

# **INCOME INEQUALITY AND FIRM OWNERSHIP/WEALTH CONCENTRATION**

Is income inequality having a life  
of its own?

# MOTIVATION

The rich would have an incentive to channel their unequal income into a capital biased technological growth engine, especially when they could politically alter the market economy in their favor.

- The emerging trends in labor share decline report channels of labor replacement with capital and market concentration, among others

Therefore, the distribution of income in time  $t$  is expected to alter the distribution of firm ownership in  $t+1$ .

# CONVERSATION SO FAR



# EXISTING DRIVERS OF FIRM OWNERSHIP CONCENTRATION

The determinants of firm ownership structure exhibit underlying mechanisms fostering economic efficiency one way or another.

In this regard, existing literature on the determinants of firm ownership concentration could be classified broadly according to the level of analysis.

On the firm level, firm size and firm risk have been identified to significantly impact firm ownership concentration for reasons of economic efficiency surrounding monitoring costs and portfolio diversification (Alchian and Demsetz, 1972; Demsetz and Lehn, 1985)

# EXISTING DRIVERS OF FIRM OWNERSHIP CONCENTRATION

On the industry level, regulation, information asymmetry, the intensity of competition, and the life cycle of the industry in which the firm operates, are identified as potential determinants of firm ownership concentration for reasons of economic efficiency surrounding monitoring and agency costs, abnormal profits resulting from information asymmetry, and regulation to subsidize the same (Demsetz and Lehn, 1985; Frick, 2004)

On the country level, the size and development of its stock market are identified as significantly determining firm ownership concentration for reasons of economic efficiency surrounding a reduction in the cost of capital (Pedersen and Thomsen, 1997)

# LABOR SHARE IS DECLINING

The constancy of the labor share (Kaldor, 1961) is not a (stylized) fact anymore.

Capital-biased technological progress, often attributed to advances in information technology and the computer age, is one of the reasons why production has shifted towards capital and away from labor – Karabarbounis & Neiman (2014)

Some research oracles a second machine age denoting a replacement of labor by capital, with spread (economic inequality) being the economic consequence parallel to the bounty that this brings – Brynjolfsson, E., & McAfee, A. (2014)

Piketty (2014) considers it instead a design of the capitalist system, whereby the increasing gap between the rate of return on capital and the rate of economic growth ( $r-g$ ) systemically leads to upsurging economic inequality.

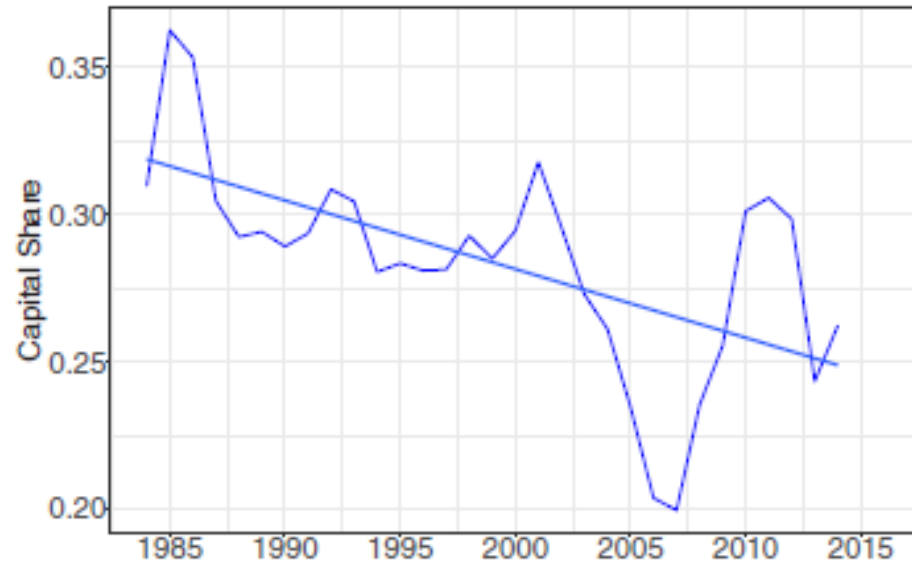
# LABOR SHARE IS DECLINING

While the aforementioned channels could exist in a competitive market, there is now an increasing focus on the decline in competitive forces, an increase in market concentration and the abnormal economic profits it rewards to capital owners.

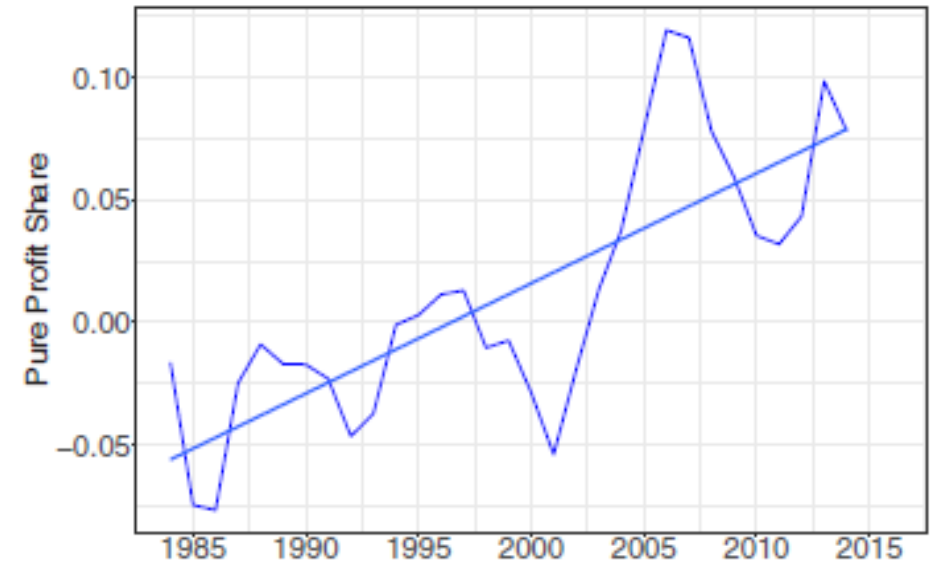
This is attributed to an increase in abnormal economic profits resulting from increasing market concentration (Barkai, 2020), which are also identified in case of technological changes favoring large firms who then are in a position of exercising market power (Autor et al., 2020)

Forces such as globalization (Leblebicioğlu and Weinberger, 2021) , decline in unionization rates, and the erosion in workers' bargaining power in labor markets (Stansbury and Summers, 2020) is exacerbating the labor share decline.





Panel A. Capital Share



Panel B. Pure Profit Share

**Figure 3. Capital and pure profit shares.** The figure shows the capital share and pure profit share of gross value added for the U.S. nonfinancial corporate sector over the period 1984 to 2014. Capital costs are the product of the required rate of return on capital and the value of the capital stock. Pure profits are gross value added less compensation of employees less capital costs less taxes on production and imports plus subsidies. Panel A: the capital share is the ratio of capital costs to gross value added. Panel B: the pure profit share is the ratio of pure profits to gross value added. Both figures include a fitted linear trend. See Section III for further details. (Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com))



# A POLITICAL ECONOMY TAKE ON MARKET CONCENTRATION

Stiglitz (2012) points out that economic system is leading to market failures and extreme inequality when left to function on its own.

Stiglitz (2016) took further the observation of market failures reported in Stiglitz (2012) to formulate the new theoretical perspectives on personal income and wealth distribution; it proposes that there is incentive for capitalists to have influencing stakes in corporations to ensure their wealth grows through exploitative practices such as insider trading, monopolistic market structures and other market manipulations.

While economic efficiency and equality has traditionally being considered a trade-off (Okun, 1975), research like Stiglitz (2016) is helping mainstream economics identify that inequality is instead a hindrance to economic growth as it is leading to inefficient market structures, rent seeking and an increasing wealth-output ratio instead of an increasing capital-output which could have driven economic growth.

# VALUE WE (HOPEFULLY) ADD TO LITERATURE

While conversation is started in literature on labor share decline, and product market concentration, there are hardly any empirical investigation that discusses the growing concentration of capital, which is another important route for the growth in economic inequality. Our paper attempts to bridge this gap.

While the existing literature already identifies incentives for capital owners to further concentrate their capital ownership, e.g., to benefit from the ever-increasing wealth-output ratio and decreasing labor participation, our study finds empirical corroboration via cross-country firm-level data.

# VALUE WE (HOPEFULLY) ADD TO LITERATURE

For 17,760 firms operating in 67 industries with unique operational presence in 54 countries for 2003-2020, we report that an increase in income inequality leads to an upsurge in firm ownership concentration, arguably to favor the owners who are rent-seeking and can distort the competitive market forces in their favor.

An important corollary is that a growing labor replacement by capital in production implies income inequality is self-perpetuating via the firm channel.

# DATA

The firm-level data for the ownership concentration distribution of firms, as well as firm-level and industry-level factors identified in the literature to impact firm ownership concentration, come from Bureau Van Dijk's OSIRIS database. The explanatory variables are for 2003-2020.

OSIRIS covers firms from almost every industry (67/74), as per GICS code classification. On the country level, it has representation from all seven geographical regions and the *High, Upper-middle, and Lower-middle* income groups, as per WDI classification. This helps establish the generalizability of the empirical evidence reported in the paper.

We restructure ownership concentration classes stored in Osiris into an ordinal variable denoting *Weak, Mild, and Strong* (that also indicates veto power) concentration level.

# DATA

**Table 1**

Mapping of concentration class, from ownership independence information encoded in the *Osiris* database, to the ordinal concentration level

Ownership class	Direct ownership		Indirect ownership		Concentration level
	More than 25%	More than 50%	More than 25%	More than 50%	
-	No	No	No	No	Weak
A+	No	No	No	No	Weak
A	No	No	No	No	Weak
A-	No	No	No	No	Weak
B+	Yes	No	Yes	No	Mild
B	Yes	No	Yes	No	Mild
B-	Yes	No	Yes	No	Mild
C+	Yes	No	Yes	Yes	Strong
C	Yes	No	Yes	Yes	Strong
D	Yes	Yes	No	No	Strong
U	-	-	-	-	-

*Notes:* The data source for the ownership information is Bureau Van Dijk's OSIRIS database. The ownership independence class recorded for each firm in the OSIRIS dataset characterizes the degree of independence via two major dimensions: direct ownership and indirect ownership. Direct ownership informs the ownership class with the percentage of firm stock legally owned by a known shareholder. In addition, there are numerous ways in which individuals could indirectly own interest in a firm, having controlling ownership of a second firm that holds a certain percentage of stock of the first firm, for example. Indirect ownership informs the ownership class on that basis. Note that a category of - is assigned for stock owned by legal entities that are independent by nature, such as financial and insurance institutions. Moreover, "U" category is assigned to firms for which ownership independence information is not known. This categorical information is mapped onto an ordinal variable identifying 3 levels of concentration (*Weak*: individual ownership  $\leq 25\%$ ; *Mild*:  $25\% <$  individual ownership  $\leq 50\%$ ; *Strong*: individual ownership  $> 50\%$ )

# METHODOLOGY

We construct an ordinal variable  $\gamma_{cf}$  that denotes three levels of firm wealth concentration.

- A level of  $\gamma_{cf} = \textit{Weak}$  denotes there is no shareholder in the firm with more than 25% ownership of firm wealth.
- A level of  $\gamma_{cf} = \textit{Mild}$  indicates that individual ownership in the firm exceeds 25% but remains up to 50% of total firm wealth.
- The highest ordinal level of firm ownership,  $\gamma_{cf} = \textit{Strong}$  denotes that there is a shareholder in the firm who owns more than half of the total firm wealth.

For income inequality and other controlled explanatory factors, we utilize 3-year lagged values to

- address potential endogeneity in their relationship with firm ownership concentration
- extend the sample to 2020 instead of 2017 which the latest we have information on stock market development
- show effect of income inequality as a leading indicator to firm wealth concentration 3 years later

This also helps expand the sample temporally to 2020 instead of, for example, closing the sample on 2017 when we have the latest sizable coverage of income inequality.

We winsorize all firm level data points at 1% to remove outliers, before proceeding to utilize them in the empirical analysis.



# METHODOLOGY

We hypothesize  $y_{cf}^*$  to be a function of income inequality  $\rho_{ft}$  of the firm's country and  $K$  control variables, as specified below:

$$y_{cf}^* = \alpha + \beta_0 \rho_{ft} + \sum_{k=1}^K \beta_k X_{kft} + \vartheta_f + \varepsilon_{ft} \quad \dots \text{where } \varepsilon_{ft} \sim \psi\left(0, \frac{\pi^2}{3}\right)$$

Here  $\vartheta_f$  are firm-level random effects and  $\varepsilon_{ft}$  follows a logistic distribution.

# RESULTS

We check the robustness of our baseline results measuring income inequality alternatively, via the top 20% and top 10% income shares, and restricting the sample to high income and OECD member countries. All regressions report a positive effect of income inequality on firm ownership concentration at 99% confidence interval. All control variables also report expected effects, with significant at 99% CI in almost all cases.

We also report average marginal effects of these panel ordered logit estimations to show how the probability of a firm ending up at a certain concentration level marginally changes with income inequality, with other factors being at their expected values

# AVERAGE MARGINAL EFFECTS

The second row, e.g., reports AMEs of the baseline estimation, indicating that a 1% increase in (absolute level) of income inequality results in a 91% decline in firm's chances of being owned such that no one owns more than 25% of its wealth. This is offset by a 23% upsurge in the probability for a firm having an owner with as much as 50% of firm wealth, and 68% increase in the firm's chances of having a controlling owner with more than 50% of firm's wealth (and veto power to potentially singlehandedly alter business practices in her favor).

**Table 2**

Average marginal effect of income inequality, on probability of a firm being classified in a certain concentration class

		Concentration level		
		Weak	Mild	Strong
		<b>Baseline</b>		
(1)	<b>Excluding control variables</b>	-0.18%*** (0.03%)	0.02%*** (0.004%)	0.15%*** (0.02%)
(2)	<b>Including control variables</b>	-0.91%*** (0.05%)	0.23%*** (0.01%)	0.68%*** (0.04%)
		<b>Robustness analysis</b>		
(3)	<b>Income inequality measured by income share of the top 20% of population</b>	-1.24%*** (0.06%)	0.31%*** (0.02%)	0.92%*** (0.04%)
(4)	<b>Income inequality measured by income share of the top 10% of population</b>	-1.07%*** (0.07%)	0.27%*** (0.02%)	0.80%*** (0.05%)
(5)	<b>High income countries only</b>	-0.75%*** (0.12%)	0.18%*** (0.03%)	0.58%*** (0.09%)
(6)	<b>OECD member economies only</b>	-0.73%*** (0.12%)	0.17%*** (0.03%)	0.56%*** (0.09%)

*Notes:* Kindly refer to *Table C1* for proxies and sources of the factors. All regressions denote panel ordered logit regressions, robust to residual heteroskedasticity. Column (1) alters the baseline by changing the measure of firm size to the firm's book value measure. The next two columns alter the baseline by measuring income inequality via income shares of top 20% and top 10%, respectively. Stars \*\*\* indicate significance at the 1%- level.

# CONCLUSION

We show the translation of income inequality into firm wealth concentration; for 17,760 firms operating in 67 industries with unique operational presence in 54 developed and developing countries for 2003-2020, we find robust empirical evidence of a positive impact of national income inequality on corporate wealth concentration via firm ownership/wealth concentration.

This is also a contribution, through a new explanatory factor identification, to the literature on firm ownership concentration.

An important corollary is that a growing labor replacement by capital in production implies income inequality is self-perpetuating via the firm channel.

# POLICY INSIGHTS

As the majority of the population belongs to the labor force, this trend in firm ownership is expected to lead to unfavorable distributional implications for the economy that are persistent and difficult to reverse as concentrated ownership strengthens both market power and political power.

Mainstream economics has starting to appreciate that economic inequality is not a tradeoff, but a hinderance to economic growth as it leads to a greater wealth-output ratio that is a result of market failures such as inefficient market structures, rent seeking behavior. This is in contrast to a greater capital-output ratio that reflects a bigger economic pie that everyone gets a slice of.

This implies there is economic growth hidden in taking public policy measures to encourage participation in firm ownership (such as through stock ownership ceilings in the stock market that abolish incentives for monopolistic market practices).

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