Uncertainty and Market Power: An Empirical Investigation

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Abstract

Recent academic research documents a sharp increase in global market power. Using newly created and more precise data on aggregate market power (see De Loecker and Eeckhout, 2021), we add to the literature on the determinants of market power by investigating whether and how uncertainty may have played a role in its increase. Using a global sample of the world's major economies, we find that uncertainty is associated with more market power. In addition, we find that higher levels of democracy and a better functioning political system, are negatively associated with market power.

Keywords: uncertainty, economic fluctuations, market power, market share, barriers to entry
JEL codes: D80, L10, L11

1 Background

Healthy competition is vital for a well-functioning economy. Competition promotes efficiency, innovation, and consumer welfare. It encourages firms to efficiently produce and allocate resources, and it forces firms to seek a competitive edge by investing in R&D. This leads to the creation of new products, technologies, and processes. Furthermore, healthy competition boosts consumer benefits as it offers competitive prices and a wider choice of high-quality products. Finally, competition allows new players to enter and breathe new life into the market. However, when certain firms have a lot of market power, problems arise. Unfortunately, as De Loecker and Eeckhout (2021) show, market power has been increasing in recent decades. To that end, given that increased market power has negative consequences for the economy and society, it is critical to understand its determinants.

There are numerous factors that may be related to market power. First, market structure is a major determinant (Syverson, 2019). When there are few competitors in a market, for example, market power increases. Furthermore, when there are significant barriers to entry, incumbent firms can maintain and expand their market power because it is unlikely that anyone will challenge their position (Bain, 1956). Furthermore, firms with differentiated products have greater market power because they face less direct competition. Patents, trademarks, and so on help to differentiate products and strengthen a company's market position (Carlton and Dana Jr., 2008). Finally, the country's political background may play a role. More democratic countries, for example, prioritize competition policies and strive to create a level playing field. They are also more likely to redistribute wealth through progressive taxation, making it more difficult for wealth to be concentrated in the hands of a small number of people. Also, because there is a higher level of accountability in democracies, consumer voices are heard, and cases, where market power is strong, are expected to be dealt with. Furthermore, more democratic countries have stronger property rights, which have been shown to encourage investment, innovation, and entrepreneurship (see Iversen, 2010).

In this paper, we pay attention to the role of uncertainty. The impact of uncertainty on market power is multifaceted. Higher uncertainty might increase market power. First, uncertainty will affect a firm's decision to enter or exit the market. When uncertainty is high, firms will be cautious when entering a sector, thus protecting the incumbents (Dixit, 1989). Similarly, with

higher uncertainty, some firms will prefer not to exit the market, thus leading to persistence in market power. Second, uncertainty will impact a firm's investment decisions. Many firms will become hesitant to invest in innovative technologies or make new products, as the returns of such projects are very uncertain (Kumar et al., 2022). When this happens, new differentiated products cannot be produced, thus allowing incumbent firms to maintain their market power. Third, uncertainty makes the information asymmetry problem worse. Here, firms with superior information or resources (as is usually the case for incumbent firms) will exploit this advantage and strengthen their position.

Increased uncertainty might also reduce market power. The advent of new technologies or regulatory changes may reduce the power of incumbent leaders, making room for new entrants or lesser competitors. Catastrophic events, such as wars, may cause established market leaders to exit, allowing new enterprises to enter. Furthermore, uncertainty might lead to lower future demand, making it more difficult for dominant enterprises to manage supply. In such a scenario, competition increases, thus reducing market power.

2   Empirical approach and results

We employ De Loecker and Eeckhout's (2021) newly created and more advanced data on market power at the country level. The authors, relying on the works of De Loecker and Warzynski (2012) and De Loecker et al. (2020), use the *production approach* to estimate markups. They argue that the aggregate measures of market power that have been utilized so far are not appropriate to study the role of market power in the whole economy.[1] The main control variable of our analysis is aggregate uncertainty, which we obtain from Ahir et al. (2022). Other control variables include the level of democracy, property rights, state capacity, competition, total factor productivity, etc. Definitions of all variables can be found in Table 1. Average markup and uncertainty values are shown in Figures 1 and 2.

[Insert Table 1 about here]

[Insert Figure 1 about here]

[Insert Figure 2 about here]

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[1] The two common methods to measure market power are (1) the demand approach, and (2) concentration indexes (e.g., Herfindahl-Hirschman).

We use an OLS estimation to regress markup on uncertainty and the other control variables in our empirical approach. To address endogeneity concerns, we use both country- and year-fixed effects in all specifications. We acknowledge that our findings are associative rather than causal.

We show the results in Table 2. Columns 1 and 2 contain models that include the basic control variables plus the variable of interest, uncertainty. For uncertainty, we use two values: (1) the average uncertainty for a country in a specific year, as well as (2) the maximum value of uncertainty for a specific year. We find positive and statistically significant results. In economic terms, a one standard deviation increase in *WUIavg* (std.dev = 0.13) increases market power by about 0.03 (=0.13*0.223), which is an increase of about 2.2 percentage points, given the average markup value of 1.35. The results support our conjecture that uncertainty is positively associated with market power. In columns 3 and 4, we control for political freedom and state capacity, while in columns 5 and 6, we further control for competition. We do not combine the competition sample with that of political freedom and state capacity because we have too few observations left. In all cases, our main findings remain strong.

[Insert Table 2 about here]

3 Conclusion

Understanding the evolution of market power is crucial. Not only does market power impede economic efficiency and innovation, but it can also negatively affect consumer welfare and income distribution. We provide evidence of how uncertainty is positively associated with market power, indicating that in times of heightened uncertainty, policymakers need to devise tools to protect consumers and producers. They can do so by strengthening competition policy and supporting small and medium enterprises. In addition, they can encourage investments in innovation and improve regulatory certainty.
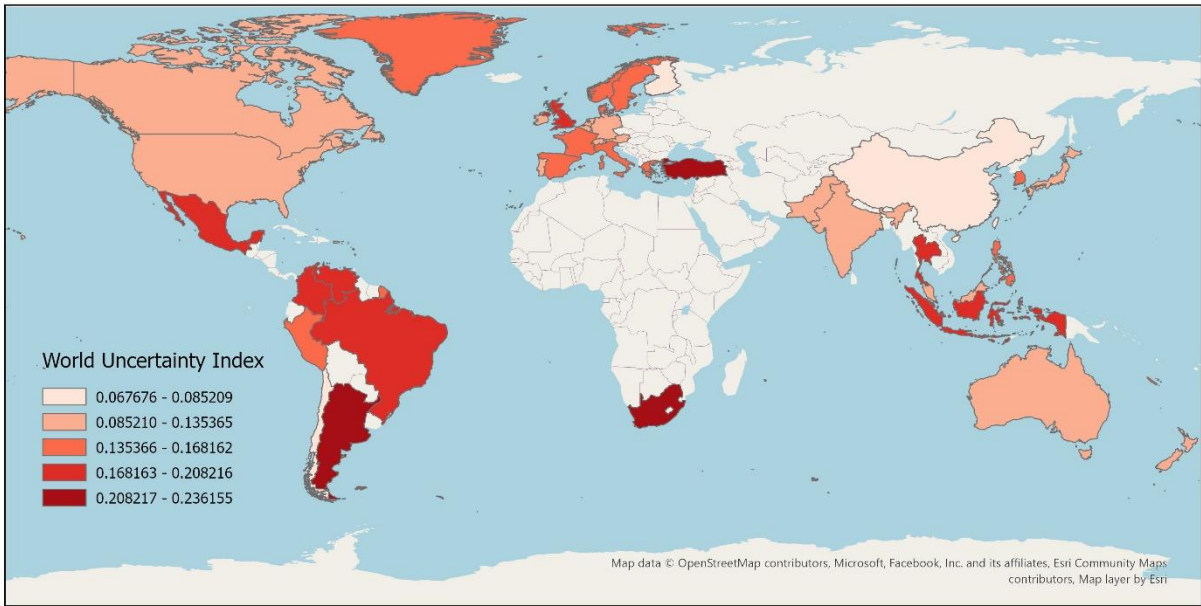
Figure 1: This map shows the average value of the World Uncertainty Index for the years 1980-2016.
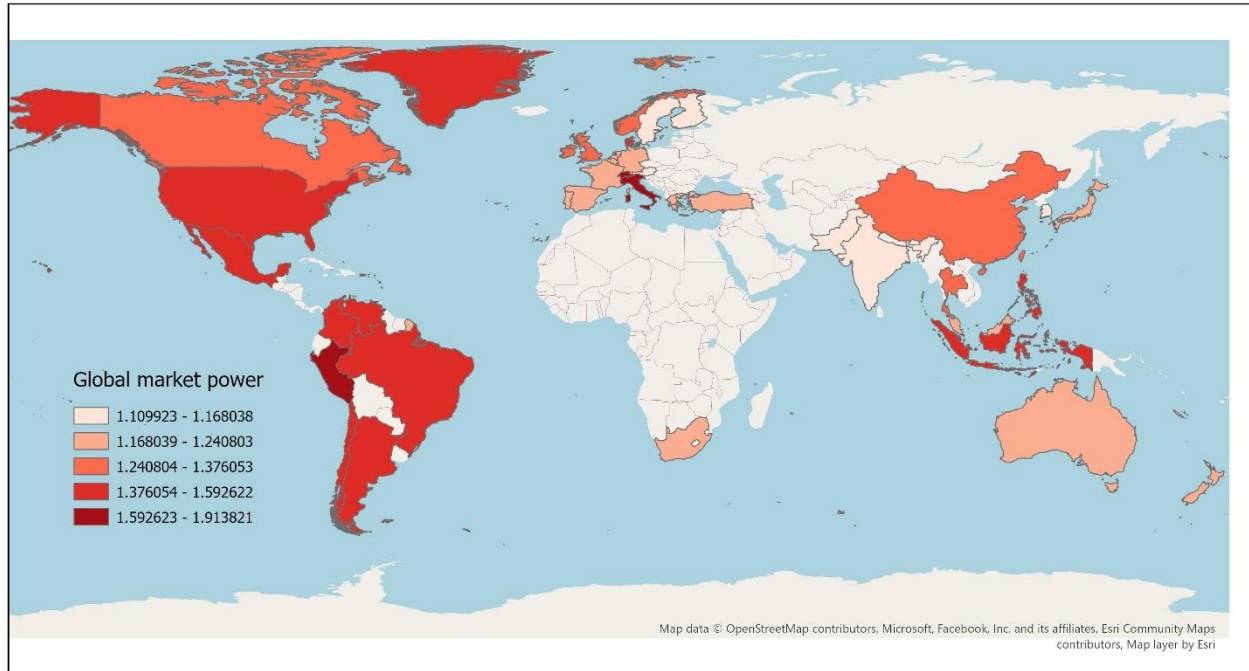
Figure 2: This map shows the average value of market power for the years 1980-2016.

Table 1: Variable definitions and sources

Variables	Definition and sources
Markup	Aggregated markups are calculated by De Loecker and Eeckhout (2021). Data have been retrieved from Jan De Loecker's website: https://sites.google.com/site/deloeckerjan/data-and-code.
Controls	
WUIavg	The average value of uncertainty for each country at a specific year. The data have been retrieved from the following link: https://worlduncertaintyindex.com/.
WUImax	The maximum value of the uncertainty index within a year for a country. The data have been retrieved from the following link: https://worlduncertaintyindex.com/.
Polity	The combined polity score provided by the Polity5 Project. This score ranges from -10 (strongly autocratic) to +10 (strongly democratic). Data can be found here: https://www.systemicpeace.org/polityproject.html.
StateCapacity	The states' ability to perform the functions that are necessary for the well-functioning of modern states. Higher values indicate better functioning states. More information can be found in Hanson and Sigman (2021). The data can be retrieved here: http://www-personal.umich.edu/~jkhanson/state_capacity.html.
Competition	Global Competitiveness Index (GCI). Higher values indicate that a country scores higher in several dimensions of competitiveness. The data have been retrieved from the World Bank portal.
Democracy	The democracy proxy is taken from Herre et al. (2013). The variable represents the best estimate of the extent to which political leaders are elected through universal suffrage in free and fair elections. Higher values indicate a higher level of democracy. The data can be retrieved here: https://ourworldindata.org/democracy.
GDPcap	GDP per capita (constant 2015 US$). Source: WDI.
Openness	The sum of exports and imports divided by the GDP at current prices. Source: Penn World Tables 10 of Feenstra et al. (2015) and https://ourworldindata.org/grapher/trade-openness.
HCI	Human Capital Index based on educational attainment data of Barro and Lee (2013). Source: Penn World Tables 10.
ExchRate	Exchange rate, national currency/USD. Source: Penn World Tables 10.
PriceConsumption	Price level of CCON (PPP/XR), price level of USA GDP in 2017=1. Source: Penn World Tables 10.
PriceExports	Price level of exports, price level of USA GDP in 2017=1. Source: Penn World Tables 10.
PriceImports	Price level of imports, price level of USA GDP in 2017=1. Source: Penn World Tables 10.
PriceCapStock	Price level of the capital stock, price level of USA 2017=1. Source: Penn World Tables 10.
TFP	TFP level at current PPPs (USA=1). Source: Penn World Tables 10.

Table 2: Results

	(1)	(2)	(3)	(4)	(5)	(6)
WUIavg	0.223***		0.217**		0.190**	
	(0.058)		(0.092)		(0.084)	
WUImax		0.141***		0.158***		0.105**
		(0.037)		(0.056)		(0.050)
Polity			-0.011***	-0.011***		
			(0.002)	(0.002)		
StateCapacity			0.037	0.039		
			(0.078)	(0.078)		
Competition					-0.034	-0.028
					(0.031)	(0.031)
Democracy	-0.373**	-0.372**	-0.505*	-0.508**	0.122	0.075
	(0.149)	(0.148)	(0.257)	(0.256)	(0.175)	(0.171)
GDPcap	0.007***	0.007***	0.012***	0.012***	0.009*	0.009*
	(0.002)	(0.002)	(0.004)	(0.004)	(0.005)	(0.005)
Openness	0.001**	0.001**	0.003**	0.003**	0.000	0.000
	(0.000)	(0.000)	(0.002)	(0.002)	(0.001)	(0.001)
HCI	-0.138**	-0.135**	-0.564***	-0.562***	-0.116	-0.107
	(0.064)	(0.065)	(0.172)	(0.170)	(0.135)	(0.135)
ExchRate	0.000*	0.000*	0.000	0.000	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PriceConsumption	0.780***	0.794***	0.825***	0.835***	0.659***	0.668***
	(0.093)	(0.093)	(0.175)	(0.174)	(0.169)	(0.173)
PriceExports	-1.542***	-1.535***	-1.160**	-1.201**	1.32	1.173
	(0.326)	(0.323)	(0.501)	(0.496)	(0.820)	(0.819)
PriceImports	0.559*	0.567*	0.259	0.299	-0.747	-0.745
	(0.305)	(0.305)	(0.386)	(0.389)	(0.498)	(0.496)
PriceCapStock	-0.466***	-0.477***	-0.471**	-0.477**	-0.631***	-0.655***
	(0.090)	(0.090)	(0.190)	(0.188)	(0.178)	(0.181)
TFP	-0.346***	-0.352***	-0.878***	-0.874***	0.252	0.227
	(0.111)	(0.111)	(0.201)	(0.196)	(0.288)	(0.295)
Constant	2.359***	2.335***	3.996***	3.966***	0.801	0.876
	(0.271)	(0.271)	(0.571)	(0.562)	(0.798)	(0.811)
Mean of dependent variable	*1.35*	*1.35*	*1.4*	*1.4*	*1.45*	*1.45*
Observations	1,306	1,306	582	582	373	373
Adjusted R^2	0.629	0.63	0.635	0.637	0.825	0.824
No. countries	38	38	18	18	38	38
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The dependent variable is the average markup value at the country level. Robust standard errors are shown in parentheses. Stars, ***, **, *, indicate statistical significance at the 1%, 5%, and 10%, respectively.

References

Ahir, H., Bloom, N., & Furceri, D. (2022). The world uncertainty index (No. w29763). *National Bureau of Economic Research*.

Bain, J. S. (1956). Barriers to new competition: their character and consequences in manufacturing industries. Harvard University Press.

Barro, R. J., & Lee, J. W. (2013). A new data set of educational attainment in the world, 1950–2010. *Journal of Development Economics,* 104, 184-198.

Carlton, D. W., & Dana Jr, J. D. (2008). Product variety and demand uncertainty: Why markups vary with quality. *The Journal of Industrial Economics*, 56(3), 535-552.

De Loecker, J., & Warzynski, F. (2012). Markups and firm-level export status. *American Economic Review*, 102(6), 2437-2471.

De Loecker, J., Eeckhout, J., & Unger, G. (2020). The rise of market power and the macroeconomic implications. *The Quarterly Journal of Economics*, 135(2), 561-644.

De Loecker, J., & Eeckhout, J. (2021). Global market power (No. w24768). *National Bureau of Economic Research*.

Dixit, A. (1989). Entry and exit decisions under uncertainty. *Journal of Political Economy*, 97(3), 620-638.

Feenstra, R. C., Inklaar, R., & Timmer, M. P. (2015). The next generation of the Penn World Table. *American Economic Review*, 105(10), 3150-3182.

Hanson, J. K., & Sigman, R. (2021). Leviathan's latent dimensions: Measuring state capacity for comparative political research. *The Journal of Politics*, 83(4), 1495-1510.

Herre, B., Esteban Ortiz-Ospina and Max Roser (2013) - "Democracy". Published online at OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/democracy' [Online Resource].

Iversen, T. (2010). Democracy and capitalism. *The Oxford Handbook of the Welfare State*, 183-195.

Kumar, S., Gorodnichenko, Y., & Coibion, O. (2022). The effect of macroeconomic uncertainty on firm decisions (No. w30288). *National Bureau of Economic Research*.

Syverson, C. (2019). Macroeconomics and market power: Context, implications, and open questions. *Journal of Economic Perspectives*, 33(3), 23-43.