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(Market) Power is (Political) Power!

The Pressure of Declining Competition on Democracy

Directorate-General for Economic and Financial Affairs and the Joint Research Centre

(Market) Power is (Political) Power! The Pressure of Declining Competition on Democracy

BASIHOS Seda

Abstract

I study how the concentration of market power among a restricted set of corporates leads to a concentration of political power that ultimately undermines democracy. This type of mechanism has been a long discussion, not confirmed or rejected by any empirical evidence. My paper fills this gap by shedding light on two recent trends observed across the world: increasing aggregate markups and democratic backsliding. Using a panel of 80 countries over the period of 1990-2019, I provide evidence of a causally driven negative relationship between market power and democracy. The quantitative estimates reveal that one-quarter of the democratic decline can be attributed to the concentration of market power. Findings from firm-level analysis suggest that the growing financial resources of high-markup firms enable them to amass substantial political influence, eventually challenging broader democratic principles.

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CONTENTS

LIST OF TABLES

LIST OF GRAPHS

1. Introduction

Democracy implies more than just holding elections. Votes can be meaningful only when all voices are equally regarded. Democracies have been losing ground in this sense all over the world. Political regimes are increasingly akin to "one dollar, one vote" rather than "one person, one vote" as Stiglitz (2012, p.xv) noted. This raises the question: why is this happening? There are arguably several factors pushing this story, and one significant yet unexplored candidate could be the rising market power of big corporates.

This study explores the link between declining competition in product markets and democratic backsliding, both observed globally in recent years. This link can exist for at least one reason: economically powerful firms can use their money to seek political power. The primary motive, if any, behind such actions might be to use political influence to further weaken market competition in their favor (Zingales 2017). This pursuit of political power could take various forms, such as strategically placing shareholders in key political posts or establishing close ties with elected officials involved in policy-making (see, e.g., Faccio 2006, and Bunkanwanicha and Wiwattanakantang 2009).

As these firms accumulate political power, their motivations may shift towards prioritizing self-interest over the interest of the general public. Consequently, they may pursue policies that favor their own interests at the expense of essential democratic values. Therefore, corporate market power could harbor political elements, beyond purely economic ones. In light of this understanding, I propose and empirically investigate whether the concentration of market power in the hands of a few firms translates into a concentration of political power that has potential implications for democracy.

This paper's contribution lies in unpacking an understudied hypothesis that weak market competition undermines democratic principles and practices. By taking advantage of the recent variation in data, it uncovers an important non-market cost of market power and offers empirical evidence that the concentration of market power can indeed undermine democracy in the long run. Additionally, it reveals that the political consequence of declining competition has been more severe in advanced democracies than in the rest of the world. The quantitative outputs of the study provide a timely warning about regulating market power to protect democratic systems.

The baseline empirical strategy relies on a dynamic panel of 80 countries over the period of 1990-2019, where I regress electoral democracy score, a proxy for the concentration of political power, on aggregate markup, a measure of the concentration of market power. Electoral democracy scores are from the Varieties of Democracy (V-Dem) Project. This newly

constructed dataset offers distinct advantages over commonly used categorical democracy measures like Freedom House and Polity indices. One key benefit is its meticulous tracking of democratic evolution across countries and over time. According to V-Dem, democracy has witnessed a setback worldwide, returning to levels in the 1990s over the past two decades.

In addition, there are separate studies that have documented a decline in competition across different parts of the world.[1] Recently, De Loecker, Eeckhout, and Unger (2020), using data of U.S. publicly traded firms, show that market power has dramatically increased over recent decades, and this trend is pervasive across industries. Drawing on these insights and previous research, I calculate aggregate markups for 80 countries over the last four decades, using data of publicly traded firms provided by Thomson Reuters. The findings show a notable rise in market power across the world, and importantly, this increase started before the observed democratic backsliding, raising questions about its potential implications in this context.

The base estimates reveal that market power has a negative effect on democracy, which holds across various interventions such as including additional controls, using country sub-samples, alternative time periods and data frequencies, alternative estimators and specifications, alternative democracy indices, and alternative market power measures. Following that, I attempt to identify the hypothesized causal direction, considering the potential interplay between market power and political power. To address the endogeneity concerns, I adopt a rationale similar to Gabaix and Koijen's (2020) granular instrumental variable (GIV) approach.

The identifying assumption is based on that firm markup (i.e., firm market power) is a deviation from a competitive pricing level. This deviation is partly driven by systematic events that may be intrinsic to unobserved political confounding, while the remainder is attributed to idiosyncratic shocks unrelated to political factors. I extract idiosyncratic shocks from microdata using various estimation techniques and compute a size-weighted aggregate at country level, creating a granular instrument. I compute and employ four alternate GIVs to instrument for aggregate markup in the panel model. The estimates robustly confirm that market power has a negative and statistically significant effect on democracy.

The counterfactual assessment suggests that, on average, around one-quarter of the observed decline in democracy could be attributed to the increased market power of corporates. Notably, this effect is more pronounced in developed countries, such as the United States, where market power may account for around half of the recently observed decline in democracy.

To understand the underlying mechanisms, I delve deeper into two crucial aspects: whether a democratic decline is driven by an overall increase in markups or primarily by the concen-

1. See, among others, De Loecker and Eeckhout (2018), Diez, Leigh, and Tambunlertchai (2018), Autor et al. (2020), and Diez, Fan, and Villegas-Sánchez (2021).

tration of increased markups among larger firms, as both aspects are reflected in aggregate markup. The initial findings suggest that not every firm experiencing a markup increase can convert market power into political power; however, it appears that larger firms are more likely to do so, and when they do, this potentially undermines democracy.

This finding aligns with intuition, as larger firms with higher markups have greater economic resources at their disposal, enabling them to exert influence in political decision-making. Such influence may not coincide with the broader democratic principles. To gain further insights, I undertake a firm-level analysis using data from the United States as a case study. The aim is to investigate whether high-markup large firms are more politically connected. To measure firm political power, I use firm-level lobbying expenditure as a proxy.

For identification, I exploit exogenous variations in firms' markups resulting from spillovers of idiosyncratic (markup) shocks to their industry-level competitors. This approach builds on prior research on shock propagation within networks. These shocks can only influence a firm's political engagement through its markup and are orthogonal to aggregate conditions as they are confined to a narrow industry. I create a time-varying index for each firm, which is a weighted sum of idiosyncratic shocks experienced by its competitors within its competition network. Weights are derived from an inverse distance matrix based on industry-level market share differences. The estimates obtained from this empirical design reveal that firms with higher market power have stronger political connections.

Building on this discovery, I investigate the machinery by which firms translate their market power into political power. Imperfect competition models suggest that firms with higher markups eventually extract larger shares in total sales, leading to reallocation of economic activity toward these firms, particularly the big ones (e.g., Autor et al. 2020). This dynamic can prove pivotal in their capacity to gain non-trivial political clout. Using a causal mediation analysis, I provide evidence that the translation of market power into political power is mediated by the concentrated financial resources in the hands of high-markup, large firms.

Lastly, I shift my focus once more to cross-country analysis to examine the effect of market power concentration on democracy, specifically considering the role of income inequality. The results suggest that the democracy-weakening effect of market power is not explained by the existing income inequality effect. The likely takeaway is that the concentration of market power could lead to a concentration of political power in its own right. This conclusion, yet, does not come without limitations and could be further refined by future research.

The paper proceeds as follows. Section 2 covers a conceptual background. Section 3 summarizes the data. Section 4 lays out the main results, robustness checks, and quantification. Section 5 provides additional results on potential mechanisms. Section 6 concludes.

2. Conceptual Background

What is democracy? Can it be measured?.— Democracy, in its contemporary standing, refers to a system of governance where people exercise power through elected representatives. Yet, beyond this core definition, there is an ongoing discussion on its conceptualization. Naturally, the lack of consensus on the concept of democracy creates a debate on how to measure it.

Understanding how democracy has evolved over time and across countries is an important policy concern. Therefore, not measuring democracy is costly above all. Yet, this task is not without challenges, and is prone to potential measurement errors. If democracy is narrowly defined, important temporal and cross-country variations may vanish (Acemoglu et al. 2019). For example, using Polity Index, the United States is rated as a full democracy throughout the twentieth century, despite historical issues concerning the active participation of marginalized groups like blacks and women in elections.[2] Or, conversely, if the conceptualization is positioned away from the basic definition, something else can be measured within democracy. For instance, Political Rights Index by Freedom House is designed to measure freedom, but it is often used as a proxy for democracy (Coppedge et al. 2011).

Despite ongoing debate, the literature is not without a more or less accepted prescription for at least what elements should be considered in order to make meaningful comparisons across political systems over time. These elements were first famously articulated by Robert Dahl (1971, 1989) and are as follows: (i) free and fair elections, devoid of coercion and bribery tactics; (ii) active participation of citizens in elections and other political practices under the guarantee of freedom of expression and association; (iii) equal opportunities for citizens to access information to understand the political issues concerning them and their societies; (iv) ultimate control of the policy agenda by citizens; (v) protection of individual rights enshrined in the above-mentioned principles.

A country's state of democracy can be evaluated by the extent to which society meets these criteria at a given point in time. This metric, referred to as *Electoral Democracy*, is a concept defined by Dahl. Drawn on the principles above, V-Dem Institute has recently estimated electoral democracy with global coverage for the last three centuries, using expert assessments and official documents and records.[3] Scores are provided as point estimates within upper and lower bounds that present probable value for electoral democracy.[4]

What is democratic backsliding? Is it really happening?.— Democratic backsliding, like the concept of democracy itself, lacks an agreed definition. Yet lately, there has been a growing

2. See Center for Systematic Peace (2018) for the Polity dataset.
3. For more information on data construction, see V-Dem Institute (2020).
4. See Online Appendix E Table Ex.1 for a comparison of alternative democracy indices.

concern about the fate of democracies, for which backsliding has become a more frequently used quality. Considering elections are still regularly held in most parts of the democratic world, backsliding should point out something much deeper. People either feel that they do not engage in political processes as much as they used to, or even if they do, they may think that they do not have as much say in governing as before.

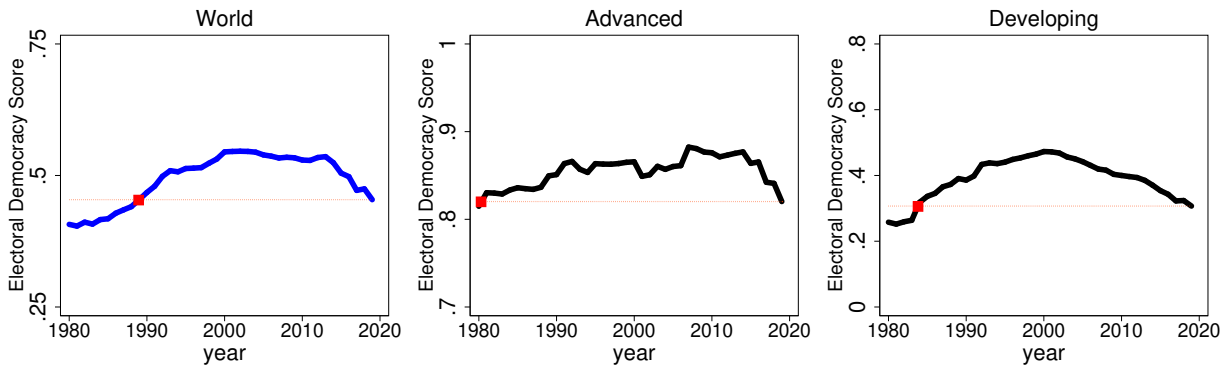


Figure 1: Evolution of Electoral Democracy Around the World

Source: V-Dem and the author's calculation

Notes: Electoral democracy score ranges from 0 (lowest) and 1 (highest). World refers to the pop-weighted average of democracy scores of 80 countries.

V-Dem Electoral Democracy Index, which provides a more comprehensive assessment of democracy, shows that this concern may not be unfounded. Globally, democracy has been losing momentum since the early 2000s and has even regressed to 1990s levels in the last decade (Figure 1). Notably, even in regions like Europe and Western offshoots with mature democracies, a noticeable decline has been observed.[5]

The interplay between market power and political power.— Market competition has been seen as an impetus of democratic development as it disperses economic power among different players, preventing its accumulation in fewer hands that could potentially use it to manipulate political decision-making (Schumpeter 1950, pp. 296-7). Declining economic competition, therefore, poses a potential threat to the democratic process per this connection between the market and politics.

In recent decades, the level of competition in product markets has reduced, creating a winner-takes-most environment with a few firms dominating the market (Autor et al. 2020, and De

5. By western offshoots, I refer to the United States, Australia, New Zealand, and Canada.

Loecker, Eeckhout, and Unger 2020). While this trend is more pronounced in advanced economies, it is not limited to them; market power has risen almost everywhere (Figure 2).[6]

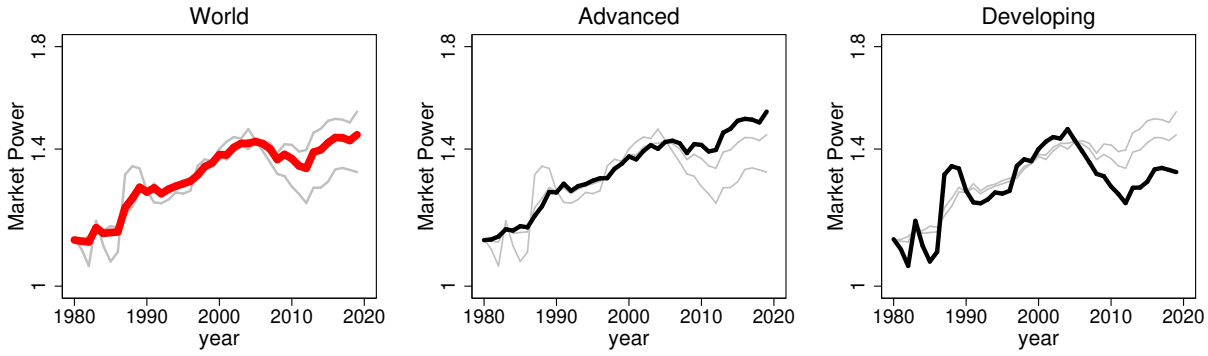


Figure 2: Evolution of Market Power Around the World

Notes: Markup data is constructed using firm financial statements accessed through Thomson Reuters. World refers to the GDP-weighted average of aggregate markups of 80 countries. For each group, missing values are imputed by the median of countries included.

The question is whether such firms use their financial power to shape government policies and regulations in their favor. Political theory suggests that this might be the very reason these firms are able to amass so much sway over the market (e.g., Lindblom 1977, Chapters 13-14, and Dahl 1998, pp. 173-9).

In a competitive setting, however, market power does not automatically translate into political power; the market power of any firm is limited by the others, potential entrants, and, in theory, no firm can dominate the market. Yet, the practical reality reveals a different picture. The combination of several factors, such as entry barriers, incumbency advantage protection, and relaxed consumer protections – all of which may be the outcome of rent-seeking activities – can grant economically advantaged firms the ability to attain and maintain higher markups and even a larger market share (Stigler 1971, Tirole 1988, p. 76, and Philippon 2019). This self-reinforcing mechanism, if left unchecked, may allow market power to influence political dynamics at the macro level, thereby affecting government decision-making processes.

The rise of politically powerful firms.— The phenomenon of economically powerful firms with significant political influence is far from rare.[7] Modern history is replete with examples

6. See also De Loecker and Eeckhout 2018, and Diez, Leigh, and Tambunlertchai 2018, which use the same data source and find very similar results.

7. For recent empirical evidence, see, among others, Akcigit, Baslandze, and Lotti (2022), and Faccio

of such occurrences. In some cases, the rise of dominant firms coincided with periods of democratic failure. For instance, in 1930s Germany, corporations obtained immense economic power and then played significant roles in shaping the political landscape of the Nazi Regime. In Japan, influential business agglomerations known as zaibatsu once dominated politics, hindering the development of democracy. The post-Soviet era in Russia offers another illustrative case where corporate entities had strong connections with political leadership, contributing to de facto autocratic system.

Yet, in most instances, it is difficult to discern whether the prevailing political environment induced the rise of these firms or if the firms themselves actively sought and gained political power. Furthermore, this phenomenon was observed in particular country cases in different time periods, adding another layer of difficulty to understanding the underlying dynamics.

The last thirty years have been marked by the market-dominant firms that emerged around the same time in different parts of the world. Intriguingly, this period has also witnessed a setback in global democracy. While this development is alarming from a normative standpoint, it also provides a rare opportunity for researchers to explore the interplay between market power and political power within the context of democracy.

The rationale behind why market power is put in the spotlight in the scope of this study is about timing, however. The onset of the market power increase predates the observed slowdown in democracy by approximately 10-15 years, arguably corresponding to the broad-based introduction of cost-reducing computing technologies into production lines (Aghion et al. 2023). However, it should be noted that the rising market power is not peculiar to a few technology firms. Microdata clearly indicates that this trend is pervasive across various industries (see also, Karabarbounis and Neiman 2014).

To sum up, the fuse ignited by structural changes may have started to pave the way from the market to the realm of politics and eventually ended up with the rise of economically and politically powerful firms. The concern is that even advanced polities may not be immune to the emergence of such pressure groups, given democracy is a fragile thing (Dahl 1996).

As a matter of fact, this could be the case happening today. When these firms gain political power, their motivations veer towards safeguarding their own interests, which could potentially clash with the broader public interest. This misalignment could have far-reaching implications that manifest in government policies and regulations that favor these entities. There is a risk that such manifestation may undermine the very essence of the above-mentioned democratic principles upon which the modern democracy concept stands.

and Zingales (2022). For theoretical discussions on rent-seeking activities, see Rowley, Tollison, and Tullock (1998).

3. Descriptive Statistics

Table 1 presents descriptive statistics and the number of observations for the main variables, namely electoral democracy and economy-wide market power. The base sample consists of 80 countries. The sample period spans from 1990 to 2019, with 5-year data, except for the last period of 4 years. Unless otherwise specified, the baseline estimates in the subsequent sections are based on this sample of countries and time periods. As a side note, throughout the paper, countries are indexed by $c = 1, 2, ..., M$ and firms are indexed by $i = 1, 2, ..., N$.

Table 1: Summary Statistics of Main Variables

	Base Sample	Excluding Closed Autocratic	Excluding Post-Soviet	Excluding Oil-Exporters
Electoral Democracy$_{ct}$	0.662	0.717	0.667	0.696
	(0.256)	(0.206)	(0.254)	(0.227)
Countries	80	70	74	68
Observations	460	412	434	400
Market Power$_{ct-1}$	1.392	1.379	1.382	1.378
	(0.371)	(0.365)	(0.369)	(0.370)
Countries	80	70	74	68
Observations	381	343	361	332

Notes: Table reports the average values during the sample period – for current value, 1990-2019; for lagged value, 1990-2015. Standard deviations are in parentheses. t denotes 5-year data except for the last period of 4 years. The summary does not include data points on Electoral Democracy when lagged Market Power is missing.

Electoral Democracy Index ranges from 0, representing full autocracy, to 1, representing full democracy. The index provides a continuous and fine-grained rating of democracy, allowing for nuanced comparisons between countries. For instance, in 2019, Russia and Hong Kong have democracy scores of 0.246 and 0.318, respectively, indicating that Hong Kong is slightly more democratic (or less autocratic) than Russia.

The first sub-sample excludes countries without a multiparty electoral regime, defined as closed autocratic by V-Dem. Post-Soviet countries are excluded due to their unique institutional setups during the early years of the sample period. The third sub-sample omits major oil exporters because market power dynamics might be influenced by energy price volatility.[8]

8. See Online Appendix E for sub-sample compositions.

Market power is aggregate markup, which is the sales-weighted average of firm-level markups. To calculate markups, I use financial statements of 57,612 publicly traded firms obtained from Thomson Reuters Worldscope. The total revenue of these firms accounts for approximately 68% of the combined GDP across 80 countries in 2019. Firm-level markups are derived by dividing sales by the cost of goods sold and multiplying it by sector-specific estimated output elasticities.[9] This ratio serves as a direct measure of a firm's ability to control the pricing of its goods, thus indicating its market power.

Detailed information on the construction of aggregate markup can be found in Online Appendix A. For the time being, it would be useful to understand aggregate markup statistics for interpreting the subsequent empirics. For instance, based on my calculations, the aggregate markup in the French economy is 1.52 in 2019. This implies that, on average, corporate firms in France charge approximately 52% more than what would be considered the competitive pricing level. Given the significant presence of corporate business in the overall economic activity of France, this charge can be attributed to the extent of economy-wide market power for this economy.

As a final note, the study does not focus on an alternative competition barometer, such as Herfindahl-Hirschman Index (HHI), for two reasons. First, HHI is more appropriate for gauging industry-level concentration, which may not be directly comparable across countries due to varying market structures. Second, increased markups often result in concentration, an aspect already captured in aggregate markup, and this dynamic will be key in this study to identify the mechanisms underlying the relationship between market power and democracy.

4. Main Results

4.1. Baseline Estimates

I use a dynamic panel model to study the long-run effect of market power on democracy.

$$Dem_{ct} = \alpha Dem_{ct-1} + \beta Markup^{S}_{ct-1} + \gamma_c + \nu_t + \varepsilon_{ct} \tag{1}$$

where, for country c, Dem_{ct} refers to electoral democracy score at time t, $Markup^{S}_{ct-1}$ denotes lagged value of market power, γ_c and ν_t are, respectively, sets of fixed and time effects, and ε_{ct} is error term with $\mathbb{E}(\varepsilon_{ct}) = 0$. The superscript S attached to *Markup* signifies the economy-wide market power, or more specifically, the sales-weighted average of firm markups.

9. I estimated output elasticities for 20 major sectors of the Industry Classification Benchmark (ICB) specifically designed for the sectoral categorization of publicly traded firms.

The behavior of democracy is a dynamic process (see, e.g., Barro 1999, and Acemoglu et al. 2008). Hence, the right-hand side of the baseline specification includes lagged dependent variable. Using lagged value of market power, I naively attempt to prevent a potential reverse causality because it is unlikely that current electoral democracy affects market power in previous period. In addition, there are good reasons to believe that an increase in market power may not instantaneously affect democracy. I choose time intervals of 5 years to exploit enough temporal variation. Table 2 shows the results from the FE-OLS estimation of the dynamic panel model for the period 1990-2019. Column (1) provides the results on the base sample of 80 countries, while the rest reports estimates using the sub-samples.

Table 2: Baseline Results with Alternative Samples, 1990-2019

	Base Sample	Excluding Closed Autocratic	Excluding Post-Soviet	Excluding Oil-Exporters
	FE-OLS	FE-OLS	FE-OLS	FE-OLS
	(1)	(2)	(3)	(4)
Electoral Democracy$_{ct-1}$	0.453	0.429	0.459	0.438
	(0.059)	(0.061)	(0.061)	(0.074)
Market Power$_{ct-1}$	-0.035	-0.045	-0.038	-0.040
	(0.019)	(0.023)	(0.020)	(0.023)
Implied cumulative	-0.064	-0.078	-0.070	-0.071
effect of Market Power	[0.060]	[0.047]	[0.048]	[0.079]
Countries	80	70	74	68
Observations	381	343	361	332
R-sqr	0.90	0.82	0.89	0.87

Notes: The dependent variable is Electoral Democracy$_{ct}$. Robust standard errors (clustered by country) are in parentheses. All columns use 5-year data from 1990 to 2015 and 4-year data from 2015 to 2019. All regressions control for time effects. The implied cumulative effect refers to the coefficient estimate of Market Power$_{ct-1}$/(1 - Electoral Democracy$_{ct-1}$). p-values from a nonlinear test of the significance of this coefficient estimate are reported in brackets.

As shown in all columns, a highly significant and large effect of lagged democracy score confirms democratic persistence. Using the base sample, I find that lagged market power has a negative effect on current electoral democracy, with a coefficient of -0.035 and standard error (SE) of 0.019. The implied effect tells that a 1-unit increase in aggregate markup might result in a 0.06-point reduction in democracy score. Between 1990 and 2019, global market power has risen by 0.2 units (from 1.25 to 1.45). Based on the calculations, this increase could potentially lead to a democratic backslide of around 0.01 points. This effect is relatively modest, yet far from being subtle, given that the global democracy score has gone down by 0.1 points since its peak in the early 2000s.

The negative effect is the largest when I exclude closed autocratic countries. For all other sub-samples, the estimated coefficient on market power is larger in absolute value than the baseline estimate. Nevertheless, since they do not differ substantially and qualitatively, I will pursue the study using the base sample from now on.

4.2. Instrumental Variable Estimates

In the preceding sections, I have outlined the possibility of mutual reinforcement between market power and political power. Moreover, there might be additional confounding factors that may govern the relationship between market power and democracy or influence its direction. To tackle potential endogeneity issues, this section takes a firm-level approach, utilizing idiosyncratic shocks extracted from microdata that allow for causal identification.

Gabaix (2011) and Gabaix and Koijen (2020) (hereafter GK) show that individual firm shocks do not fully dissipate in the aggregate since the distribution of firm sizes is typically heavy-tailed, and therefore, idiosyncratic shocks to sizeable firms leave traces in macroeconomic variables. As these shocks are unexpected and highly localized, this type of granularity can be used as a tool to identify a causal effect of the treatment in macro-level models.[10]

I would like to briefly discuss the concept of idiosyncratic shocks and how they differ from common (systematic) shocks within the confines of this study, particularly in the context of markup. Idiosyncratic shocks pertain to random events that affect individual firms and are beyond their direct control. For instance, consider a mining company that experiences an idiosyncratic shock upon discovering a new mineral deposit near its operational site without incurring additional costs. Similarly, a fashion retailer might see a markup hike in response to a surge in consumer demand for its products driven by a viral social media campaign.

10. The literature on this subject is flourishing, with numerous studies exploring different types of aggregate fluctuations by examining idiosyncratic shocks to economic actors (see, among others, Acemoglu et al. 2012, and Carvalho and Grassi 2019).

These shocks are not exclusively positive; for example, an automotive firm might face an idiosyncratic shock due to a significant safety issue in its vehicles that leads to financial losses. Such occurrences are often a natural part of firm production and pricing dynamics, which are unlikely to directly influence the democratic process.

Common shocks, contrarily, affect the entire economy, rather than being specific to individual firms. These shocks can include events such as economic recessions, natural disasters with widespread impact, path-breaking technological advancements, or changes in government policies or regulations. Consider a scenario in which politically influential firms obstruct any modifications to antitrust regulations that might benefit competition. As political decisions have wide-ranging implications, the effects of this policy shift would resonate across the entire business environment, which potentially influences all firms within the affected economy.

As illustrated above, common shocks can originate from various sources, and some of them could be even related to political factors. Without loss of generality, suppose that for firm i in a country, market power is defined as a deviation from the competitive pricing level:

$$Markup_{it} = \lambda_{it}\eta_t + \mu_{it} \tag{2}$$

where $\lambda_{it}\eta_t = \sum_k \lambda_{it}^{(k)}\eta_t^{(k)}$ for $k \in [1, n]$; hence, η_t is an affine combination of common shocks affecting the evolution of market power of firm i, and possibly also correlated with some unobservables affecting democracy, and λ_{it} is a vector of loadings that capture firm-specific sensitivities to these common shocks. The second term, μ_{jt}, denotes idiosyncratic shock. By assumption, idiosyncratic markup shocks are uncorrelated random events across firms with mean zero.[11] My goal is to recover these shocks from the firm-level data.[12]

Although the systematic variation in markup, η_t, is not directly observed, it can be purged by using observable firm characteristics as proxies for firm-specific sensitivities. I use four indicators associated with the financial characteristics of firms: (i) Price-to-sales ratio, which is market capitalization over sales. This ratio provides insights into whether a firm is overvalued or not. (ii) Pay-out ratio, represented by dividends over sales. This ratio offers a rough measure of profit-sharing sustainability. (iii) Q Ratio, calculated using the formula (Market Capitalization + Debt)/Assets. This is a standard gauge of a firm's investment worthiness. (iv) Total duration of being quoted on the stock market since the initial public offerings.

First, I run a factor analysis by regressing firm markup on four indicators period-by-period using cross-sectional firm data for each country. This process yields initial residuals. Then,

11. I will relax this assumption in later parts of the study.
12. It may not be possible to capture all idiosyncratic shocks.

aiming to uncover latent firm attributes, if present, I estimate additional loadings using principal component analysis (PCA) involving these financial indicators. I extract final residuals (idiosyncratic shocks) by regressing the initial residuals on the principal components.

I aggregate idiosyncratic shocks, μ, at country level. For the aggregation, I use cost-based market shares instead of sales-based, which I normally use for calculating aggregate markups. The reason for this choice is that politics-related unobservables driving changes in markups can be correlated with changes in firm revenue. Importantly, this choice preserves the granular character of the aggregate data, as cost-based sizes also exhibit a heavy-tailed distribution, similar to sales-based sizes.[13] Finally, this procedure gives me the benchmark GIV,

$$GIV_t = \sum_i \tilde{S}_{it}\mu_{it}$$

where $\tilde{S}_{it}$ is the cost-based market share of firm i in a country at period t.

Recall that aggregate markup is a size-weighted average markup. It can be simply defined as $Markup_t^S = \eta_t + \sum_i S_{it}\mu_{it}$, where the second term is the size-weighted sum of idiosyncratic shocks. If firms would have equal market shares, $S_i = \frac{1}{N}$, we would have $\sum_i S_{it}\mu_{it} = 0$ by the central limit theorem. However, due to heavy-tailed size distribution, local volatility decays slower than $\frac{1}{N}$, which results in non-zero granularity in aggregate markup, $\sum_i S_{it}\mu_{it} \neq 0$. Exploiting this characteristic, GIV fulfills the relevance condition, $\mathbb{E}\big(GIV_t Markup_t^S\big) \neq 0$.

Under the assumption that idiosyncratic shocks are orthogonal to systematic conditions, which may also involve politics-related unobserved variations, the extracted random component of firm markup is not correlated with the error term in equation (1), $\mathbb{E}\big(\mu_{it}\varepsilon_t\big) = 0$. This mechanically implies the exclusion restriction condition also holds, $\mathbb{E}\big(GIV_t\varepsilon_t\big) = 0$.

Finally, the first-stage equation that incorporates GIV is defined as:

$$Markup_{ct-1}^S = \delta^F GIV_{ct-1} + \alpha^F Dem_{ct-1} + \gamma_c^F + \nu_{t-1}^F + \varepsilon_{ct-1}^F \tag{3}$$

where superscript F denotes the first-stage parameters, and for country c, Dem_{ct-1} is lagged electoral democracy score, ε_{ct-1}^F is error term, and the rest denotes fixed and time effects.

Table 3 Column (1) presents the FE-2SLS estimates, using the benchmark GIV. The first-stage results reveal a strong positive relationship between market power and its aggregate random component. The estimated effect of market power on democracy is -0.069, with SE of 0.026, which is nearly twice as high as the FE-OLS estimates. This suggests that the implied effect could be notably larger than what OLS estimates reveal.

13. For more discussion, see Online Appendix A.

Table 3: Granular Instrumental Variable (GIV) Results, 1990-2019

	FE-2SLS (1)	FE-2SLS (2)	FE-2SLS (3)
Electoral Democracy$_{ct-1}$	0.440	0.439	0.440
	(0.057)	(0.057)	(0.056)
Market Power$_{ct-1}$	-0.069	-0.072	-0.070
	(0.026)	(0.027)	(0.028)
	First stage for Market Power$_{ct-1}$		
Electoral Democracy$_{ct-1}$	-0.227	-0.202	-0.247
	(0.138)	(0.134)	(0.139)
GIV$_{ct-1}$	0.544		
	(0.130)		
GIV$^{odd}_{ct-1}$		0.290	
		(0.057)	
GIV$^{even}_{ct-1}$		0.384	
		(0.090)	
GIV$^{top25}_{ct-1}$			0.543
			(0.134)
Implied cumulative	-0.123	-0.128	-0.125
effect of Market Power	[0.008]	[0.006]	[0.014]
Countries	80	80	80
Observations	381	381	381
Hansen-J		[0.40]	
F-stat	17.6	19.6	16.4

Notes: The dependent variable is Electoral Democracy$_{ct}$. Robust standard errors (clustered by country) are in parentheses and p-values are in brackets. All columns use the base country sample and 5-year data from 1990 to 2015 and 4-year data from 2015 to 2019. All regressions control for time effects. The implied cumulative effect refers to the coefficient estimate of Market Power$_{ct-1}$/(1 - Electoral Democracy$_{ct-1}$). p-values from a nonlinear test of the significance of this coefficient estimate are reported in brackets.

Next, I construct alternative instruments to check whether the systematic shock is successfully purged, as failure to do so could lead to a violation of the exogeneity assumption. One way to understand this is to apply an overidentifying restrictions test.[14] For this, I construct two different instruments as the subsets of the benchmark GIV; both are composed of size-weighted idiosyncratic shocks respectively to odd-numbered firms, GIV_{t-1}^{odd}, and to even-numbered firms GIV_{t-1}^{even}. I ranked the firms by alphabetic order while assigning numbers. I instrument market power with two subsets of GIV together. Overidentifying restrictions test (so-called Hansen J) tests the null hypothesis that excluded instruments are uncorrelated with the error term. As seen in Column (2), the parameter estimate does not significantly change, and I fail to reject the null hypothesis at the conventional significance level.

Another approach involves limiting idiosyncratic shocks to a predefined subset. Assuming that all GIVs remain valid when derived from random events, this adjustment should not alter the results. I restrict the instrument to very large idiosyncratic shocks – the largest 25% shock realizations.[15] This gives me an alternative instrument, GIV_{t-1}^{top25}. Column (3) shows that coefficient estimates do not significantly differ when using the restricted GIV.

4.3. Robustness of the Main Results

Alternative estimator, alternative period, and additional controls.— Table Bx.1 Panel A in Online Appendix B provides the robustness checks results using different estimators under the baseline period, 1990-2019, and an alternative period, 1980-2019.[16] In Panel B, I do the same analysis by controlling for additional variables relevant to the discussion.

Dynamic panel models commonly suffer from Nickell (1981) bias due to finite time dimension, T. To address this issue, I use GMM estimator of Arellano and Bond (1991) (hereafter A-B), following the common application in the literature. I find that persistence in democracy is stronger when using A-B GMM, and the negative effect of market power is larger than OLS estimates. The inclusion of the benchmark GIV as an external instrument for market power does not change these results (Panel A: Column (4)).

For the period 1980-2019, I find that the market power effect remains negative but reduces in absolute value.[17] Possible explanation for the sensitivity to this period selection is that

14. Indeed, there is no formal way to test exogeneity of an instrument. By using more instruments than the number of endogenous regressors, one can, however, check overidentifying restrictions to test that additional instruments are exogenous.

15. To rank shock realizations, I multiply idiosyncratic shocks with firm market share. Note that firm ranks can change by different years in this strategy.

16. For convenience, Column (1) and (2) present the same result as in Column (1) of Table 2 and Table 3.

17. FE-OLS estimate of market power effect is statistically insignificant for the period 1980-2019.

the panel becomes more unbalanced when earlier years of the sample period are included, or the effect of market power on democracy is not substantial in the first decade of the study period (1980-2019).

In Panel B, I include potential covariates and estimate the model again using alternative estimators and periods. I include log GDP per capita because changes in income might be correlated with changes in democracy. Moreover, a broad-based rise in market power can be associated with changes in economic growth, as well.[18] I control for urbanization based on Dahl and Tufte's (1973) argument that a larger urban population increases competition between power groups due to diversity in the same pot and thus imposes various restrictions on the concentration of political power. I control for education following the standard approach in the literature.[19] Population median age proxies age structure, and including it can be relevant considering that change in mass political preferences overall may be age-dependent (Boix 2001, and Fuchs-Schündeln and Schündeln 2015).

The estimates in Panel B show that the effect of market power remains negative across different estimators and alternative periods. The joint effect of additional variables on democracy is not statistically significant, and including these variables increases robust standard errors of GMM coefficient estimates.

Alternative democracy indices.– I use other democracy indices from V-Dem as well as Political Rights (PR) and Civil Liberties (CL) indices from Freedom House, and Polity V index from Center for Systematic Peace. V-Dem indices are interval-based, so they are continuous measures of democracy, while PR, CL and Polity are categorical measures.[20]

Table Bx.2 Panel A (Online Appendix B) presents the FE-OLS coefficient estimates.[21] Market power has a negative effect when the dependent variable is one of V-Dem indices. As shown in Columns (5)-(7), this effect becomes negligible and statistically insignificant when PC, CL, and Polity V are used. However, for all indices, FE-2SLS coefficients on market

18. This association, however, could be subtle since the complexity of underlying mechanisms governing market power and productivity allows different economic interpretations (see, Autor et al. 2020, and Aghion et al. 2023). Despite conflicting arguments, I still think that adding GDP per capita can be useful to see whether the negative effect of market power on democracy stays undistorted.

19. See, e.g., Barro (1999). I take education as the average years of schooling in the population aged 25 and older.

20. Civil Liberties and Political Rights indices are between 1-7 (from highest to lowest), and Polity index is between -10 and 10 (from lowest to highest). I normalize these measures to 0-1 (from lowest to highest).

21. Dependent variable in Column (1) is Liberal Democracy Index which scores the strength of institutional practices in protection of individual rights and freedom. In Column (2), I use Participatory Democracy Index, which scores how much citizens take an active role in making political decisions. In Column (3), Deliberative Democracy Index measures democracy based on deliberative engagements of all citizens in democratic processes, and in Column (4), Egalitarian Democracy Index hints at conceptual democratic equality.

power (in Panel B) are negative and reasonably larger than FE-OLS. Notably, the estimated coefficients on lagged CL, PR, and Polity V are considerably smaller than V-Dem counterparts. This may justify the measurement concerns about category-based indices because such differences in estimated coefficients on lagged democracy scores potentially indicate an attenuation bias due to measurement error.

Alternative specification and data frequency.— I use yearly data for two alternative periods, 1990-2019 and 1980-2019, and also change the specification by including five lags of electoral democracy to exploit the long-run dynamics of democracy.[22] For the estimation, I use FE-OLS and A-B GMM. Alternatively, I adopt a long difference strategy from Hahn, Hausman, and Kuersteiner (2007) by taking 5-year and 10-year seasonal differences of the baseline model using yearly data. The results are provided in Table Bx.3 in Online Appendix B. The findings indicate a negative market power effect in most regressions, except for A-B GMM in 1980-2019. However, significance varies with different periods and estimators, suggesting that the negative effect of market power might be relatively limited in the short term.

Alternative aggregation and calculation method for markups. – As mentioned earlier, firm-level markup is derived by dividing sales by expenditure on variable input, i.e., cost of goods sold (COGS), and then multiplying this ratio by the estimated sector-specific output elasticities. Finally, the estimated markups are aggregated using sales-based market shares.

I make two modifications to this procedure following De Loecker, Eeckhout, and Unger (2020). As an alternative to the sales-weighted average markup, I use COGS as a weight. Second, I calculate elasticities based on the cost share of variable input in a total cost – COGS and capital expenditure (see Online Appendix A under *Cost-Share Approach*). One advantage of this approach is that it is based on observables and hence less prone to identification problems. Nonetheless, at least for this study, one downside is that the calculation is limited to a sample of firms reporting sales, COGS, and capital expenditure, which is smaller than the base sample mainly due to missing values of capital expenditure. This reduces the representativeness of firms.

Figure Ax.1 in Online Appendix A depicts the alternative measures. All aggregate markups are trending upward. Yet, the increase in the cost-weighted average is less severe than the increase in the sales-weighted average, while the increase in the cost-share-based aggregate markup is more than both. I find a larger negative effect for the cost-weighted average markup compared with the baseline aggregate markup (see Table Bx.4 in Online Appendix

22. I determine the number of lags based on their joint significance. Including farther lags does not improve the predictive power, while the increase in unexplained variation grows with the exclusion of the lags of 2 to 5.

B). The effect of the cost-share-based aggregate markup is negative but highly insignificant. However, after correcting for potential bias using GIV, the effect becomes significant. I find larger coefficient estimates (in absolute value) for all measures compared to OLS estimates.[23] Overall, the estimates suggest that the main results may not be driven by a specific measure of market power.

4.4. Quantification Exercise

I close this section by quantifying the effect of market power on democracy. For this, I use balanced panel data between 1990-2019, of which the cross-section dimension covers 40 countries. My preferred estimation strategy is FE-2SL2, where I instrument aggregate markup with the benchmark GIV. The estimates are provided in Table Cx.1 in Online Appendix C.

I build a counterfactual thought experiment by freezing aggregate markups in 1990 as if they did not change over the sample period. Then, based on the parameter estimates, I gauge the size of the effect by comparing the change in counterfactual electoral democracy scores from 1995 to 2019 with the observed change during the same period.[24] I find that 24% of the observed decline in global democracy is explained by the recent increase in aggregate markups. I show this finding in Figure 3 under the world case study.[25]

Figure 3 includes data for Turkey and India, both of which have exhibited autocratic tendencies, and the United States, which has undergone significant democratic regression in recent times. The effect on U.S. democracy is particularly pronounced, with 42% of the observed decline attributed to the rise in market power. On the other hand, in Turkey and India, the change in aggregate markup explains a relatively small portion of the democratic decline. I find that the U.S.-like pattern is more prevalent in developed countries; for the entire sample, the negative effect is, on average, five times larger in advanced democracies than in emerging ones.

This finding is not surprising and can be attributed to several reasons. Firstly, in developing countries, corporates may already possess significant political power, which sets a limit on the marginal effect that a rise in market power can have on long-run democracy. Moreover, these countries tend to have a fragmented political landscape characterized by condensed

23. I have computed a new GIV for the cost-share-based measure: I use demeaned residuals assuming factor loadings are uniform across firms (see Gabaix 2011). This granular instrument is simply the difference between size-weighted and equally-weighted average markups.

24. See Online Appendix C for more information on the counterfactual approach.

25. When taking the change in electoral democracy scores from 2000 to 2019, the increase in aggregate markups explains 15% of the democratic backsliding.

power centers, such as the military, religious cliques, and influential families. The presence of these alternative pressure groups may serve as a mitigating factor, contributing to the relatively small observed effect.

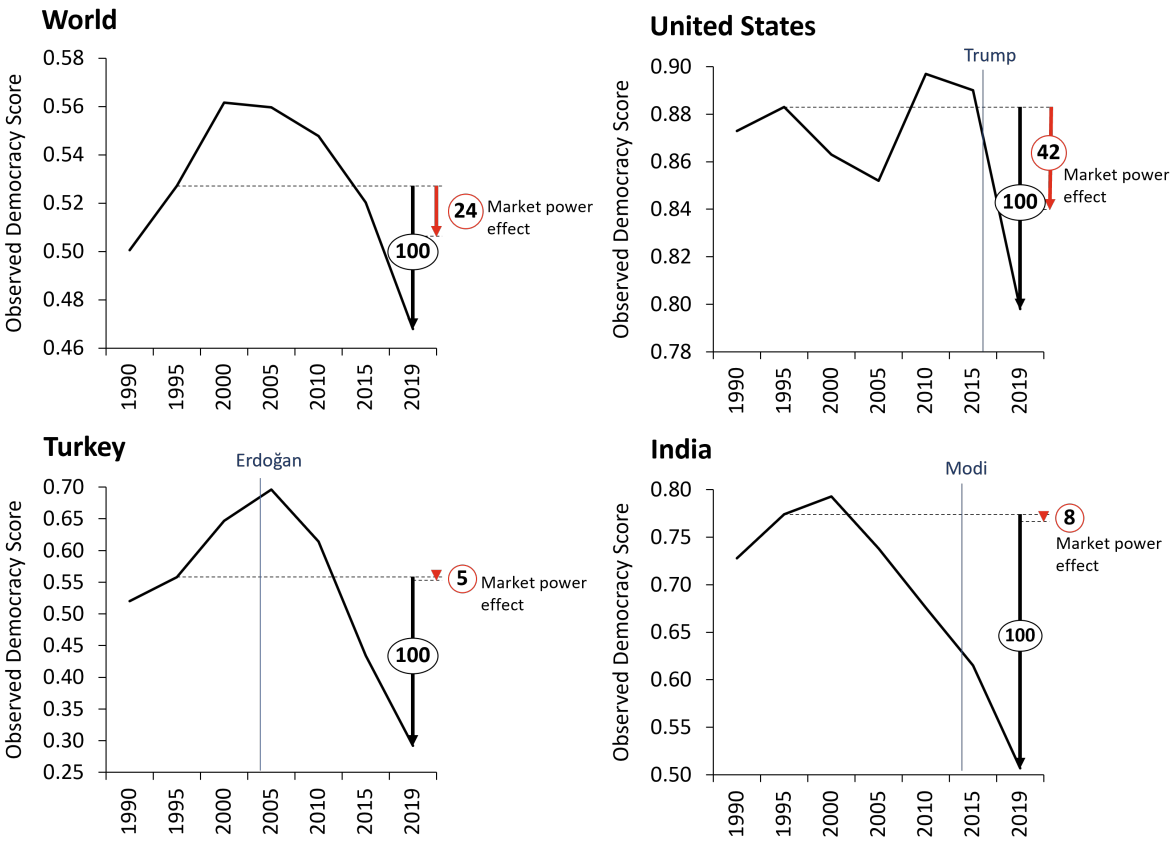


Figure 3: Observed Change versus Counterfactual Change in Democracy

Source: V-Dem and the author's calculation

Notes: World refers to the pop-weighted average of democracy scores of 40 countries. The figure is plotted with five-year intervals.

5. Additional Results

In this section, I deepen my research by examining the potential mechanisms that may contribute to the negative relationship between market power and democracy. To begin, I decompose the aggregate markup into its within and reallocation components, aiming to identify which component primarily drives the negative effect of market power. The estimates

suggest that an increase in markups alone does not have a significant effect on democracy unless it occurs in large firms. To further investigate this finding, I conduct a firm-level analysis, focusing specifically on the United States as a case study. The objective is to inquire whether large firms with high markups exhibit stronger political connections. To measure the extent of firm political power, I use firm-level lobbying expenditure as a proxy. The results confirm that large firms with high markups are more politically engaged.

5.1. Decomposition of Aggregate Markup

I decompose aggregate markup using Haltiwanger's (1997) firm-level decomposition method. The equation below reflects the main idea behind this decomposition. To simplify the notation, I use $\mathcal{M}$ to denote markup and S to denote market share, as done throughout the paper. If not indicated by i, they refer to size-weighted average, otherwise, they refer to firm-level measures.

$$\Delta Markup_t^S = \underbrace{\sum_{i\in\tilde{N}} S_{it-1}\Delta\mathcal{M}_{it}}_{Within} + \underbrace{\sum_{i\in\tilde{N}} \Delta S_{it}\tilde{\mathcal{M}}_{it-1} + \sum_{i\in\tilde{N}} \Delta S_{it}\Delta\mathcal{M}_{it} + NE_t}_{Reallocation} \tag{4}$$

where $\tilde{\mathcal{M}}_{it-1} = \mathcal{M}_{it-1} - \mathcal{M}_{t-1}$ with $\mathcal{M}_{t-1} := Markup_{t-1}^S$.

Within tracks the change in the unweighted average of markups, assuming market shares remain unchanged from the previous period. *Reallocation* consists of terms that quantify changes resulting from the reallocation of sales to relatively high-markup firms and from net entry (NE). A positive contribution of the reallocation term over time indicates an increasing concentration of market power among large firms.

I construct two counterfactual components by cumulatively adding changes in within and reallocation terms using initial-period aggregate markups as the base. Figure 4 Panel A illustrates the evolution of counterfactual and realized aggregate markups globally. The decomposition shows that within-firm markups have increased, suggesting that a substantial number of firms in the sample have higher markups compared to the initial period. Approximately half of the observed increase in aggregate markup can be attributed to reallocation. This suggests that the rise in markups benefits some firms, potentially already large ones, allowing them to further increase their market shares.

I compute similar counterfactuals using five-year changes.[26] Panel B in Figure 4 reveals that changes in reallocation and within components have nearly equal contributions to the

26. The last period from 2015 to 2019 is a 4-year change.

increasing global markup over the last decade, although within effect is more pronounced between the 1990s and 2010. As a cautionary note, the global figures obscure the heterogeneity of contributions; there are country cases where one component systematically contributes more significantly than the other.

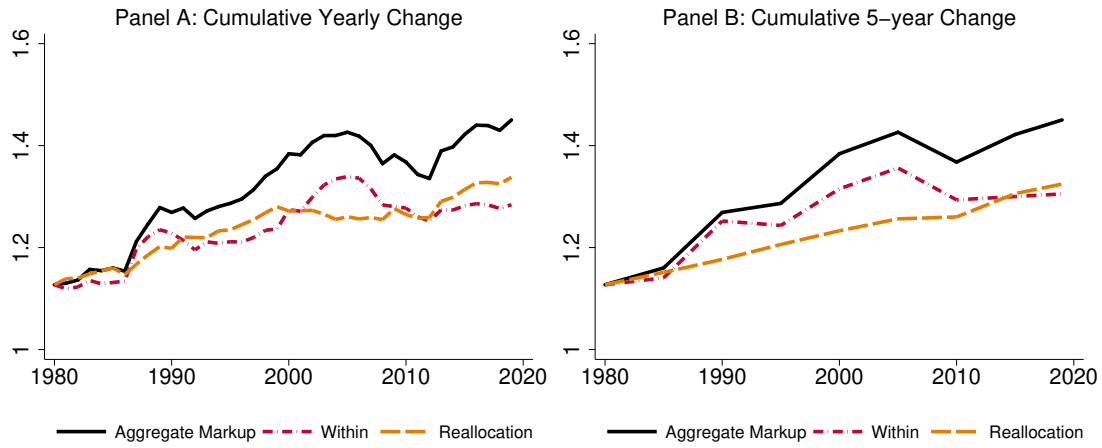


Figure 4: Haltiwanger Decomposition of Aggregate Markup (World)

Notes: GDP is used as a weight to obtain global-level data. The figure uses the base country sample.

To see which one could primarily drive the negative effect of market power on democracy, I run a simple horse-race regression of current democracy score on five-year lagged components using the baseline dynamic specification similar to equation (1). In Columns (2) and (3), I report their individual effects when included separately. The unweighted average markup (within) shows no statistically significant effect on democracy, whereas reallocation exhibits a negative and significant effect even larger than market power itself.

In Column (4), I include both within and reallocation as covariates. The effect of reallocation is amplified, while the effect of within remains statistically insignificant, although it is negative. These results overall suggest that a significant portion of the democracy-weakening effect of market power may come from the reallocation term.

While the increase in markups on average may not have a significant effect on democracy in and of itself, it can be indicative of underlying changes in competition. When increased markups are predominantly concentrated among a group of large firms, it typically leads to reduced competition. This concentration of market power carries the potential to undermine democracy.

Table 4: FE-OLS Estimates for Markup Components, 1990-2019

	(1)	(2)	(3)	(4)
Electoral Democracy$_{ct-1}$	0.453	0.466	0.452	0.449
	(0.059)	(0.059)	(0.059)	(0.060)
Market Power$_{ct-1}$	-0.035			
	(0.019)			
Within$_{ct-1}$		0.001		-0.017
		(0.019)		(0.017)
Reallocation$_{ct-1}$			-0.059	-0.066
			(0.032)	(0.033)
Countries	80	80	80	80
Observations	381	381	381	381
R-sqr	0.90	0.90	0.87	0.86

Notes: The dependent variable is Electoral Democracy$_{ct}$. Robust standard errors (clustered by country) are in parentheses. All columns use the base country sample and 5-year data from 1990 to 2015 and 4-year data from 2015 to 2019. All regressions control for time effects.

It is worth emphasizing once more that the focus of this paper is specifically on publicly traded firms that are already considerably larger compared to private firms in the overall economies. Even among this tiny group of businesses, the democratic implications of rising market power are being driven by an even smaller number of firms. These particular firms, often characterized by their substantial size and economic power, could have a heightened financial capacity to wield a considerable political influence and shape policy outcomes in ways that may not align with broader democratic principles and practices.

On the other hand, it is natural to wonder why these firms, which already possess substantial economic power, continue to pursue political influence, if that is indeed the case. First and foremost, they must maintain their existing political relationships.[27] Additionally, firms with growing market power face an increased likelihood of future regulations, especially in democratic systems, so there is always space for political capture. The second reason is that they are capable of doing it. As I will refer soon in the U.S. case, their pecuniary effort to sustain political connections, such as lobbying, is essentially quite small in comparison to their massive revenues.

27. For an alternative perspective, refer to the work of Bombardini and Trebbi 2020.

5.2. The U.S. Case Study

There are several studies examining the political influence of corporate firms using lobbying data. For example, among others, Cowgill, Prat, and Valletti (2021), in their U.S. case study, have found a positive association between lobbying expenditure and mergers. Another recent study by Huneeus and Kim (2018) reveals a positive effect of lobbying on firm revenues and profits. To the best of my knowledge, my study is the first that explores the link between markups, a direct measure of market power, and political connections. I am particularly interested in whether higher market power leads to stronger political ties, though the direction of this could well run in the reverse direction. Hence, I will design my identification strategy to align with this objective.

Lobbying data is from the U.S. Senate Lobbying Disclosure Act (LDA) of 1995 reports that are digitally provided.[28] Lobbying entities consist of firms, unions and associations, and other types of organizations. The time span of the data is from 1999 to 2022 (I use until 2019) as semiannually until 2008 and quarterly after this year with the adoption of a new disclosure law. I convert the data to annual frequency for the sake of consistency with markup data.

LDA data includes names of entities employing their own in-house lobbyist(s) or that are clients of intermediary lobbyist companies. I matched the firm names in Thomson Reuters with ones in LDA using an appropriate text pattern algorithm.[29] Approximately 16% of the 8,651 publicly traded firms, which includes both active and inactive firms in any year throughout the sample period 1999-2019, have engaged in lobbying activities at least once. These percentages are based on the subset of firms for which markup data, key financial ratios discussed earlier in Section 4.2, and sub-level industry information are available.[30] The lobbying expenditure of these firms accounts for an average of only 0.005% of their annual revenue.[31]

Using firm panel data for the period of 1999-2019, I regress current level lobbying expenditure on current markup. I control for time and firm fixed effects and cluster robust standard errors at firm level. The results are provided in Table A.1 in Appendix.

The estimates presented in Column (1) reveal a marginally significant positive relationship between lobbying and firm market power. Nonetheless, this observed relationship could po-

28. See https://lda.senate.gov/system/public/

29. I use a text pattern detection routine that matches string observations from two datasets. For more information on matching algorithms see Online Appendix A.

30. As part of the baseline analysis, markups were calculated for a total of 10,233 firms.

31. The portion of firms that embarked on lobbying per year has stayed almost constant over time, though, the amount of lobbying has doubled to approximately 0.6 billion dollars (at 2015 constant prices) from 1999 to 2019.

tentially be spurious, as lobbying efforts may contribute to an increase in market power. For identification purposes, I put forth and use a novel instrumental variable approach drawing on idiosyncratic markup shocks that happened to firms' close competitors.

In Section 4.2, I defined firm markup as $Markup_{it} = \lambda_{it}\eta_t + \mu_{it}$, assuming that idiosyncratic shocks, μ_{it}, are uncorrelated across firms. However, I relax this assumption considering for correlation between idiosyncratic shocks, μ_{it} and μ_{jt}, only when firm i and firm j are close competitors within a specific industry (refer to GK).[32] This implies that the shock experienced by firm j indirectly impacts firm i. Furthermore, similar to firm j, the shock is unexpected for firm i. Thereby, this may introduce exogenous volatility in the market power of firm i, which may not be directly related to its specific characteristics, except for its proximity as a competitor to firm j.

Consider a scenario where a cloud-based technology firm suffers a data breach due to a cyberattack, resulting in customer distrust. As a result, some of the customers who have lost confidence in the affected firm may actively look for alternative providers, resulting in a higher demand for services offered by the firm's closest competitors. In response to this increased demand, the rivals may raise their prices to take advantage of the situation.

For each firm within 173 industries categorized by Industry Classification Benchmark (ICB), I build a time-varying adjusted inverse distance weight matrix based on the disparity in market share between the focal firm and its competitors. Subsequently, I calculate a weighted sum of idiosyncratic shocks of competitors for each firm, using rescaled inverse distances.[33] This composite index, which I call the competitors' shock index, serves as an instrument for firm-level markups. In Column (2) of the analysis, the instrumental variable (IV) estimation reveals a significantly positive relationship, larger than the results obtained through OLS estimation.

However, I contend that it is crucial to incorporate firm sizes into the empirical analysis. First, previous research suggests a positive association between sales (i.e., revenue) and lobbying.[34] Second, the link between market power and political engagement may be influenced by the sales-reallocating implication of increased markups. This mechanism might enhance the capacity of large firms to use their financial resources to influence political processes.

The following results suggest that the firm size could be an intermediary pathway in the transformation of market power into political power. Initially, I include firm size as a control

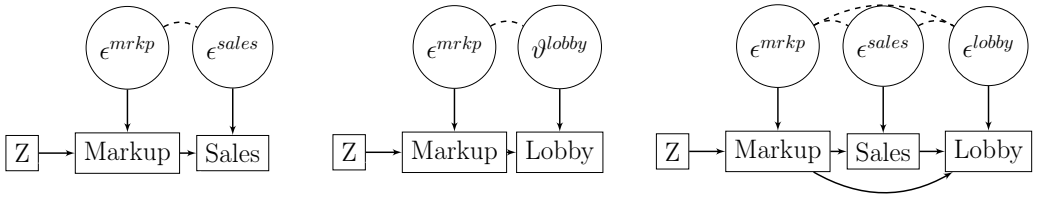
32. There is an extensive literature on the propagation of shocks among competitors. See the additional references in Appendix.

33. Further details are provided in Appendix.

34. Also see Figure Ax.3 in Online Appendix A.

in the IV estimation defined above. As shown in Table A.1 Column (3), *Sales* attenuates the effect of market power. This implies a potential overlap in the underlying factors governing the relationship between market power and political power, as well as the relationship between firm size and political power. The estimates in Column (4) affirm this, as the competitors' shock index proves to be a strong instrument for firm size when I apply the same IV procedure only for *Sales*. Moreover, this estimation reveals that size significantly and positively affects lobbying. Lastly, market power exhibits a significant positive relationship with size after correcting for potential endogeneity. This finding aligns with previous empirical evidence of the reallocation of market shares toward high-markup firms.

Table 5: Graphical Representation of Causal Mediation Analysis



Model 1	Model 2	Model 3: Mediation
$\epsilon^{\text{mrkp}} \not\perp \epsilon^{\text{sales}}$	$\epsilon^{\text{mrkp}} \not\perp \vartheta^{\text{lobby}}$	$\epsilon^{\text{mrkp}} \not\perp \epsilon^{\text{lobby}} \mid \varepsilon^{\text{sales}}$
$Z \perp \epsilon^{\text{mrkp}}, \epsilon^{\text{sales}}$	$Z \perp \epsilon^{\text{mrkp}}, \vartheta^{\text{lobby}}$	$Z \perp \epsilon^{\text{mrkp}}, \epsilon^{\text{sales}}, \epsilon^{\text{lobby}}$

Notes: Mediation diagram is created based on Dippel, Ferrara, and Heblich (2020). $\perp$ denotes statistical independence, Z denotes the excluded instrument.

For further exploration of this, I adopt a structural mediation approach introduced by Dippel, Ferrara, and Heblich (2020) (hereafter DFH). In this framework, both markup and sales are considered potentially endogenous. DFH estimation enables using a single instrument for both the treatment and intermediary variable, thereby preventing under-identification problems. By capitalizing on this advantage, I identify the causal pathway from market power to political power by using the competitors' shock index as the excluded instrument.

Table 5 displays the steps of the mediation analysis, enclosing three structural models. Model 1 scrutinizes the effect of increased markups on firm size. Model 2 investigates the causal relationship between market power and political power. Lastly, Model 3 integrates the first two models to explore the transformation of market power into political power, specifically through the reallocation of resources to dominant firms. To save space, I have provided comprehensive technical details regarding key identification assumptions in Appendix, while presenting the mediation estimates in Table A.2.

The results from the analysis confirm that higher firm market power facilitates forging close political connections. Moreover, the relationship between market power and political power is materialized through firm size. In other words, financial resources held by firms serve as the intermediary that mediates the transformation of market power into political power.

These findings align consistently with the cross-country evidence, substantiating that the conversion of increased markups into political power predominantly occurs among larger firms. This discovery holds considerable significance, as it suggests that the concentration of market power among these firms not only grants them considerable economic influence but also leads to their increasingly active involvement in political processes. Per the findings from cross-country analysis, this type of concentration of political power can be detrimental to democratic progress in the long run.

However, lobbying is just one avenue through which firms can seek or gain political power. For example, firms, their proprietors, or employers can contribute to the election campaigns of candidates they support.[35] These channels of influence are legally permissible. In both the United States and other countries, there may exist additional covert channels that operate behind the scenes. These channels could involve cultivating personal relationships with politicians, influencing or corrupting regulatory bodies, or using various undisclosed financial means. Nevertheless, substantiating such activities can be intricate and challenging, though we cannot deny their existence.

5.3. Discussions and Limitations

The empirics of this study so far suggest that large firms may more easily convert market power into political power. However, likely, implications of market power are not limited to the political dimension. Even more generally, the concentration of market power can affect income inequality, which itself can play a role in democratic outcomes.

Recent studies reveal that the rising market power goes hand in hand with increased profits due to concentrated sales (e.g., De Loecker and Eeckhout 2018, and Barkai 2020). This potentially implies a wealth transfer from consumers (and thus workers) to shareholders. Given that corporate rents are captured by a relatively small number of shareholders, as Piketty, Saez, and Zucman (2018) suggest, this dynamic should aggravate income inequality. In addition, greater inequality can increase the likelihood of backsliding from democracy because the poorer majority will be less likely to engage in political processes (e.g., Muller

35. Cowgill, Prat, and Valletti (2021), for example, have found a positive association between merger activities and campaign contributions.

1988, and Solt 2008). Thus, the concentration of market power may also erode democracy for having an effect through income inequality.

I assess inequality using four statistics: the income shares of the top 1% and 10% of income earners, labor income share in GDP, and Gini Index.[36] Subsequently, I explore the role of income inequality as a potential macroeconomic channel that could partially transmit the aggregate effect of market power on democracy. The results, however, indicate a lack of evidence for the existence of this channel (see Online Appendix D).

There are several plausible explanations for this finding. First, the link between the concentration of market power and income inequality may not be straightforward or could be nuanced. Second, concentrated market power itself may directly contribute to the concentration of political power, thereby undermining democracy. However, it is important to note that the observed decline in global democracy cannot be solely attributed to the rising market power. There could be other contributing factors as well. Consequently, the results do not negate the possibility of a more intricate interplay between economic and political factors in shaping the observed response of democracy to diminishing economic competition.

Given these considerations, it is pertinent to explore additional macroeconomic channels that may contribute to our understanding of the democracy-weakening effect of market power. While this study primarily focuses on market power in output markets, it overlooks the potential effect of monopsony power in labor markets. Consequently, it would be valuable to investigate how changes in workers' bargaining power, which may be linked to weak competition in sectors (Deb et al. 2022), could influence democracy.

One genuine limitation of the study is data-related, as it focuses on publicly traded firms. Although these firms represent a significant portion of economic activity within their respective countries, many of them also operate abroad. As a result, these firms may pursue political power beyond national borders, driven by the same motivations as in their home countries. This implies that their potential political influence may extend internationally. However, due to the absence of detailed geographical breakdowns in firm financial statements, controlling for this spillover effect becomes challenging, at least using direct observables. This study principally addresses whether the increasingly dominant firms could pose democratic implications within their respective nations. However, a future study could be designed to specifically examine the spillover effect, incorporating the potential implications of globalization.

36. Top 1% and 10% shares are from World Inequality Database (WID) constructed by World Inequality Lab 2020. Labor income share is the share of labor income of employees in GDP, which is obtained from Penn World Table 10.0 under *Labor Detail* (Groningen Development and Growth Center 2021). Gini Index is obtained from World Bank 2020.

6. Concluding Remarks

Market competition is necessary for democracy to exist and thrive, and this relationship often works both ways. Therefore, if one falters, the other is likely to follow suit. Lately, some regularities have been aroused in compliance with this argument. The market power of large firms in many countries has increased significantly over the past few decades. Nearly a decade after this increase began, there has been a noticeable decline in democracies worldwide, which has persisted until recently.

In this paper, I explore the potential role of declining market competition on observed democratic backsliding. Hereby, I propose and test the hypothesis that excessive market power that a limited number of firms hold can turn into a political power that eventually weakens long-run democracy. I use a dynamic panel covering 80 countries observed over the period from 1990 to 2019. I compute economy-wide market power using financial statements of publicly traded firms, which I access through Thomson Reuters. As a measure of democracy and proxy for the concentration of political power, I use electoral democracy scores calculated by V-Dem.

Initial results suggest that the concentration of market power has a negative effect on democracy, and this effect stays qualitatively robust to a series of statistical interventions. After adjusting for potential endogeneity, I find the negative effect is causally driven and economically large. Counterfactual estimates reveal that one-quarter of the democratic decline observed in the world could be associated with the rise in corporate market power.

Further results from cross-country and firm-level analysis on potential mechanisms of this link suggest that the negative effect of market power is mainly driven by the increased ability of very large firms to deploy their financial clout to influence political processes. I also investigate the role of income inequality as an additional macroeconomic channel because the literature highlights that a rise in corporate market power can weaken democracy through increasing income inequality. However, I do not find any evidence that the negative effect of market power is governed by this channel. The results point out that the concentration of market power has a direct and specific effect on democracy.

Clearly, these results do not sideline the existence of other potential mechanisms, but even call for further research directions to have a complete understanding of the anti-democratic effects of declining competition. Therein, the findings of this study provide a promising starting point for such an endeavor.

Appendix

Firm-Level Panel Analysis

Below is the simplified specification for the relationship between firm market power and political connection:

$$Lobby_{it} = \beta_1 Markup_{it} + a_i + b_t + \epsilon_{it} \tag{A.1}$$

where, for firm i, $Lobby_{it}$ is the amount of lobbying expenditure (in log) proxied for firm political power, $Markup_{it}$ denotes firm-level market power, a_i and b_t respectively denote fixed and time effects, and ϵ_{it} is the error term.

The sample period is between 1999-2019 at the yearly frequency. The preferred estimation strategies are FE-OLS and FE-2SLS, where I control for time and fixed effects and cluster errors at firm level.

Instrumental Variable—. Recall that the firm markup is considered a departure from competitive pricing and encompasses two distinct sources of variation, as follows $Markup_{it} = \lambda_{it}\eta_t + \mu_{it}$. The first component, denoted as η_t, is a common variation that may be governed by systematic economic and political factors. The second component, denoted by μ_{it}, captures the idiosyncratic shock resulting from random events, thus introducing exogenous variation into firm markup.

In the baseline study, idiosyncratic shocks are assumed to be uncorrelated across firms, $\mathbb{E}(\mu_i \mu_j) = 0$. I relax this assumption by articulating that idiosyncratic shocks might propagate within the cluster of industry competitors, such that for firms $i, j \in \tilde{I}$, where $\tilde{I}$ is a specific type of industry, $\mathbb{E}(\mu_{i\in\tilde{I}}\mu_{j\in\tilde{I}}) \neq 0$.

The focus herein is on the horizontal propagation of idiosyncratic shocks among firms within a relatively niche industry, rather than the vertical propagation from upstream to downstream industries or vice versa. In this regard, the most related research to this study would be Kee 2015 and Barrot and Sauvagnat 2016, which document the horizontal spillover of idiosyncratic shocks among suppliers that have a link through their shared customer(s). However, a key distinction in this study is that firms have a link due to competitive relations in their narrow sector through various customers, and these links are tightened based on the proximity of their market shares.

Previous research provides evidence of such spillover effects between competitors in different settings. For instance, a recent study by Raj (2022) reveals a positive demand shock spillover

between competitor providers on online platforms, while Liu (2022) finds that a product recall by a firm with high corporate product reliability negatively impacts the market value of its competitor in the U.S. automobile industry. Similarly, in this study, it is expected that the extent of shock propagation between competitors varies across different market structures. Although this study does not specifically define a particular business environment, it leverages the proximity of market shares to capture such heterogeneities.[37]

My identifying assumption is based on that a firm-specific shock that happened to firm j would be an unexpected shock to firm i. This might inject volatility into the random part of the rival firm's markup to some extent depending on how close rival they are. On the other hand, idiosyncratic markup shock that befell firm j can affect firm i's inclination to political engagements only through firm i's market power, $\mathbb{E}(\epsilon_{it}\mu_{jt}) = 0$. In addition, presumably, these shocks are short-lived and confined to the close competition vicinity. This limits the competitor's random shock to remain orthogonal to the common variation, $\mathbb{E}(\eta_t\mu_{jt}) = 0$.

To exploit local propagations, I create an adjusted inverse distance weight (AIDW) matrix based on market share differences within 173 ICB-coded industries. The weight matrix allows firm i's competitors to have a local influence on it that diminishes with increasing distance to it. Let s represent industry-level market share, and assume that $|s_{it} - s_{jt}| = d_{ij,t}$ and $|s_{it} - s_{mt}| = d_{im,t}$, with $d_{ij,t} > d_{im,t}$ at time t. This implies that, in comparison to firm m, any idiosyncratic shock of the same magnitude to firm j could have a larger effect on the pricing power of firm i.

However, the distribution of market shares is not uniform across industries. This may give rise to a spatial bias where data points may receive either an inflated or reduced weight, depending on the distribution of firm sizes and the number of firms within the specific industry. Hence, I use a correcting factor based on Shepard's method (Shepard 1968), whereby the weight functions are normalized to ensure that the sum of weights equals unity.

Consequently, AIDW function, $\Omega[w_{ij}]_{i,j}$, at time t is defined as follows.

$$w_{ij,t} = \frac{|s_{it} - s_{jt}|^{-1}}{\sum_{j=1, j\neq i}^{N} |s_{it} - s_{jt}|^{-1}} \tag{A.2}$$

The next step is to construct a (close) competitors' shock index. I simply multiply competitors' idiosyncratic shocks with respective adjusted inverse distance for each period and sum over all competitors of firm i within its competition network at time t. This provides us the competitors' shock index, denoted by Z_{it}, for firm i.

37. Further research could explore how the degree of propagation varies across different setups, but for simplicity, this study does not delve into specific market structures.

$$Z_{it} = \sum_{j=1, j\neq i}^{N} w_{ij,t}\mu_{jt} \tag{A.3}$$

Based on the moment conditions, $\mathbb{E}(Markup_{it}Z_{it}) \neq 0$ and $\mathbb{E}(\epsilon_{it}Z_{it}) = 0$, the first stage for market power, $Markup_{it}$, in regression A.1 is formulated as:

$$Markup_{it} = B_z Z_{it} + a_i^F + b_t^F + \epsilon_{it}^F \tag{A.4}$$

where all control variables are the same as defined earlier, and Z_{it} is the excluded instrument.

Table A.1: Lobbying, Market Power, and Size, the U.S. Firm-level 1999-2019

	Lobby_{it} (in log)				Sales_{it} (in log)	
	FE-OLS	FE-2SLS	FE-2SLS	FE-2SLS	FE-OLS	FE-2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
$\text{Market Power}_{\text{it}}$	0.043	0.553	0.370		-0.013	0.849
	(0.025)	(0.253)	(0.245)		(0.012)	(0.162)
Sales_{it}			0.216	0.651		
(in log)			(0.024)	(0.297)		
Observations	80,888	80,703	80,703	80,703	80,888	80,703
R-sqr	0.70				0.94	
F-stat		61.9	63.3	51.8		61.9

Notes: The dependent variable is in the header. Robust standard errors (clustered by firm) are in parentheses. The annual-frequency data is used. All regressions control for firm fixed effects and time effects. In Columns (2), (3), and (6), $\text{Market Power}_{\text{it}}$ is instrumented by $\text{Competitors' Shock Index}_{\text{it}}$. In Column (4), the same excluded instrument is used. To keep zero values, Lobby_{it} is inverse-hyperbolic-sine transformed, which approximately equals $\log\big(\text{Lobby}_{\text{it}} + \sqrt{\text{Lobby}_{\text{it}}^2 + 1}\big)$.

The estimation of the baseline panel model is detailed in Column (1) of Table A.1. Column (2) presents FE-2SLS estimate derived from the instrumental variable approach. The further analysis involves the introduction of Sales (in log) as a control variable in the baseline IV estimation. Subsequently, I conduct a regression that focuses on firm size exclusively

in relation to lobbying, where the competitors' shock index is now used as an excluded instrument for firm size. The corresponding estimates are documented in Columns (3) and (4). The subsequent columns delve into exploring the connection between market power and firm size. OLS and 2SLS fixed effects estimates are reported in Columns (5) and (6). In Column (6), firm market power is instrumented by the competitors' shock index.

Firm-level Causal Mediation Analysis

I build a structural mediation model that simultaneously incorporates three interrelated relationships between market power, firm size, and political power. This approach relies upon the formulation proposed by DFH for the identification of causal mediation.

Model 1 specifies the relationship between market power and size, where their evolution is governed by joint confounders. Using a standard IV approach, I instrument firm-level markup with the competitors' shock index.

As a shorthand, I omit time and fixed effects from the equations below, though they are all included in model estimations. The first-stage relationship in Model 1 is defined by

$$Markup_{it} = \tilde{B}_z Z_{it} + \epsilon_{it}^{mrkp} \tag{A.5}$$

The second stage of Model 1, thus, includes the estimated markup from the first stage:

$$Sales_{it} = \beta_2 \widehat{Markup}_{it} + \epsilon_{it}^{sales} \tag{A.6}$$

Model 2 is similar to the main specification A.1, except that market power may include causal elements of reallocation of sales. Therefore, I extend Model 2 to Model 3, where market power leads to political power indirectly through firm revenue as well as directly. For the first-stage estimation of Model 3, I use the competitors' shock index as an instrument for firm size conditioned on markup,

$$Sales_{it} = A_z Z_{it} + A_m Markup_{it} + \epsilon_{it}^{mrkp} \tag{A.7}$$

Hereby, I identify the direct effect of market power on political power by estimating the mediation model (Model 3) which incorporates estimated size.

$$Lobby_{it} = \beta_3 Markup_{it} + \varsigma \widehat{Sales}_{it} + \epsilon_{it}^{lobby} \tag{A.8}$$

where β_3 denotes *direct effect* of market power on political power, which does not occur through firm size. To obtain *indirect effect*, it will be enough to estimate *total effect*. By substituting (A.6) into (A.8), Model 2 specification is defined as follows.

$$Lobby_{it} = \underbrace{(\beta_2 \times \varsigma + \beta_3)}_{\beta_1} Markup_{it} + \underbrace{\epsilon_{it}^{lobby} + \varsigma \epsilon_{it}^{sales}}_{\vartheta_{it}^{lobby}} \tag{A.9}$$

where β_1 is total effect of market power. Hence, indirect effect simply equals $\beta_1 - \beta_3$.[38]

Table A.2 reports the second-stage estimates of the mediation model. The analysis reveals a positive relationship between market power and political power, where *total effect* is estimated at 0.554 with SE of 0.170. However, this effect is almost fully realized through firm size; *indirect effect*, estimated at 0.505 with SE of 0.177, accounts for more than 90% of *total effect*, while *direct effect* is economically small.

Table A.2: Causal Mediation Results, the U.S. Firm-level 1999-2019

Simplified Second Stages	Coefficient	Estimates
(1) $\text{Sales}_{\text{it}} = \beta_2 \widehat{\text{Markup}}_{\text{it}} + \epsilon_{\text{it}}^{\text{sales}}$	$\hat{\beta}_2$	0.849
		(0.107)
(2) $\text{Lobby}_{\text{it}} = \beta_1 \widehat{\text{Markup}}_{\text{it}} + \vartheta_{\text{it}}^{\text{lobby}}$	$\beta_{\text{total}} \equiv \hat{\beta}_1$	0.554
		(0.170)
(3) $\text{Lobby}_{\text{it}} = \beta_3 \text{Markup}_{\text{it}} + \varsigma \widehat{\text{Sales}}_{\text{it}} + \epsilon_{\text{it}}^{\text{lobby}}$	$\beta_{\text{direct}} \equiv \hat{\beta}_3$	0.049
		(0.015)
	$\beta_{\text{indirect}} \equiv (\hat{\beta}_1 - \hat{\beta}_3)$	0.505
		(0.177)
Observations		81,409
F-stat (Markup on Z)		132.5
F-stat (Sales on Z|Markup)		100.8

Notes: Robust standard errors (clustered by firm) are in parentheses. All regressions control for time and fixed effects.

38. The standard orthogonality conditions are: $\epsilon^{mrkp} \perp \epsilon^{lobby}$, but $\epsilon^{mrkp} \not\perp \epsilon^{sales}$ and $\epsilon^{sales} \not\perp \epsilon^{lobby}$, and so $\epsilon^{mrkp} \not\perp \epsilon^{lobby} | \epsilon^{sales}$. The assumption of $\epsilon^{mrkp} \perp \epsilon^{lobby}$ can be relaxed. DFH demonstrates that even with $\epsilon^{mrkp} \not\perp \epsilon^{lobby}$, the mediation model adequately captures any underlying causal relationship(s).

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