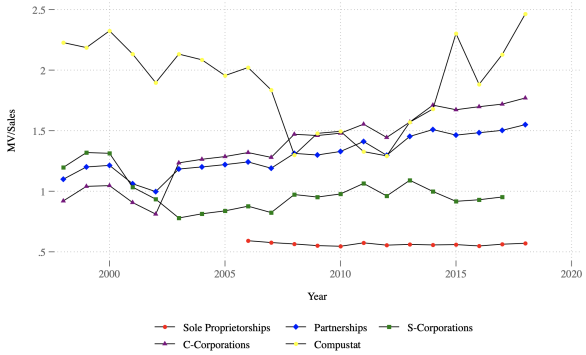
Notes: Data from BVR and IRS SOI.

Figure 4: Valuation ratios, by legal form of organization.

(a) EV/EBITDA



(b) EV/Sales



Notes: Data from BVR and IRS SOI.

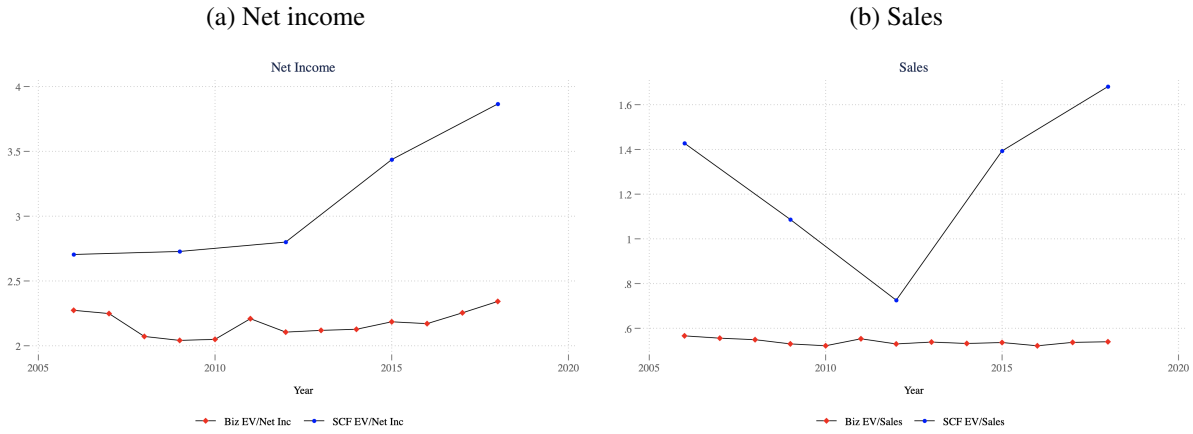
Figure 4 presents valuation ratios of EV/EBITDA and EV/Sales across different legal forms of organization. For each legal form of organization, we estimate valuation ratios by year by size by industry cell. We then take a weighted mean across the cells, with the weights of aggregate EBITDA/sales from the corresponding cell in the IRS data.

The results show large differences in valuations, and a distinct ordering by legal structure. Public companies and private C corporations have the highest valuation ratios, then partnerships, then S corporations, and finally sole proprietorships. In 2018 the mean MV/EBITDA was 12.6 public firms, 9.9 for private C corporations; 6.8 for partnerships; 6.6 for S corporations; and 2.3 for sole proprietorships. The ranking for EV/Sales is similar, however the magnitudes of the differences are distinct.

There are also important differences in medium and short term trends across types of firms. Public corporations have high valuations leading up to the dotcom bust, then a decline in valuation ratios, followed by an increase after the great recession. S corporations and partnerships have less of a pronounced peak during the dotcom boom and a more moderate increase post great recession. Sole proprietorships display a striking constancy over time. Private C-corporations also display a more modest recovery in valuations post great-recession.

4.1 Comparison with SCF valuations

Figure 5: Comparison of sole proprietorship valuation ratios, Bizcomps vs SCF



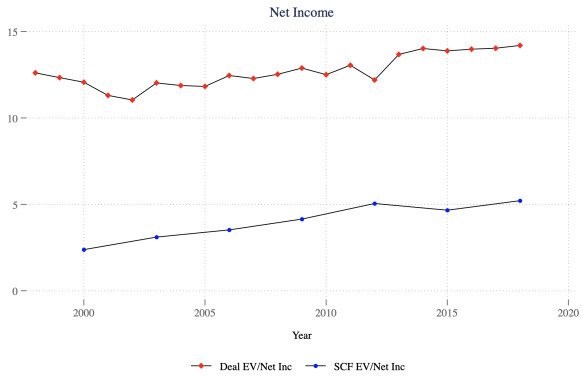
Notes: Data from BVR and the Survey of Consumer Finances.

Figure 5 compares sole proprietorship valuation ratios from Bizcomps with self reported-valuation ratios from the Survey of Consumer Finances. Self reported valuation ratios are higher in the SCF than in the transaction data. The aggregate MV/(Net income) from the SCF was 3.9 in 2018, compared with an EV/SDE of 2.3 in Bizcomps. The aggregate MV/Sales in in the SCF was 1.7 in 2018, compared with an EV/SA of 0.5 in Bizcomps.[20] Overall, there is thus strong evidence that SCF owners have higher self-assessed valuations for their sole proprietorships than in the transaction data. There are also different time series trends between the two sources, with transaction values displaying little trend.

[20]We note that the comparisons are not precisely apples to apples: the SCF reported market values (net of debt), while Bizcomps is an enterprise value, however this would tend to increase the Bizcomps valuation and cannot explain the large difference. On the other hand, if proprietors do not include owners' salary as a part of net income, this would tend to bias the SCF valuation ratio upwards and could potentially explain part of the difference. However, this problem is not present in the sales comparison where the only source of bias is the upward bias in Bizcomps EV.

Figure 6: Comparison of partnership valuation ratios, Dealstats vs SCF

(a) Net income



(b) Sales

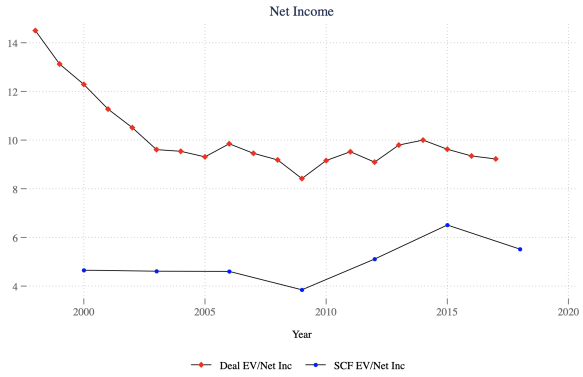
Notes: Data from BVR and the Survey of Consumer Finances.

Figure 6 compares valuation ratios for partnerships, and shows that in this case transaction based valuation ratios are much higher than self reported ones. In 2018, the aggregate MV/(Net income) was 14.2 in Dealstats compared with 5.2 in the SCF; the MV/Sales was 1.5 compared with 1.2 in the SCF.

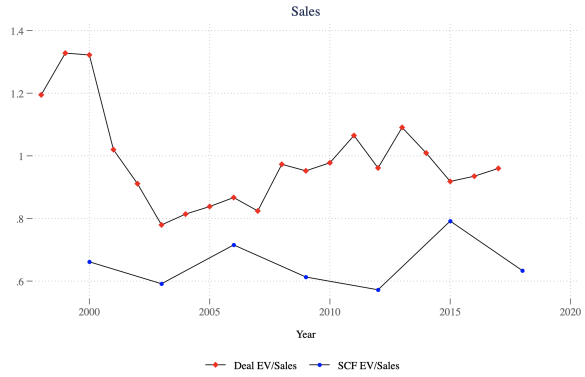
Figure 7 compares valuations for S corporations. These ratios, similar to partnerships, again show that Dealstats has higher valuation ratios than the self reported SCF. In 2018, the average MV/Net income was 8.7 , compared with 5.5 in the SCF. The MV/Sales ratio was 0.9 compared to 0.6 in the SCF. Figure 8 compares private C corporation valuation ratios across the two sources. Dealstats valuation ratios are significantly higher than the SCF for both MV/Net income and MV/Sales.

Figure 7: Comparison of S corporation valuation ratios, Dealstats vs SCF

(a) Net Income



(b) Sales

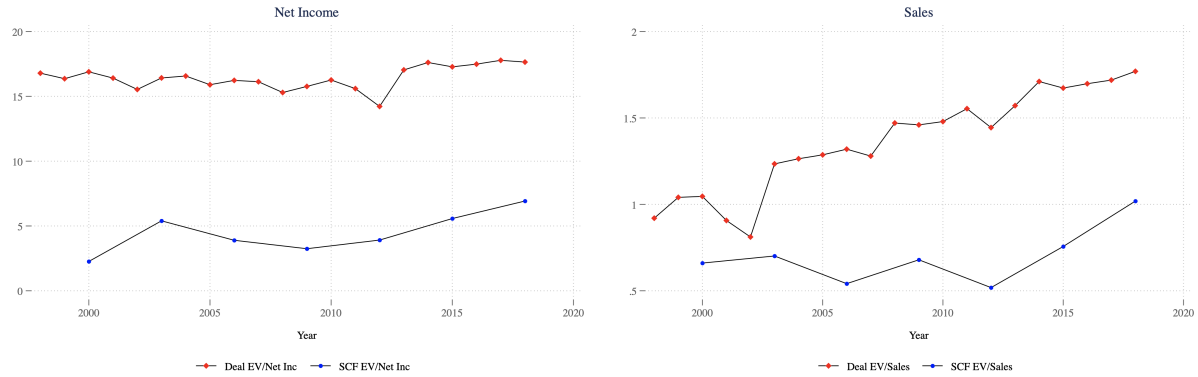


Notes: Data from BVR and the Survey of Consumer Finances.

Figure 8: Comparison of C corporation valuation ratios, Bizcomps vs SCF

(a) SDE/Net income

(b) Sales



Notes: Data from BVR and the Survey of Consumer Finances.

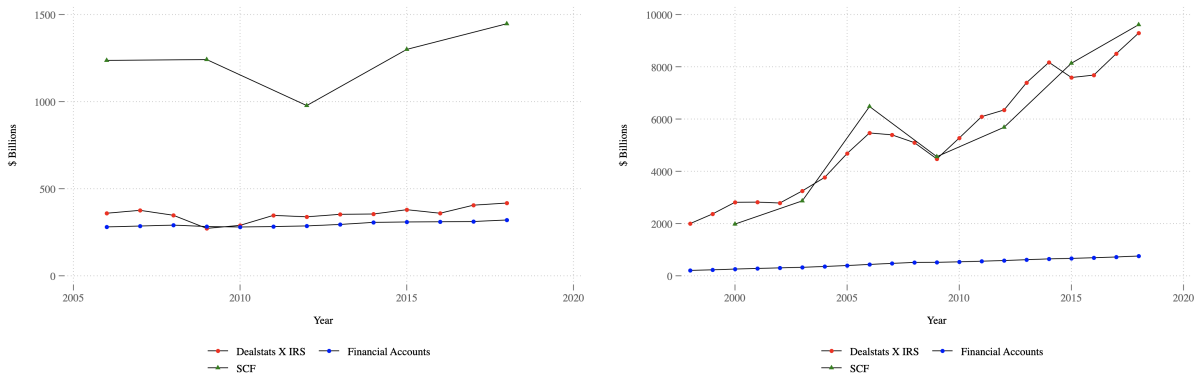
5 Aggregate private business wealth

5.1 Sole proprietorships

Figure 9: Comparison of aggregate valuations, noncorporate businesses

(a) Sole proprietorship

(b) Partnership



Notes: Data from BVR, the Survey of Consumer Finances, and the Financial Accounts of the Federal Reserve.

A problem of estimating sole proprietorship wealth from tax return data is that many tax returns from 'sole proprietorships' do not represent marketable businesses: they may also be independent contractors, freelancers, gig economy

workers, or other self-employed individuals.[21] In order to properly value sole proprietorships that are marketable businesses, we need to carve out these workers from the tax data. As seen in figure 1, most marketable businesses in the transaction data have sales that at least $50,000, while most IRS tax returns have business receipts significantly less.

In order to better distinguish between marketable businesses and independent contractors / freelancers, we make two modifications to the IRS data. First, we subtract from the IRS totals those who filed Schedule C-EZ, a simplified tax return used by independent contractors.[22] In recent years, Schedule-C EZ filers were 20% of filings, but only 2% of sales.

Second, we use additional data from the Economic Census, County Business Patterns, and Nonemployers Statistics to estimate the percentage of Schedule C sales and profits that are likely due to freelancers / nonmarketable businesses. The Economic Census provides total revenue of sole proprietorships by industry in the US for firms with *at least one employee*, which are guaranteed to be businesses. We then take the ratio of revenue for businesses to total revenue in the industry, and then apply the ratio in our valuations: $Valuation =$ IRS SDE $*$ Carve out $*$ MV / SDE. Figure A.3 shows carve out ratios over time, which averages around .5 for the sample.

Figure 9 (a) shows our primary estimate for the valuation of sole proprietorships, which is an average of the EV/SDE and EV/Sales estimation. The aggregate value of sole proprietorships was $417.9 billion in 2018. Figure A.5 breaks down our estimate into its two constituent components using the two different valuation ratios, and shows the aggregate valuations track each other closely.[23] Figure 9 (a) also compares our valuation to that of the FA. Although the methods and data sources are different, the aggregate values are surprisingly similar.[24]

Figure 9 (a) also compares our totals to that of SCF, with the SCF valuation significantly larger than either of the other sources. We note that the SCF comparison is not 'apples to apples' with the other two valuations. The SCF valuation includes the value of real estate owned by the business — this includes nonresidential real estate, but may also include residential real estate.[25] The SCF

[21] See, for example, Bhandari et al. (2020) and Abraham et al. (2017).

[22] Schedule C-EZ can be used by individuals that: (i) earned a profit (ii) have expenses are not greater than $5,000 (iii) have no employees, (iv) have no inventory, (v) are not using depreciation or deducting the cost of their home.

[23] Looking at detailed industries, however, and there can be significant differences between the two. Appendix figures **??-??** displays valuation by industry, showing that valuations across the two methods can vary by a factor of two.

[24] The FA values assets using the replacement value of the capital stock, taken directly from the BEA.

[25] When the SCF initially asks for the value of real estate (question X1703) it explicitly excludes real estate owned by a business.(Question X1701: "How many properties that are not owned by a business do you (and your family living here) own or have an interest in?") Later when asking for the value of businesses, they exclude the value of only structures that were asked about before.

totals also includes the value of debt. [26] [27]

5.2 Partnerships

Figure 9 (b) shows the aggregate enterprise value of partnership businesses in the US. Partnership wealth is substantial and has been growing rapidly. In 2018 the total value was $9.3 trillion, and has grown by approximately a factor of 5 from its value of $2.0 trillion in 1998. Similar to sole proprietorships, valuations using either EV/Sales or EV/EBITDA track each other closely.[28]

Figure 9 (b) compares our valuation with the FA and display a large gap between the series. In 2018 the FA valued total partnership assets at $758.6 billion[29]— less than a tenth of our valuation.[30] Figure 9 (b) also compares our valuation with the SCF. Noting again that this is not quite an apples to apples comparison, as the SCF may concern real estate and debt, the total value of partnerships was $9.3 trillion in 2018, similar in magnitude to our methodology using transaction data.[31]

The closest comparison we can make between our valuation using IRS data and the SCF is to estimate the total value of noncorporate business (sole proprietorship + partnership), inclusive of residential and nonresidential real estate, financial assets, and debt. In the SCF, we add the total value of active businesses for sole proprietorships and partners, plus the value of nonactive partnerships,[32] plus the value of tenant occupied residential and nonresidential real estate, plus the value of farm businesses. To construct our aggregate valuation of non-corporate business wealth using IRS data, we start with our initial enterprise valuation of sole proprietorships and partnerships, and add the value of real estate, financial assets, and debt from the FA B.104. For comparison purposes, we also plot the aggregate net worth of noncorporate business from the FA, taken directly from table B.104.

[26] "X3129: "the value should be net of all loans"

[27] There are at least three points which are imprecise about the question which makes a direct comparison difficult:

(i) Do individuals that own and rent real estate for a living include the value of these businesses, or do they include them in X1703? (ii) Do individuals include in the "value" of the businesses the financial assets held by the business? (iii) Does the market value include inventories?

[28] See figure A.6.

[29] The FA values partnership assets using BEA data on the replacement value of the capital stock. This total includes equipment and intellectual property products, but excludes structures.

[30] There are several definitional differences in the comparison. First, the method using Dealstats X IRS measures the value of some businesses that are legally corporations but have chosen to be taxed as partnerships. Second, the FA includes the value of farm partnerships, while the Dealstats X IRS does not.

[31] For completeness, several other small aspects are not quite apples to apples. The SCF and Dealstats X IRS valuation do not include farms partnerships. while the FA does

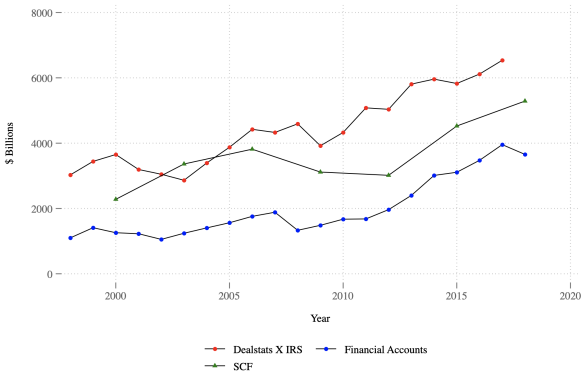
[32] The addition of nonactive businesses is potentially problematic as this may include financial partnerships such as hedge funds and private equity funds which would not be present in the FA. As the total value of the nonactive businesses is small relative to the other components, this is not a big driver of the differences between the series

Figure A.4 displays the results of this exercise. In 2018, the aggregate market value of noncorporate business was $11.3 trillion in the FA, $20.2 trillion in the SCF, and $19.9 trillion using our methodology. We thus see that our valuation of noncorporate business is substantially larger than the FA, but similar in magnitude to the SCF.

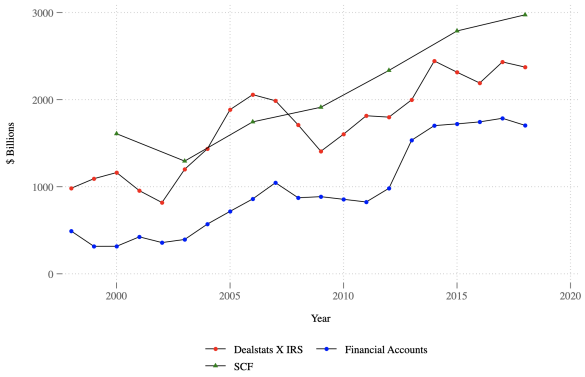
5.3 S and C corporations

Figure 10: Comparison of aggregate valuations, corporate businesses

(a) S corporations



(b) C corporations



Notes: Data from BVR, the Survey of Consumer Finances, and the Financial Accounts of the Federal Reserve.

Figure 10 (a) presents our preferred estimation for aggregate S corporation wealth. In 2017, the aggregate value of S corporation wealth was $6.5 trillion, substantially higher than the FA value of $4.0 trillion, and moderately higher than the SCF value of $5.3 trillion. The higher valuation over the SCF is due largely due to the higher valuation ratios in Dealstats (figure 7). Net income in the SCF is substantially above net income in the IRS data, while sales are generally of the same magnitude. [33]

Figure 10 (b) presents our valuation estimate of private C corporations. In order to estimate the value of private C corporations, we must carve out from the tax data the profits and sales from all publicly traded entities. We do so by using a conservative methodology of carving out the largest 15,000 companies each year from the tax data. under the assumption that the largest firms are public corporations.[34] We estimate a total value of $2.4 trillion, similar to the SCF value of $3.0 trillion and larger than the FA total of $1.8 trillion. Although

[33]The average ratio of SCF sales to IRS sales is .93, while the average ratio of SCF net income to IRS net income is 2.03.

[34]Kahle and Stulz (2017) document the number of public companies on major stock exchanges is around 5,000 per year, but this does not include penny stocks sold over the counter.

Dealstats valuation ratios are higher than SCF values, the higher levels of profits and sales in the SCF data lead to similar overall valuations.

5.4 Capital gains

From 1998 to 2017, we the aggregate value of S corporations increased from $3.03 trillion to $6.54 trillion— in real terms, from $4.56 trillion to $6.69 trillion in 2017 dollars. Over that same time period, capital injections into S corporations from additional paid in capital and retained earnings totaled $0.96 trillion nominal and $1.14 trillion real. Total nominal capital gains over the time period were thus $2.55 trillion, with real capital gains totaling $0.90 trillion.

For partnerships, aggregate business wealth increased from $2.00 trillion in 1998 to $9.29 trillion in 2018 — in real terms, from $3.01 trillion to $9.29 trillion. Over the same period, the total change in basis through new capital raised and retained earnings was $3.70 trillion ($4.29 trillion real), for a total of $3.59 trillion in nominal capital gains ($1.51 trillion real).

For private C corporations, there is no comparable data for basis changes, and thus we estimate nominal and real capital gains using prices indexes from public corporations, specifically the S&P 500.[35] From 1998 to 2018, total aggregate nominal capital gains were $1.82 trillion, with $1.13 trillion of real capital gains.

Across all private business types, there were thus $7.96 trillion in nominal and $3.54 trillion in real capital gains.

6 Discussion and conclusion

Combining all legal forms of organization, we estimate an aggregate enterprise value of private business wealth[36] of $17.9 trillion in 2017. This is sizable in comparison to both public equity wealth and aggregate net worth. In 2017, individuals in the US held $27.2 trillion in public equity wealth across directly held stocks, mutual funds, and pension funds; excluding equity wealth in pension funds, this would be $22.9 trillion.[37]

Our estimated valuations using private transaction data are substantially larger than the FA value of $6.0 trillion. The largest difference between the estimations is for partnerships and S corporations. For partnerships, the FA uses the replacement value of capital from the BEA, which greatly understates its importance compared with market values. For S corporations, the FA uses valuation ratios of market value to book value of public corporations, which produces relatively low values. There are also substantial differences for private C corporations. For

[35] Data is from Robert Shiller. Capital gains are estimated as changes in the price index minus retained earnings.

[36] Not including real estate wealth.

[37] Data is from the FA. Holdings within mutual funds were separated between corporate equities and other assets.

these companies, the FA uses data from the Forbes largest private company list, which only includes a total of 500 companies, a small fraction of the over 1.5 million private C corporations in 2017.

These new estimates of private business wealth have direct implications for measures of wealth inequality in the US. The Distributional National Accounts of Piketty, Saez, and Zucman (2017) use the FA value of private business wealth in studying wealth inequality. Our new estimates of private business wealth are substantially higher than the Financial Accounts, and correspondingly increase the average wealth of the top percentiles. In 2017, the top 10% held 83.9% of private business wealth, the top 1% 61.5%. Adjusting for our value of private business wealth would increase the top 10% share of wealth from 69.6% to 72.7%. For the top 1%, the wealth share would increase from 34.9% to 40.3%. The top .1% wealth share would increase from 18.2% to 22.3%.

Our results also have important implications for estimates of revenue under a wealth tax, as well as the difficulties of implementing the tax in the presence of substantial private business wealth. A one percent tax on the top .1% would generate a mechanical tax revenue estimate of $166.3 billion, or $1820.4 billion over 10 years.[38] Of this total, $96.7 billion ($1058.7 billion over 10 years) would come from private business wealth, which would have to be valued by tax authorities.

The large magnitude of private business wealth poses a challenge to the implementation of a tax on wealth or unrealized capital gains. In their wealth tax proposal, Saez and Zucman (2019) suggest that some private businesses could be valued using markets for pre-IPO securities that exist for very large companies such as Uber or Lyft. In practice, however, these larger private companies represent only a small fraction of aggregate private business wealth. An alternative option would be to pursue the methodology developed in this paper: to collect transaction data on private business sales, and apply the ratios to the data submitted by private corporations on tax returns in order to value them. The IRS already collects data on the universe of business transactions through forms 8594, 4797, and Schedule D. By linking this data to the tax data of the underlying businesses, the agency would have the data to construction valuation ratios for the universe of private business transactions.

Our results also have implications for the raising of revenue through a capital gains tax that is "marked-to-market", as was proposed by Senator Ron Wyden,[39] or through realizations at death, as proposed by the Biden administration. We estimate that over our sample there was a total of $7.96 in nominal capital gains. In principle this could also be estimated on a yearly basis as the change in the valuation in the minus the change in basis.

[38] Estimates from the Distributional Accounts, with updated private business wealth estimates.

[39] We note that the Wyden plan does not plan to estimate calculate capital gains of private businesses on a yearly basis, but only when they are sold through a 'lookback' provision.

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Online Appendix for *S Corporations*

Jacob A. Robbins

A Data details

A.1 BIZCOMPS

In practice business sales can be quite complicated, with transactions differing in the percent of the business that is sold and what is included in the sale price.[40] To create an apples-to-apples comparison between business sales, BIZCOMPS standardizes the transactions as follows:

- The sale price includes only the value of fixtures, equipment, and goodwill. Cash, accounts receivable, loans receivable, real estate, and other assets are not included in the price, and all liabilities have been excluded. This exclusion of short term assets is in line with how businesses are generally listed in sold, as asset sales.[41]
- Businesses are considered to be debt-free at close even if there are new loans coming on board from the seller or others.[42]
- Real estate used by the business is not included.[43]
- The value of inventory is also excluded from the ratios.[44]
- In the case where there are multiple owners, each transaction in the data is converted to a 100% interest sale, such that a SDE in the data goes to a single owner.

A.2 Survey of consumer finance

The Survey of Consumer Finance asks respondents for detailed financial data up to two[45] of their closest controlled businesses: sales, profits, and their subjec-

[40] For example, transactions may or may not include inventory, real estate, or short term assets.

[41] According to BVR, "the sellers of these businesses rarely are willing to part with the cash and accounts receivable and the buyers are rarely willing to pay for it."

[42] From BVR: "Sellers usually are responsible for paying off all debt at the close of sale."

[43] BVR: "Small businesses almost always lease the premises they occupy. Leasing is often a better use of capital, at least in the early stages of a business? life. Somewhere less than six percent of the transactions reported involve real estate. The value of the real estate is subtracted from the enterprise value."

[44] Bizcomps excludes inventory because it is a volatile asset, and there are reasons to manipulate the amount of inventory at the time of closing.

[45] For 2007 and below, the SCF collected data on three businesses.

Table A.1: SCF summary statistics, $ millions

	(1) SP all	(2) SP 2018	(3) Part	(4) Part 2018	(5) S corp	(6) S corp 2018	(7) C corp	(8) C corp 2018
Net income	0.036	0.037	0.13	0.12	0.17	0.28	0.14	0.16
Sales	0.33	0.11	0.76	0.87	2.08	4.82	2.63	1.54
Valuation	0.14	0.20	0.74	1.00	1.14	2.15	0.88	1.93
Employment	2.61	2.07	36.2	31.1	27.7	35.5	41.9	89.8
MV/Sales	1.56	1.61	2.25	2.34	1.37	1.74	1.49	1.50
MV/Netinc	3.36	3.11	5.44	5.37	5.48	5.16	5.99	7.08

Notes: Data from Federal Reserve Board.

tive valuation of what the business would sell for. Table A.1 presents summary statistics.

One concern with using the SCF is that the sample size is relatively small, and thus there is a relatively wide sampling variation. For example, in 2018 there were only 86 unique private C corporations. Coverage of other business types is somewhat better: there were 359 S corporations, 1,020 partnerships, and 391 sole proprietorships.

A.3 Financial Accounts

The Financial Accounts of the Federal Reserve valuations of private businesses by legal form of organization.

For S corporations,[46] data on the networth of S-Corporations by two digit industry is taken from the IRS Statistics of Income (SOI), where networth is defined as assets minus liabilities. From Compustat, networth valuation ratios are constructed by industry, with the valuation ratio equal to the the following ratio: in the numerator, the total market value of public corporations for the industry, and the denominator, the total value of networth for the industry, where networth equals assets minus liabilities. The Compustat data excludes international firms and subsidiaries as well as repeats in the data, and outliers are kept. The total market value of S-corporations is adjusted downward by 25 percent to reflect the lack of liquidity of closely held shares.

For private C corporations,[47] the market value of C-corporations is estimated by multiplying the revenue data of companies that appear on Forbes' annual list of America's Largest Private Companies by the ratio of total market value to total revenue of public companies from Compustat with similar industry, employ-

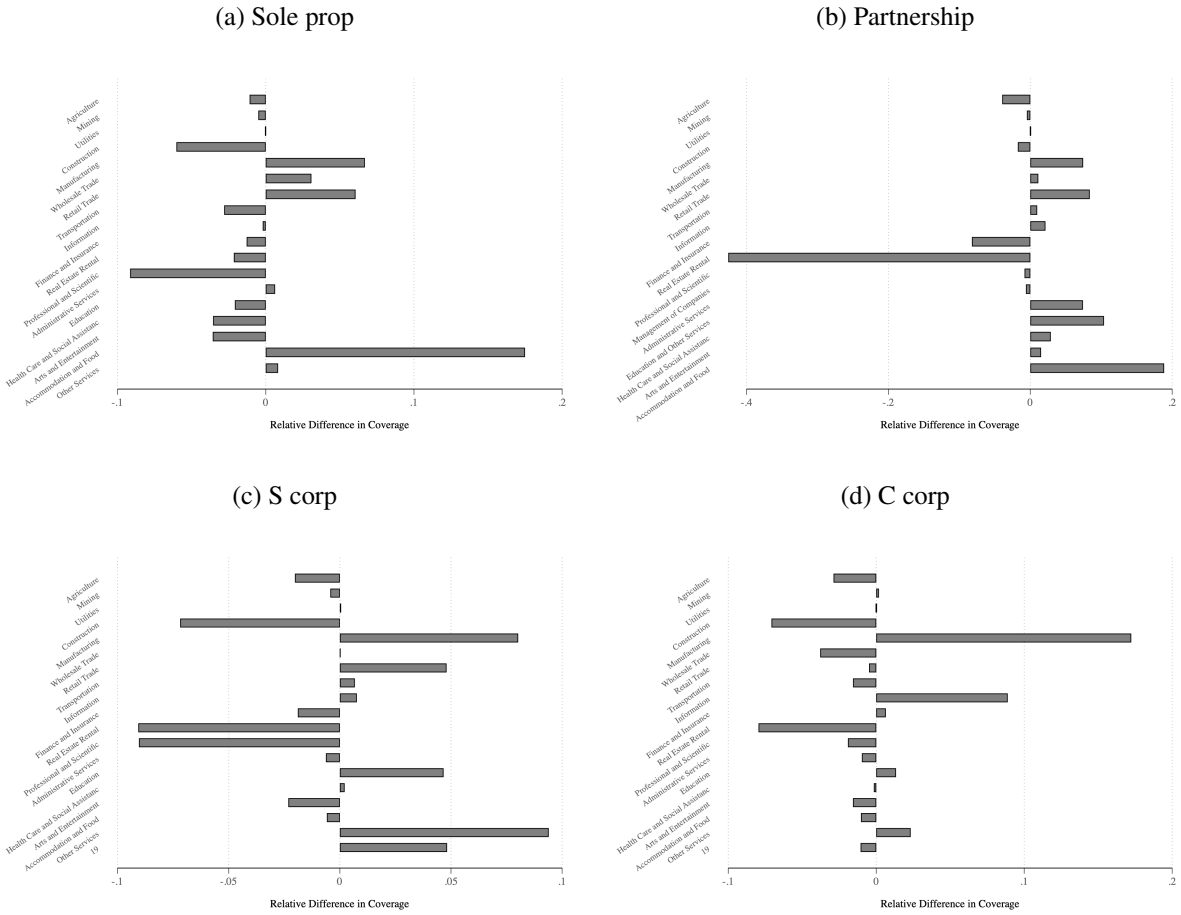
[46] Series LM883164133.

[47] Series LM883164135.

ment, and revenue profiles. The total market value of C-corporations is adjusted downward by 25 percent to reflect the lack of liquidity of closely held shares.

Sole proprietorship and partnership valuations are combined together in a single table, B.104 Nonfinancial Noncorporate Business. The largest asset/liability on this balance sheet is tenant occupied real estate / real estate mortgages, which are at market value. Other nonfinancial assets are at book value, with equipment, intellectual property products, and inventories taken directly from the BEA. Financial assets for partnerships are taken from IRS SOI tax returns, while sole proprietorship assets are estimated using the 2003 FRB Survey of Small Business Finance.

Figure A.1: Comparison of coverage, BVR vs IRS



Notes: Data from BVR and IRS SOI.

A.4 Construction of valuation ratios by cell

The IRS provides aggregate tax return data by legal form of organization, 2 digit NAICS code, and 10 bins for the size of the firm by the value of business receipts. The cells are as follows: (i) Under $25,000 (ii) $25,000 to $100,000

(iii) $100,000 to $250,000 (iv) $250,000 to $500,000 (v) $500,000 to $1,000,000 (vi) $1,000,000 to $2,500,000 (vii) $2,500,000 to $5,000,000 (viii) $5,000,000 to $10,000,000 (ix) $10,000,000 to $50,000,000 (x) $50,000,000 and above. While ideally we would have enough data to construct ratio of means β_t^{RM} for each of the sales, due to limitations in the number of observations there would not be enough transactions in each cell. Instead, we construct ratio of means by legal form of organization and industry, then use a regression of observed valuation ratios to adjust for size. This combines the advantage of ratio of means estimation with allowing us to adjust for firm size.

To adjust for size, we run the following regression on the Dealstats sample:

$$\beta_t^{f,obs} = \upsilon + \alpha_s \mathbb{1}\{\text{S corp}\} + \alpha_p \mathbb{1}\{\text{Partnership}\} + \sum_{g=1}^{10} \beta_g \mathbb{1}\{\text{Sales cell = g}\} + \theta_y + \gamma_i + \epsilon_{ft} \tag{A.1}$$

Here γ_i are industry fixed effects and θ_y are year fixed effects. The excluded group in the regression is companies with sales between $500,000 and $1,000,000. We combine the regression coefficients and ratio of means statistics as follows. For firms in the excluded regression group, we use the ratio of mean statistic $\beta_t^{RM,i,lfo}$, calculated by legal form of organization (LFO) and industry. For firms in a size cell g, we adjust the valuation ratio relative to the ratio of means using the regression coefficients β_g.

Finally, for some years / legal forms of organization there is not sufficient data from the IRS to adjust valuation ratios by size. When this happens, we adjust the ratio of means valuations as follows. First, we calculate the average ratio of size-adjusted to non-size adjusted valuation ratios for the years which data is available. We then multiply the ratio of means valuation ratios by this ratio.

Table A.2: IRS SOI Summary Statistics

	Mean per Return	Mean 2017	% of GDP	% of GDP 2017
		Sole Proprietorships		
Sales	70,016.7	73,221.4	8.2	7.8
Profits	15,503.2	16,555.6	1.8	1.8
EBITDA	19,046.5	20,032.5	2.2	2.1
Interest Expenses	574.0	462.5	0.1	0.0
Taxes Paid	972.6	1,002.6	0.1	0.1
Depreciation	1,996.7	2,011.7	0.2	0.2
Average Num of Returns:		19292854		
		Partnerships		
Sales	1,319,377.6	1,397,987.8	27.6	27.9
Profits	91,084.7	91,911.5	1.9	1.8
EBITDA	203,406.4	221,742.2	4.3	4.4
Interest Expenses	31,271.5	28,424.7	0.7	0.6
Taxes Paid	21,270.4	24,450.5	0.4	0.5
Depreciation	42,946.0	58,031.5	0.9	1.2
Average Num of Returns:		3394666		
		S-Corporations		
Sales	1,414,270.3	1,679,930.9	38.2	40.6
Profits	71,162.8	101,969.2	1.9	2.5
EBITDA	108,510.6	141,250.9	2.9	3.4
Interest Expenses	12,797.7	10,251.4	0.4	0.2
Taxes Paid	28,903.0	34,453.5	0.8	0.8
Depreciation	22,421.3	26,463.7	0.6	0.6
Average Num of Returns:		3790053		
		C-Corporations		
Sales	9,601,200.6	13,465,835.0	115.5	108.7
Profits	392,894.2	332,615.9	4.5	2.7
EBITDA	1,319,092.2	1,535,681.5	15.8	12.4
Interest Expenses	502,851.1	527,950.2	6.3	4.3
Taxes Paid	203,200.5	271,393.8	2.5	2.2
Depreciation	337,725.8	527,822.5	3.9	4.3
Average Num of Returns:		1751110		

Notes: Data from the IRS Statistics on Income.

Table A.3: Dealstats and Bizcomps, valuation factors

	(1) Deal EB	(2) Deal SA	(3) Biz SDE	(4) Biz Sa
Size dec 1	-1.435***	-0.0986***	-0.0472	0.0109
	[0.366]	[0.0199]	[0.115]	[0.0151]
Size dec 2	-1.270***	-0.0530**	-0.200***	-0.0135
	[0.258]	[0.0208]	[0.0742]	[0.0118]
Size dec 3	-0.975***	-0.0354*	-0.147*	-0.00882
	[0.214]	[0.0193]	[0.0829]	[0.0145]
Size dec 4	-0.791***	-0.0116	-0.0990	-0.00762
	[0.230]	[0.0227]	[0.0774]	[0.0118]
Size dec 5	0	0	0	0
	[.]	[.]	[.]	[.]
Size dec 6	0.273	0.0452**	0.0221	-0.0200**
	[0.208]	[0.0204]	[0.0976]	[0.00969]
Size dec 7	0.186	0.0569**	0.0835	0.0136
	[0.252]	[0.0279]	[0.0696]	[0.0110]
Size dec 8	0.800**	0.0796***	0.159**	0.0174
	[0.310]	[0.0244]	[0.0792]	[0.0112]
Size dec 9	0.939***	0.223***	0.369***	0.0254*
	[0.279]	[0.0430]	[0.105]	[0.0144]
Size dec 10	2.132***	0.669***	0.758***	0.111***
	[0.365]	[0.0750]	[0.136]	[0.0155]
Part	-1.806***	0.0420*		
	[0.231]	[0.0244]		
S corp	-1.484***	-0.00822		
	[0.270]	[0.0188]		
N	16307	16307	13343	13343
r2	0.0668	0.0857	0.0145	0.0121
dep_mean	6.330	0.740	2.300	0.540
cluster	Naics 3	Naics 3	Naics 3	Naics 3

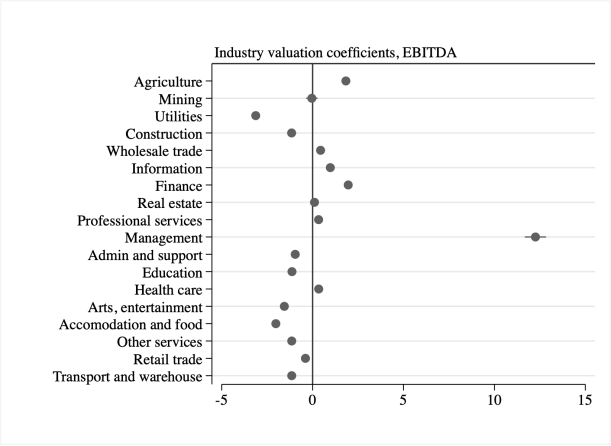
Notes: Data from BVR and IRS SOI. Column (1) ranks firms by deciles of sales, column (2) ranks firms by deciles of EBITDA, column (3) ranks firms by deciles of sales, column (4) ranks firms by deciles of SDE.

B Tables

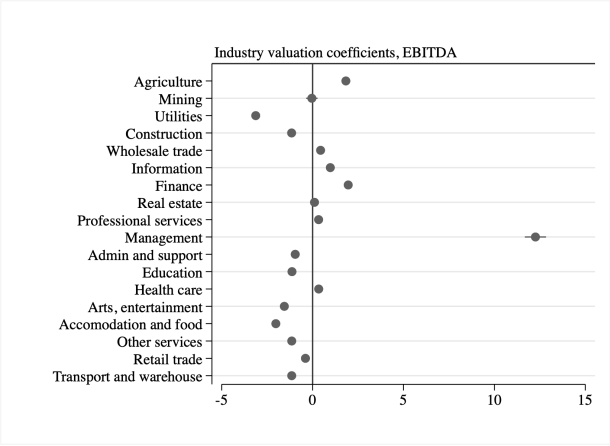
C Appendix figures

Figure A.2: Industry regression coefficients, valuation ratios

(a) Ebitda



(b) Sales



Notes: Data from BVR and IRS SOI.

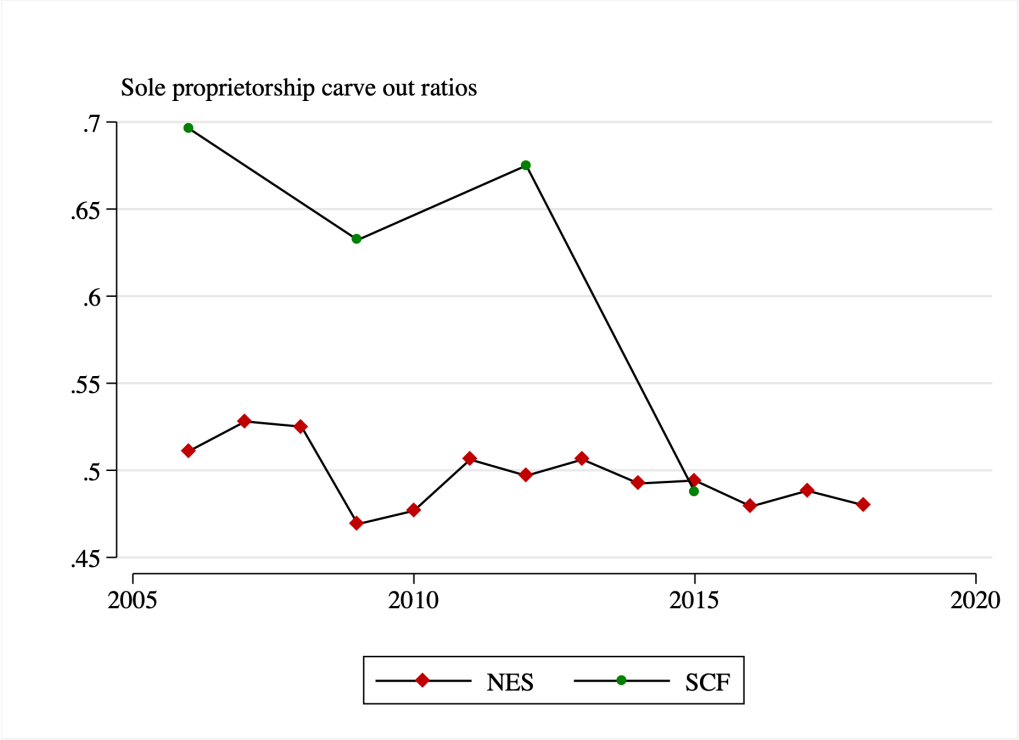


Figure A.3: Sole proprietorship carve out ratios

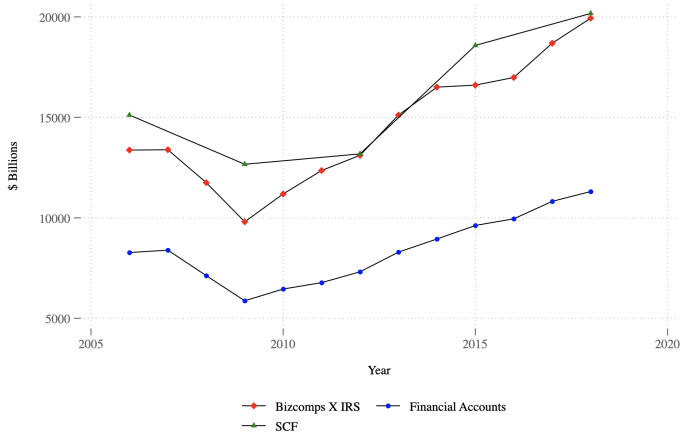


Figure A.4: Comparison of noncorporate business wealth, Dealstats X Bizcomps X IRS vs SCF vs Financial Accounts

C.1 Sole proprietorships

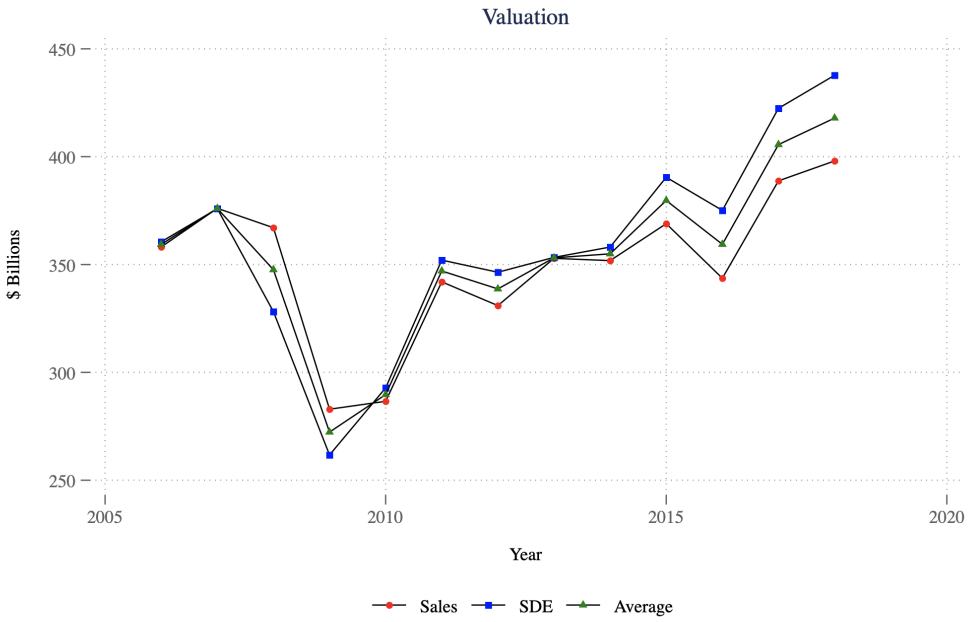


Figure A.5: Comparison of Sole Proprietorship Valuations

C.2 Partnerships

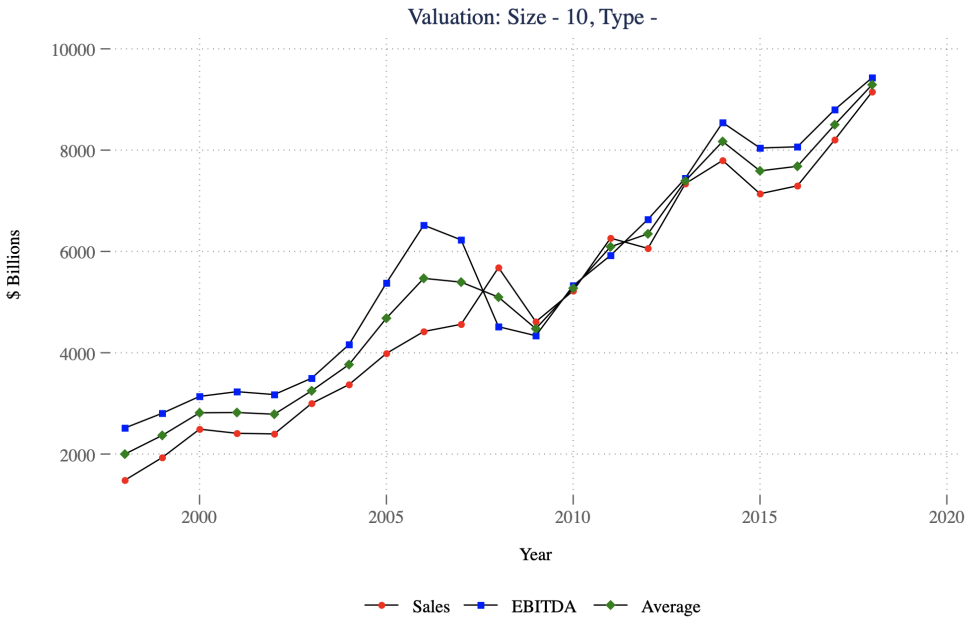


Figure A.6: Comparison of Partnership Valuations

C.3 S corps

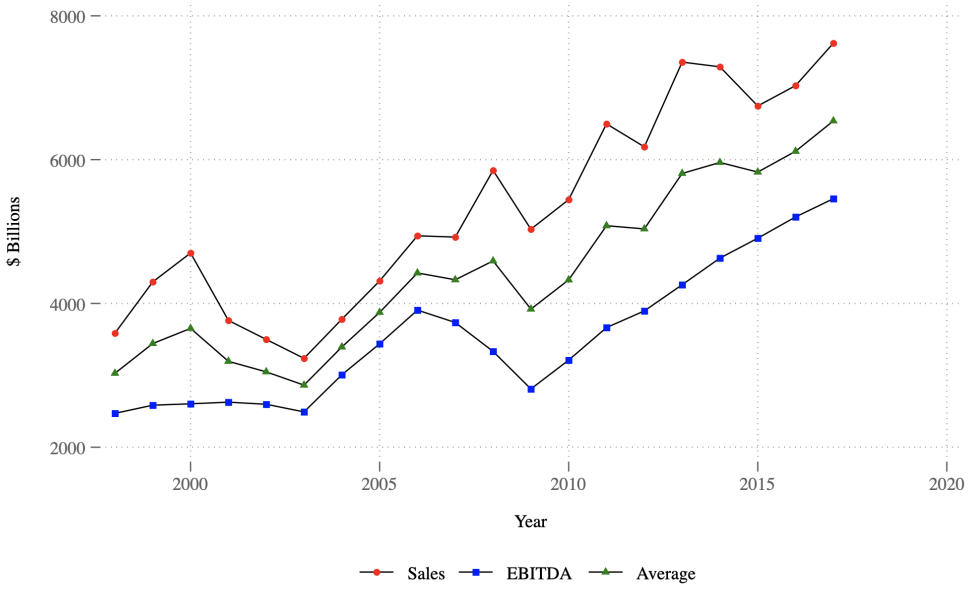


Figure A.7: Comparison of S corp Valuations

C.4 C corps

Figure A.8: Comparison of C corp Valuations