# Internet Appendix:
Supplementary Materials: Not for Print Publication

I Sample Comparison

Our merged NBER-CES-public-firm sample presents a high degree of similarity to the overall NBER-CES universe. Figure IA1 shows the time series of labor shares in both the NBER-CES sample and in the merged NBER-CES-public-firm sample. Without including equity-based compensation, these two samples show similar levels and trends in all three labor share measures.

Figure IA1: Factor Shares Across Different Samples

The top panel shows the total labor share, unskilled labor share, and skilled labor share (without equity-based compensation) in the NBER-CES sample and the merged NBER-CES-public-firm sample. The sample is from 1960–2011.
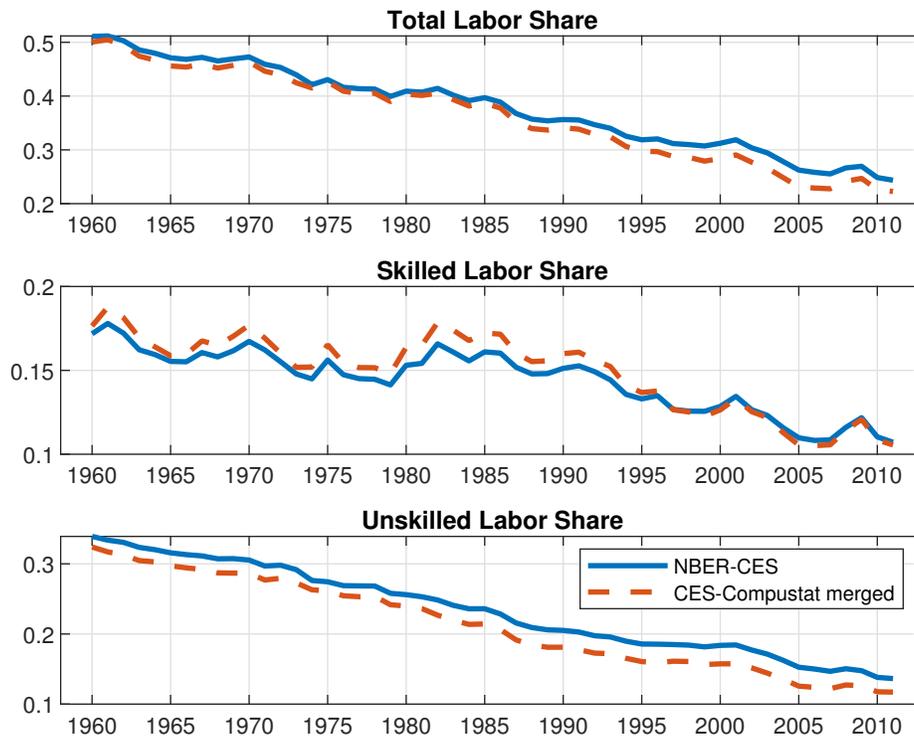
II Human Capitalist Income: Equity Pay, Robustness Checks

We present several robustness checks to our main measure of the annual flow of equity-based compensation, $NG = \frac{RS}{gp}$, in Figure IA2. The top panel of Figure IA2 shows that using firms' actual granting periods from 1996 to 2005 from Risk Metrics data yields very similar dynamics to our measure using a constant six year weighted-average granting period.[37]

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[37]for the shorter time period, we also have information on whether a firm discloses all available reserved shares in its 10-K filing. This is the case for 80% of the firms, further supporting the accuracy of our estimate for NG.

Next, we construct a measure of new grants to value added using the aggregate Black and Scholes (1973) value of newly granted stock options (BS) from Risk Metrics for the period 1996–2005. The middle panel of Figure IA2 plots the aggregated BS value relative to value added, along with our baseline measure including shares reserved for both options and restricted stock grants. As is apparent in the Figure, these two measures are highly correlated for the shorter sample when both are available. The time series correlation between the ratio of BS to value added and the ratio of NG to value added is 0.52.[38] There are a few reasons why the BS share of value added is somewhat lower than our reserved-share measure. The main reason is that there is substantial evidence (see, for example, Aboody, Barth, and Kasznik (2006)) that once firms were required to expense option grants, they began to significantly understate their value. Another reason that the BS share is lower is that it does not include restricted stock grants, which became increasingly popular relative to options after the severe downturns in equity valuations in 2000 and 2008. Indeed, Bachelder (2014) estimates that in recent years about half of equity-based compensation is in the form of restricted stock.

The bottom left panel of Figure IA2 plots the aggregate human capital income share based on a fraction of the Selling, General, and Administrative (SG&A) expense that includes all wages and equity compensation allocated to headquarters, as discussed in the main text.

Figure IA2: Measures of Equity-Based Compensation as a Fraction of Value Added

This plot reports the time series of our three grant-based measures and one expense-based measure of the aggregate equity-based ratio of compensation to value added. In the top left panel, the solid blue line NG/Vadd reports the annual flow of equity-based compensation using NG = RS/7, where 7 is the weighted average granting period. The the dotted red line NG(Actual GP) is the aggregate value of reserved shares divided by the actual average remaining life of RS on the balance sheets in the IRRC sample. In the top right panel, the dashed pink line BS/Vadd is the aggregate Black–Scholes value of newly granted stock options relative to value added constructed using the IRRC sample from 1996–2005. The solid blue line is NG=RS/7. In the bottom right panel, the annual flow of equity-based compensation is the expense-based measure $0.3SG\&A$. Data source: Compustat Fundamental Annual (1960–1996), RiskMetrics (IRRC) (1996–2005), and NBER-CES Manufacturing Industry Database (1960–2005). The sample period is from 1960 to 2005.

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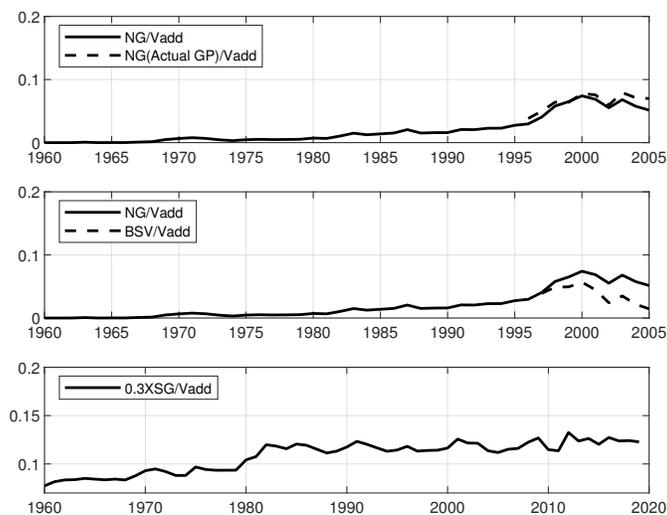
[38]In pooled time series cross section data using 4-digit SIC industry-level observations, we find that the correlation between the ratio of BS to value added and the ratio of NG to value added is 0.97.

Table IA1: The Human Capital Share and Investment Goods Prices: Additional Industry-Level Analysis

This table reports (4-SIC) industry-level regressions of alternative measures of the human capital share in a given year on investment good prices. We report results for three alternative estimates of the value of equity pay from stock options. All defined relative to value added. The first measure is based on the value of diluted earnings per share (Column 2). The intuition for this measure is that dilution reflects expected equity issuance from actual and/or expected exercise of options grants. The number of shares from dilution is measured as the difference between common shares used to calculate diluted earnings per share and common shares used to calculate basic earnings per share. The value of dilution is equal to the product between the number of shares from dilution and the stock price. The second measure is based on the value of stock repurchases (Column 3). The intuition for this alternative measure is that firms repurchase stock to offset dilution from actual and/or expected exercise of options grants. The third measure is based on the value of small stock issuance (Column 4). Small stock issues are defined as those whose value is smaller than three percent of total assets. The intuition for this alternative measure is that small stock issuance is predominantly related to actual and/or expected exercise of option grants, while large issues are predominantly motivated by financing needs (McKeon, 2013). To ease interpretation, all variables are expressed in standard deviation units. The interpretation of each reported coefficient is the change in standard deviations of the dependent variable associated with a one standard-deviation change in the explanatory variable. For example, in the first column, a one standard-deviation change in investment good prices is associated with about 13% of a standard deviation change in the baseline NG share. The time period is 1960-2011. All specifications include time (year) and industry effects. Standard errors are robust, with ***, **, and * denoting significance at the 1%, 5%, and 10% levels, respectively. See Section 2.2 and Appendix 6.2 for detailed variable definitions.

	Baseline NG/VADD (1)	Diluted EPS (2)	Repurchases (3)	Small Issues (4)
Inv. Goods Prices	-0.187***	-0.146***	-0.051***	-0.179***
	(-12.20)	(-7.62)	(-2.68)	(-9.92)
Year FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
Industry Controls	Y	Y	Y	Y
N	6,207	6,207	6,207	6,207
R2	0.531	0.263	0.272	0.349
Mean LHS (pct. pt.)				
All	2.4	5.2	4.6	1.5

III Diluted EPS and Share Repurchases

In Tables IA1 and IA2, we confirm that the relation is robust to two important sensitivity checks: First, Table IA1 shows that the relation is robust to using a battery of alternative approaches to measuring the human capitalists' income share, which are based on firm estimates of diluted earnings from option exercise or based on the value of stock repurchases to offset expected dilution from option exercise or small issues of new stock primarily related to option exercise (see table legend for detailed definitions of these alternative measures). Second, Appendix Table IA2 shows that the relation is robust to expanding the sample to the public-firm universe by also including the non-manufacturing sectors.

IV Additional Cross Section Evidence

This section reports additional cross-sectional facts about equity-based compensation.

Table IA2: The Human Capital Share, Stock Market Value, and Investment Goods Prices: Additional Firm-Level Analysis

This table reports firm-level regressions of the human capital share in a given year on investment goods prices for an expanded sample that includes non-manufacturing industries. Specifically, we add to the core manufacturing industries from NBER-CES (SIC 2000-3999) information on investment good prices from Cummins and Violante (2002) for the following non-manufacturing industries: Agriculture, Forestry, & Fishing (SIC 0100-0999), Mining & Construction (SIC 1000-1999), Transportation (SIC 4000-4999), Wholesale & Retail Trade (SIC 5000-5999), Finance (SIC 6000-6999), and Services (SIC 7000-8999). We report results for the ownership share (Columns 1 to 2), which is defined relative to stock market value, the results for NG/Sales ratio (Columns 3 to 4) and the results for SG&A to sales ratio (Column 5 to 6). To ease interpretation, all variables are expressed in standard deviation units. The interpretation of each reported coefficient is the change in standard deviations of the dependent variable associated with a one standard-deviation change in the explanatory variable. The time period is 1960-2011. All specifications include time (year) effects. Standard errors are robust, with ***, **, and * denoting significance at the 1%, 5%, and 10% levels, respectively. See Section 2.2 and Appendix 6.2 for detailed variable definitions.

	Equity Comp Share NG/Sales		SG&A/Sales	
	(1)	(2)	(3)	(4)
Inv. Goods Prices	-0.020***	-0.025***	-0.031***	-0.031***
	(-4.44)	(-4.86)	(-5.31)	(-6.45)
Firm FE	N	Y	N	Y
Industry FE	Y	N	Y	N
Firm Controls	Y	Y	Y	Y
N	110,688	109,611	98,130	97,140
R2	0.636	0.771	0.578	0.877

IV.1 Industry

Figure IA3 plots the equity-based compensation share of value added by industry. Clearly, there is substantial heterogeneity across industries, with the high-tech and health sectors represented within the NBER-CES manufacturing database showing the largest increase.

IV.2 Firm Size

We define the equity-based compensation share as the ratio of NG to sales at the firm level. We analyze the cross sections of equity-based compensation as a share of total output.

First, equity-based compensation is not just a phenomenon of a subsample of large firms. Instead, we find that equity-based compensation is more concentrated among small firms in the sample. In Figure IA4, We categorize firms into five quantiles based on their total assets, and we plot the NG-to-sales ratio within each group over the sample period from 1970–1995. As a fraction of output (measured by sales), small firms (solid blue line) offer 10% more equity-based compensation to employees than the largest quantile (yellow line). As a result, the average NG-adjusted total labor income share should be higher than the aggregate trend, since smaller firms are overweighted when calculating the average. In fact, the increase in equity-based compensation among smaller firms enhances the divergence of the average and the aggregate total labor share (see Figure IA5) found by Hartman-Glaser et al. (2019).

IV.3 Human Capital Wealth

We examine the relation between a measure of human capitalists' wealth and investment goods prices across industries and firms. Table IA3 repeats our main cross section analysis using the

Figure IA3: Equity-Based Compensation Share of Value Added: Industry

The plot report the aggregate equity-based compensation (NG) share of value added in the four sub-industries: Consumer Goods, Manufacturing, High Tech and Health Products. Data source: Compustat Fundamental Annual (1960–1996), RiskMetrics (IRRC) (1996–2005), and NBER-CES Manufacturing Industry Database (1960–2011). The sample period is from 1960 to 2011.
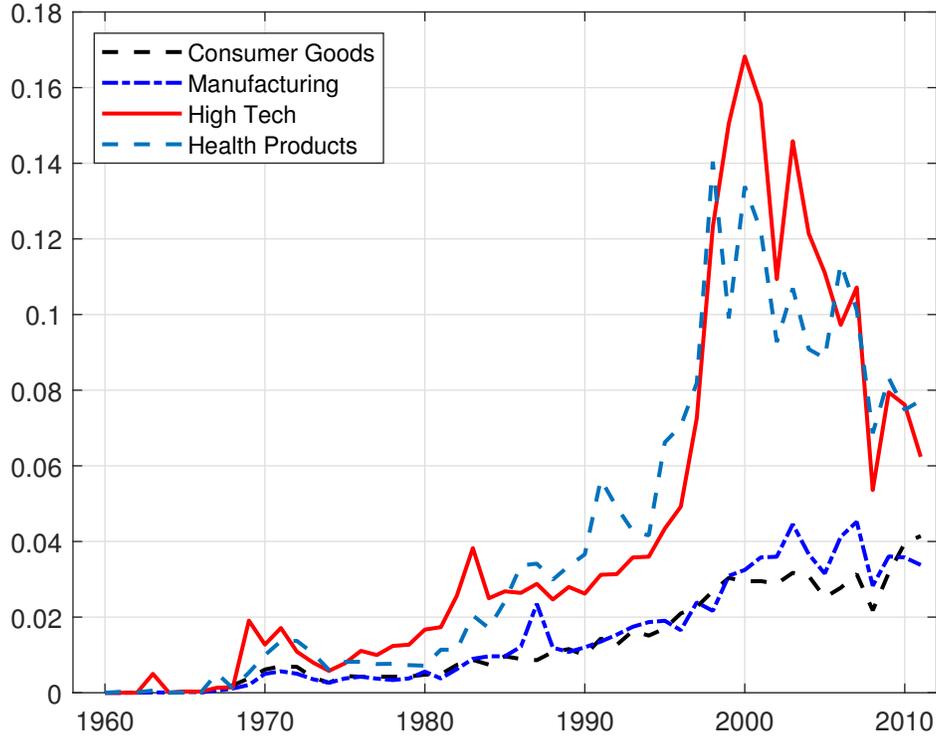
(Black–Scholes) value of employees' current *and past* stock option grants relative to stock market capitalization. This measure is broader than the income measure because it captures not only new grants but also the capital appreciation of past grants. Thus, it is a proxy for the stock of equity compensation human capitalists receive, or, equivalently, human capitalists' compensation wealth. The negative relation with investment goods prices controlling for industry or firm fixed effects is even stronger for this more comprehensive measure, which offers additional reassurance that our baseline estimates indeed reflect an economically important relation between investment goods prices and human capitalists' income.

Table IA3: Human Capital Wealth and Investment Goods Prices: Firm-Level Analysis

This table reports industry- and firm-level regressions of an alternative measure of the human capital ownership share based on the Black-Scholes value of past unexpired grant, and new grants of stock options for all employees (Panel A), and excluding top executives (Panel B) in a given year on investment goods prices, in turn. To ease interpretation, all variables are expressed in standard deviation units. The interpretation of each reported coefficient is the change in standard deviations of the dependent variable associated with a one standard-deviation change in the explanatory variable. For example, in the first column of Panel A, a one standard-deviation change in investment goods prices is associated with about 10% of a standard deviation change in the human capital ownership share. The time period is 1996-2005. All specifications include time (year) and either industry or firm effects. Standard errors are robust, with ***, **, and * denoting significance at the 1%, 5%, and 10% levels, respectively. See Section 2.2 and Appendix 6.2 for detailed variable definitions.

	(Employee Wealth, Black-Scholes Value)/			
	Stock Mkt Value			
	(1)	(2)	(3)	(4)
	Industry-level		Firm-level	
Investment Goods Prices	-0.163***	-0.366***	-0.362**	-0.370**
	(0.026)	(0.128)	(0.166)	(0.176)
Time Effects	Yes	Yes	Yes	Yes
Industry Effects	No	Yes	No	No
Firm Effects	No	No	Yes	Yes
Firm Controls	No	No	No	Yes
N. of obs.	1,111	1,111	2,506	2,714
R^2(%)	25.09	35.17	75.83	77.33
	(Non-Exec Employee Wealth, B-S Value)/			
	Stock Mkt Value			
	(1)	(2)	(3)	(4)
	Industry-level		Firm-level	
Investment Goods Prices	-0.394***	-0.290**	-0.568***	-0.510**
	(0.034)	(0.096)	(0.209)	(0.223)
Time Effects	Yes	Yes	Yes	Yes
Industry Effects	No	Yes	No	No
Firm Effects	No	No	Yes	Yes
Firm Controls	No	No	No	Yes
N. of obs.	1,111	1,111	2,071	2,218
R^2(%)	13.77	59.50	78.22	78.62

Figure IA4: Equity-based compensation as share of sales

This figure shows the equity-based compensation NG-to-sales ratios across size groups. Size is measured as total assets. Firms are categorized into five quantiles based on total assets, and the NG-to-sales ratio is $\frac{\sum_i NG_i}{\sum_i Sales_i}$ ratio within each group. The sample is winsorized at 1%. The sample is from 1970–1995, from the Compustat-CRSP merged database.
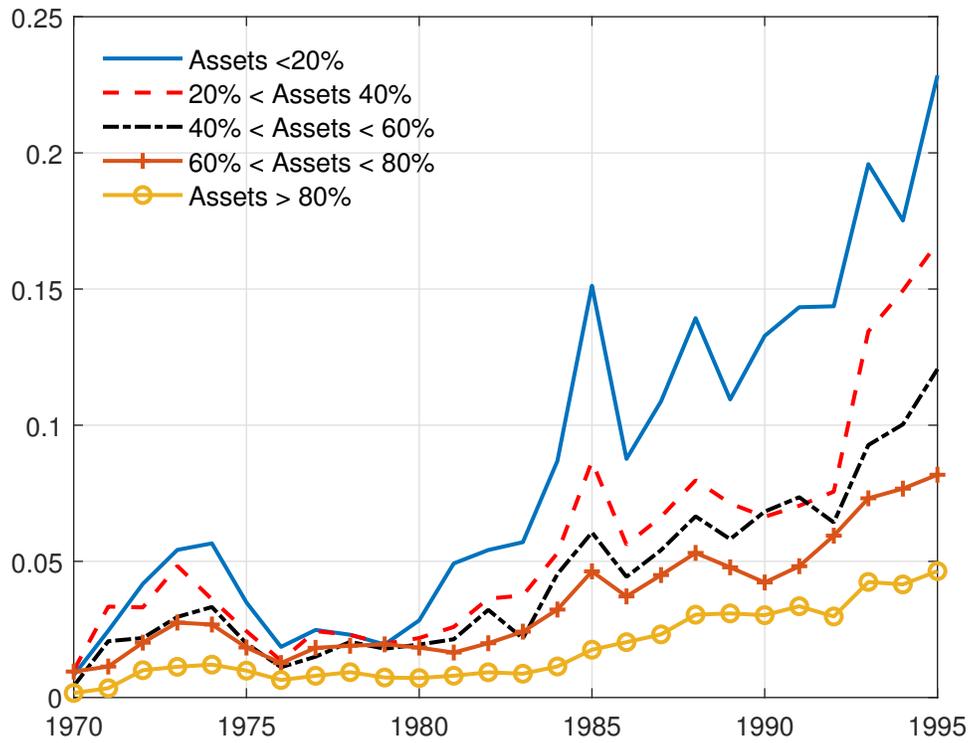
Figure IA5: Aggregate and average total share of income

This figure shows the time series of the aggregate and average capital income and labor income-to-sales ratio. The total labor income consists of the extended staff expenses (following Donangelo (2016)[39]) plus NG. The capital income is OIBDP minus NG. The total labor share is the (extended XLR + NG)/sales. The top figure plots the time series of the average (extended XLR + NG)/sales as well as the aggregate $\sum_i (\text{OIBDP} - \text{NG})_i / \sum_i \text{sales}_i$. The bottom figure plots the time series of the average (oibdp-NG)/sales, and the aggregate $\sum_i (\text{OIBDP} - \text{NG})_i / \sum_i \text{sales}_i$. The sample is from 1970–1995, from the Compustat-CRSP merged database.
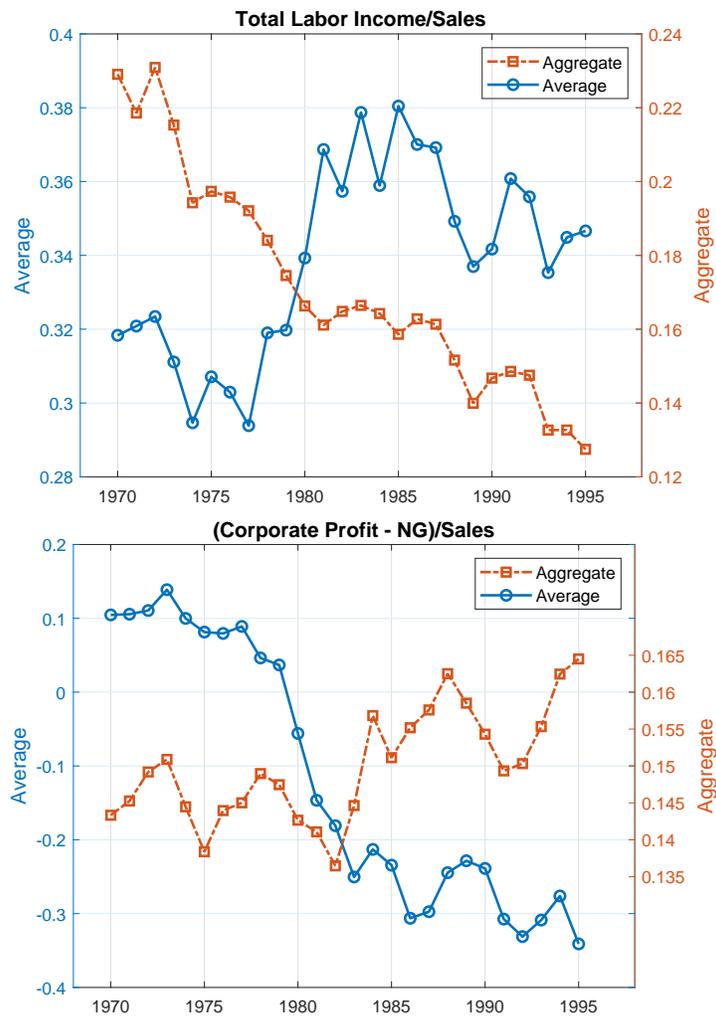
V   Model Fit

Figure IA6: Model Fit: Two-Step Estimation

The figure shows the model fit of the two-step estimation reported in Table 7. Panel (a) plots the model-implied time series of the relative ratio of marginal products: $\frac{s_k}{s_h \omega_R}$ (in red dashed line) and the actual time series from the data. Panel (b) plots the time series of the unskilled labor share from the model and the data. Compustat Fundamental Annual, RiskMetrics (IRRC), and NBER-CES Manufacturing Industry Database. The sample period is from 1980 to 2011.

(a) $\frac{s_k}{s_h \omega_R}$ (b) s_n