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Beyond the Great Reversal: Superstars, Unions, and the Euro

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Superstars, Unions, and the Euro?

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Beyond the Great Reversal: Superstars, Unions, and the Euro

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Abstract

How does the interaction between supranational and domestic institutions affect competition? We answer this question by investigating how the Euro has radically changed the rules of the competition game between firms. Using a staggered difference-in-differences design, we find that the Euro, as a supranational institution, has increased firm-level market power between 23 and 30 percent after its adoption. Deepening economic integration creates a stronger competitive environment where superstar firms acquire a dominant position. Consistent with this explanation, the Euro effect on market power is between 8 and 9 percent larger for tradable industries and 10 and 17 percent larger for firms in the top percent of the Eurozone pre-Euro productivity distribution. This rise in market power is mainly driven by changes in labor market power (i.e., lower markdowns) that more than compensate for the increase in product market competition (i.e., lower markups). Counterintuitively, we also find that unions, under certain conditions, can increase the market power of superstar firms. This happens in the presence of domestic cooperation-enhancing institutions that favor agreements between labor and capital and raise firms' competitiveness by diminishing markdowns. Successful labor-capital cooperation positively impacts workers' attitudes toward further European integration. Our findings contribute to the debate over the rise of global market power by embedding this phenomenon into an institutional framework, creating an inherently European version of the superstar hypothesis.

Keywords: Competition, Single Currency, Superstar Firms, Market power, Labor Market Institutions.

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1. Introduction

Several studies seem to agree on the unparalleled global rise of market power. In the US, especially, markets are becoming increasingly concentrated in a handful of powerful firms (Autor et al. 2020). These firms are usually highly productive and place themselves at the technological frontier (Autor et al. 2020, Tambe et al. 2020). For this reason, they acquire market power and an increasingly dominant position (De Loecker et al. 2020). This trend, however, does not seem to be limited to the US but appears to be a more worldwide phenomenon (De Loecker and Eeckhout 2018). Europe, on the contrary, is apparently immune from this phenomenon, according to Philippon (2019), who, in the *Great Reversal,* accounts for this different European story. Philippon (2019) and Gutierrez and Philippon (2022) argue that the increasing openness caused by the Single Market and strict antitrust enforcement by the European Commission contributed to creating a highly competitive environment. Philippon (2019) points to a "Great Reversal," which occurred because competition in Europe outpaced the one in the US, for a long time considered the land of free and competitive markets.

However, the analysis of Philippon (2019) and Gutierrez and Philippon (2022) seems to give little weight to supranational and domestic institutions. The Euro represents a critical component in the first category as it comes with a common set of authorities and rules (e.g., a common central bank) that affects coordination and cooperation among governments over economic policy (Sandholtz 1993, Schneider and Slantchev 2017). This common set of rules, in turn, affects competition by increasing market integration (ECFIN 1990, Frieden 2002) and, thus, the scale at which firms compete. Therefore, the Euro represents an institution in the Northian sense since it radically changes the rules of the game and the strategies pursued by firms competing against each other (North 1981, 1991). This institutional effect, however, also varies at the sectoral level according to the industry's exposure to international trade. For this

reason, the Single Currency can represent a critical source of national and sectoral variability for the evolution of competition.

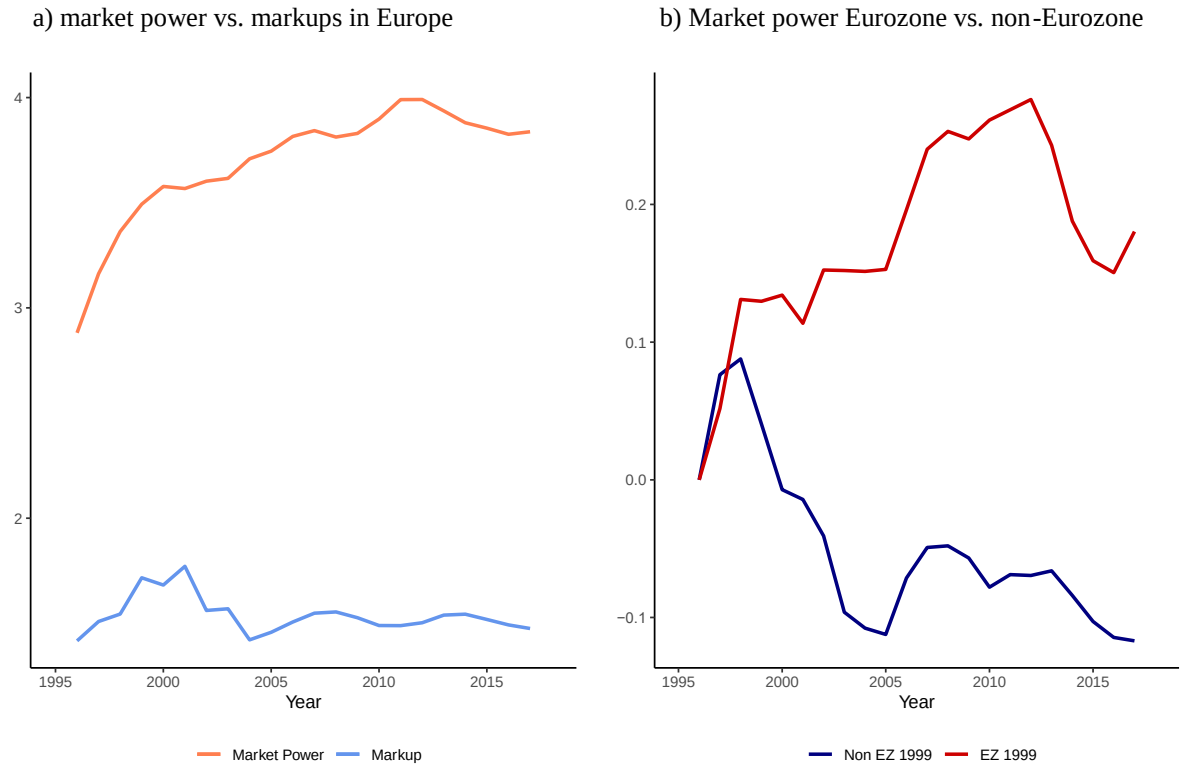
The Euro, therefore, as an institution, has an important role in fostering economic openness and trade. The fruits of increasing international competition, however, are unevenly distributed among firms. A critical contribution of the "new" New Trade Theory is that the gains from increasing openness are concentrated in a handful of "superstar" exporters – highly productive firms that win the global competition game (e.g., Melitz 2003, Melitz and Ottaviano 2008, Bernard et al. 2007, 2014, Baccini et al. 2017).

Domestic institutions play a critical role in determining the winners and losers of increasing competition. Kim et al. (2019) show that political institutions determine the choice of countries' trading partners. As shown by Baccini et al. (2022), some labor market institutions mitigate the winner-takes-all effect, and large and competitive firms should be in favor of removing coordination mechanisms that constrain their ability to reap the full potential of trade liberalization.

The importance of labor market institutions and labor market dynamics has been left out of several studies looking at the evolution of competition in the EU (e.g., Weyerstrass and Jaenicke 2011, Battiati et al. 2021). Most of the literature, in fact, focuses on product market competition. However, recent contributions in industrial organization (Morlacco 2019, Tortarolo and Zarate 2018, Yeh et al. 2022) show that market power can be decomposed into two sources: monopoly (product market) and monopsony (labor market) power. Thus, to fully understand competition, we must look at both the product and labor dimensions of market power. While Philippon (2019) and Gutierrez and Philippon (2022) thoroughly investigated the first dimension of market power, less attention has been devoted to the second.

Figure 1 highlights the joint importance of the Euro and labor markets. When considering the entire European Single Market, markups (an indicator of product market

power), following an initial increase, have decreased after 2000 and remained stable thereafter (Figure 1a). Stable aggregate markups are consistent with the results of Christopolou and Vermeulen (2008), Bassanetti et al. (2010), Cavalleri et al. (2019), Bighelli et al. (2022), and Gutierrez and Philippon (2019). However, when we consider the market power indicator, which also accounts for labor market competition, we can see an overall increase throughout the period. This trend suggests that while product market competition has increased after 2000, different mechanisms may be at work in the labor market. Economy-wide aggregation, however, may mask heterogeneous institutional effects. When focusing on European countries that adopted the Euro in 1999 (EZ 1999), we see that market power has increased sharply in relative terms with respect to countries that were EU members in 1999 but never adopted the Euro (non EZ 1999 in Figure 1b).



Note. Indicators have been aggregated within each group as follows: 1) firm-level indicators have been averaged using market share as weights for each NACE 2-digits country-industry; 2) for each country, the national indicators have been obtained by taking the average of industry indicators using as weights the share of industry revenues in the total economy; 3) the group indicators have been obtained by averaging across countries. In the first panel, we include every European country, excluding Cyprus, Luxembourg, Malta, and Greece (for which we do not have enough data), including the UK. EZ 1999 includes EU countries that adopted the Euro in 1999 (excluding Luxembourg). Non-EZ 1999 includes countries that were part of the EU in 1999 but never adopted the Euro (Denmark, Sweden, and the UK)**.** Relative changes have been computed by subtracting to the current indicator its value at the beginning of the period and then dividing by it. Since we use a three-year moving average, we lose our sample's first (1995) and last (2018) year. Source Orbis Historical.

Figure 1. Market power and markups trends, three-year moving averages.

Figure 1 raises two important questions. Firstly, why did we observe increasing market power despite increasing product market competition? How can we explain these starkly different competition trends for Euro Area countries?

We answer these questions by proposing a theoretical framework that builds on three literature strands: new New Trade Theory (e.g., Melitz and Ottaviano 2008), superstar firms (e.g., Autor et al. 2020), and the comparative political economy of labor market institutions (e.g., Hicks and Kenworthy 1998, Acemoglu 2002, Hancké 2013, Jager et al. 2021, Baccini et al. 2022). In our understanding, the Euro is an institution that induces a positive trade shock

that increases economic integration and makes transnational transactions easier. As international product market competition becomes fiercer, fewer and fewer firms survive over time. These are superstar firms that thrive in highly integrated markets thanks to their superior productivity. As low-productivity firms are outperformed, superstars acquire increasing market shares and see their market power increase.

However, because of the increasing competition in the product markets, these firms must derive their market power from other sources. We thus embed our superstar firm explanation within the peculiar European institutional landscape by focusing on the role of unions and labor market institutions. In a highly open economic environment, the international success of superstar firms depends on their capacity to keep production costs low compared to productivity. As is often the case, labor costs constitute one of the most significant shares of total production costs. Thus, firms tend to be more competitive the lower the ratio between the wage and marginal revenue product of labor. This ratio is also called markdown and can represent a proxy of monopsony power since the wage should equate labor productivity in perfectly competitive labor markets. However, unions and labor market institutions impact wage determination and thus are critical to understanding firms' competitiveness and market power. Intuitively, in tradable industries where firms have a limited price-setting capacity because of international competition, unions' demands for higher wages decrease firms' competitiveness and market power. However, this mechanism assumes an adversarial relationship between unions and firms. As several authors have shown (Hall and Soskice 2001, Hancké and Johnston 2009, Hancké 2013), this is not always the case. Building on these authors, we claim that in the presence of cooperative institutions (Hicks and Kenworthy 1998), unions and firms can stipulate competitiveness-enhancing agreements, where workers accept lower wages relative to their productivity in exchange for future work-related benefits (e.g., training, pension scheme, healthcare). We do not want to claim, however, that every dominant

European firm owes its international success to a "pact" with its workers. We are indeed perfectly aware that several firms can reach a dominant position at the expense of their employees. Yet, our explanation provides a European version of the usually US-centered superstar firms literature. In the US, the limited or absent labor market institutions prevent workers and firms from developing mutually beneficial long-term pacts.

Two main predictions are derived from our theoretical framework. Firstly, the Euro has a positive effect on market power, which, in line with new trade models and superstar firm literature, should be stronger for tradable industries and highly productive firms. Secondly, unions contribute to increasing firms' market power in the presence of cooperation-enhancing institutions via competitiveness gains, while they decrease market power when these institutions are absent. These predictions are tested employing difference-in-differences and panel regressions on firm-level data provided by Orbis Historical.

Consistently with our superstar firm hypothesis, we estimate that the Euro has increased market power in the Euro Area countries in a range between 23% and 30% compared to the non-Euro Area ones. Furthermore, this effect is between 8 and 9 percentage points larger for tradable industries and between 10 and 17 for firms in the top 1% of the pre-Euro productivity distribution. In line with our second prediction, we first find that the Euro has decreased markups, confirming our suspicion that the increase in market power comes predominantly from labor market imperfections. Secondly, we show that the union's power increases markdowns, thereby reducing market power, in countries with weak cooperative institutions. By contrast, when these institutions are strong, the effect on markdowns and market power is reversed. Thirdly, we find that the impact of the Euro on market power via markdowns increases with our index of cooperative institutions.

We complete our analysis by investigating how the interaction between increasing external competition and domestic institutions impacts the support for further European

integration using European Social Survey (ESS) data. The result shows that the union's power increases the support for further integration in tradable sectors where cooperative institutions are strong. By contrast, this effect is negative when cooperative institutions are weaker. We interpret this result as showing that in countries where labor-capital pacts are successful, citizens are more supportive of further integration as they enjoy the benefits of increasing competition.

Our analysis makes several contributions. Firstly, our paper embeds in an institutional framework the literature on rising market power and superstar firms (Autor et al. 2020, De Loecker et al. 2020, Stiebale et al. 2020, Tambe et al. 2020). In this respect, we show that the interaction between supranational and domestic institutions is critical in shaping firms' strategies to acquire market power. Therefore, we provide a European and institutional angle to the vivid debate on the global decline in competition.

Secondly, the paper goes beyond the findings of Philippon (2019) and Gutierrez and Philippon (2022), in which the Single Market improved competition and European firms exert a lower influence on policymakers when strong competition authorities are in place. We show that focusing on product market competition may not be enough in the presence of labor market imperfections and that the Euro has created a high degree of country, industry, and firm variability underneath the aggregate trends for the Single Market.

Thirdly, we contribute to the literature by highlighting the importance of institutions as a factor mediating the effect of increasing openness and trade. Kim et al. (2019) show how political institutions impact the extensive margin of trade (i.e., choice of trading partners). As in Crescioli (2023), domestic institutions are critical in shaping varying responses to common European policies. In line with Baccini et al. (2022), we determine that labor market institutions have crucial distributional consequences in the global competition game.

Finally, our contribution goes against the view that openness per se is conducive to more competition (Helpman and Krugman 1989, Blackhurst 1991, Neven and Seabright 1997, Besley et al. 2021).

The paper is organized as follows. Section 2 discusses the works studying the effect of the Euro on market power. Section 3 introduces our conceptual framework and the predictions. Section 4 discusses data and variables, while section 5 the empirical strategy and results. Finally, section 6 concludes. Additionally, a separate appendix includes supplementary robustness checks.

2. The Euro and the Evolution of Competition in Europe

2.1 One Money, One Market: Intended and Actual Effects of the Euro on Competition

In a famous European Commission study published at the end of 1990, *One market, one money* (ECFIN 1990), the likely impact of EMU was foreseen to develop along three major directions: (i) microeconomic efficiency, with one market needing one money and the benefits substantially reinforcing the gains obtained from 1992; (ii) macroeconomic efficiency, with better overall price stability and fewer fluctuations in output and employment; (iii) equity between countries and regions, with EMU improving the opportunities for a catch-up. The microeconomic efficiency goal was expected to be achieved by further market integration in the Single Market. According to Friberg (2003), the Euro would promote market integration by reducing market segmentation. Furthermore, the removal of transaction costs and reduced exchange rate uncertainty would also lead to an expansion in trade (Rose 2000). Consequently, the enlarged market size and the increased exposure of domestic markets to other European countries would put downward pressure on market power.

In their review of first-generation studies, Baldwin et al. (2008) find that the Euro increased trade by 5% on average. New generation studies, such as Gunnella et al. (2021), find a larger increase between early and later adopting countries, ranging between 15%-20%. While the empirical evidence confirms the expected increase in trade, what has been the effect of the Single Currency on competition in the Euro Area? In order to provide an answer to this question, we first look at the related literature examining the relationship between market power and the Euro.

2.2 The Evolution of Market Power in the EU

The previous attempts to study the effect of the Euro on market power have predominantly focused on estimating markups, often leaving aside labor market imperfections. This literature can be divided into two main categories: sectoral and firm-level studies.

Sectoral Studies. Weyerstrass and Jaenicke (2011) study competition dynamics for nine large Euro Area countries. Since the completion of the Single Market, product market power, measured by markups, has declined in the Euro Area and even more in the UK. However, considerable cross-country variation is observed. Other authors analyze the evolution of markups in Europe by comparing it with the US. Anticipating Philippon's (2019) book by almost a decade, Christopoulou and Vermeulen (2008) found stable markups in Europe while they increased in the US. Similarly, Battiati et al. (2021) compare the four largest Euro Area economies with the US. They find stable markups apart in the case of Spain, where market power increases moderately but still significantly less than in the US. But again, the study reports a significant degree of country and industry heterogeneity. Cook (2011) shows that this heterogeneity can be attributed to different labor market institutions and barriers to trade. However, contrary to previous studies, Cook (2011) finds a general increase in markups (proxied by the inverse of the labor share).

Firm Level Studies. De Loecker and Eeckhout (2018a) record an increase in markups for Europe since the 1980s. However, their measure does not separate between product and labor market power. Indeed, when these dimensions are properly disentangled, Bighelli et al. (2022) find stable aggregate markups. Nevertheless, substantial heterogeneity may be masked underneath EU-wide trends. Altomonte and Nicolini (2012), using firm-level price cost margins (PCM), study the evolution of competition in France, Italy, Poland, and Sweden from 1999-2007.[1] The paper finds a tendency toward lower PCM, which accelerates after the launch of the Euro. Declining PCMs, however, are observed in manufacturing and not in services (as in Badinger 2007). Industry variability in firm-level PCM is also found by Cavalleri et al. (2019) in four major countries (France, Germany, Italy, and Spain).

Gillou and Nesta (2014) build on De Loecker and Warzynski (2012) and compute markups for French manufacturing firms by estimating a production function. They find that, on average, markups decreased after the Euro. However, the authors also find that markups tend to be higher for Eurozone exporters. These authors argue that this result indicates evidence of imperfect pass-through: the non-perfect transposition of cost efficiencies into prices by firms (De Loecker et al. 2016, Melitz 2018). The Euro, by reducing transaction costs, decreases firms' total costs. However, a proportional reduction in prices does not accompany this cost variation, markups increase because of the imperfect pass-through. Drivas et al. (2020) also find a similar result. This study shows that markups increased for highly productive Greek firms that could reduce prices in a lower proportion than costs following the Euro.

Despite the different estimation techniques adopted, ranging from more macro to firm-level approaches, a high-degree country and industry heterogeneity underneath often stable or declining aggregate markups emerges.

[1] Price cost margins are defined as value added minus employee compensation over output and can, under certain assumptions, represent a proxy of firm-level markups (Martin 2002, Siotis 2003).

3. Beyond the Great Reversal: A Story of European Superstar Firms

3.1 Market Power Definition

Recent industrial organization studies (e.g., Tortarolo and Zarate 2018, Morlacco 2019, Yeh et al. 2022) estimate market power by building on the methodology proposed by De Loecker and Warzynski (2012). This new technique allows to disentangle market power (mp) between the degree of monopoly power in the product market (μ) and of monopsony power in the labor market (md):

$$mp = \frac{\mu}{md}.$$

The term μ is the markup defined as the ratio between the price and the marginal cost. The larger the markup, the greater the firm's power in the product market. A classical result in economics is that the price equals the marginal cost in perfectly competitive markets. Therefore, the more competitive a market is, the lower the markup. Following Tortarolo and Zarate (2018), the markdown is defined as the ratio between the wage paid by the firm and the marginal revenue product of labor (MRPL). Absent labor market imperfections, a firm pays a wage equal to MRPL and thus $md = 1$. By contrast, the larger the firm's monopsony power, the lower the wage compared to the MRPL and the smaller the md.[2]

Perhaps one of the most important insights of these studies is that market power derives from two sources: monopoly power in the product market and monopsony power. Therefore, it is in principle possible to have market power even in industries where product market competition is high. This requires firms to pay wages below the MRPL.

[2] Yeh et al. (2022) define markdowns in the opposite fashion, as the MRPL divided by the wage. According to their formulation, larger markdowns denote higher monopsony power.

The indicator mp can be obtained by dividing the output elasticity of labor by the revenue share of labor costs (Tortarolo and Zarate 2018). Similarly, the markups can be computed as the ratio between material input elasticity and the revenue share of this factor costs (Yeh et al. 2022). Markdowns are therefore obtained by dividing the markup by the market power indicator. While revenue shares are observable in firm balance sheets, the elasticity requires the estimation of a production function.

3.2 The Euro and Superstar Firms

The literature discussed in section 2 often overlooks the institutions as a key factor determining the uneven evolution of product market competition in Europe. The high country-level institutional variability in Europe may have shaped firm strategies and opportunities in different ways. Firms, therefore, can react differently to the new institutional and economic landscape created by the Euro, representing themselves a source of variability. Moreover, these studies look mainly at the product market component of competition, leaving out the labor market, which can represent an important source of market power. Indeed, it might be the case that market power has increased despite stable markups because of declining markdowns.

For this reason, we try to explain the evolution of market power by advancing a theoretical framework grounded on supranational and domestic institutions, which has the firm as the primary unit of analysis and takes into account the different components of market power. To do so, this paper first builds on two firm-centered and deeply interconnected literature strands: new trade models (e.g., Melitz 2003; Melitz and Ottaviano 2008; Bernard et al. 2007, 2014) and superstar firms (e.g., Autor et al. 2020, Stiebale et al. 2020, Tambe et al. 2020)

One of the critical insights of new trade models is that trade liberalization can lead to an increase in market power. Trade liberalization by increasing external product market

competition reduces the marginal cost cut-off, and only firms producing at lower costs will survive (Cavenaile et al. 2022, Arkolakis et al, 2022). These are highly productive and efficient firms - the so-called superstars (Autor et al. 2020: 654). Because of their cost-efficient technology and high productivity, superstar firms can meet these cost requirements (Karabarbounis and Neiman 2014). Small and low-productive firms cannot sustain this fiercely competitive environment and exit the market. Therefore, superstar firms acquire increasing market shares over time, consequently increasing their market power. Evidence of superstar firms has been found predominantly in the US (Autor et al. 2020). Nonetheless, Autor et al. (2020) and Stiebale et al. (2021) find superstar firm effects also in Europe, although less pronounced. The paradoxical conclusion from these literature strands is that competition can deteriorate endogenously precisely because of the policy meant to foster it in the first place (i.e., trade liberalization).

We apply the insights of these bodies of literature by interpreting the Euro as an institution inducing a positive trade shock that substantially amplified the effects of the initial trade liberalization caused by the Single Market. While several studies confirm the positive effect of the Euro on trade, we investigate whether this increased interdependence has made competition fiercer within the Euro area. In our view, this deeper economic integration may have favored the emergence of superstar firms. Over time, therefore, we should observe superstar firms consolidating their position and increasing their market power.

HP1: The Euro has increased firm-level market power.

However, our argument, if valid, should generate two other sub-predictions. Firstly, since this effect operates through the trade channel, the increase in market power should be larger in tradable industries. This is because tradable industries are those naturally more exposed to international competition, which, in the traditional classification, include agriculture,

manufacturing, and mining. Secondly, since the rise in market power operates via superstar firms, the effect should work predominantly for highly productive enterprises.

HP1a: The effect of the Euro on firm-level market power should be larger in tradable industries.

HP1b: The effect of the Euro on firm-level market power should work predominantly for highly productive firms.

3.3 Superstar Firms and Wage-Bargaining Institutions

So far, we have claimed that firms' market power may have increased their market power, despite a rise in product market competition. But how can this happen? Section 3.1 showed that besides markups, firms can increase market power by keeping wages low with respect to the MRPL, or, in other words, by decreasing markdowns. To better understand this relationship between superstars and market power, let us consider the formula provided by Tortarolo and Zarate (2018):

$$mp = \frac{\theta_l^Q}{\alpha_l},$$

where θ_l^Q is the output (Q) elasticity with respect to labor and α_l is the expenditure share of labor costs. The term α_l can be interpreted as the firm's labor share of (gross) output.[3] Thus, superstar firms with lower labor shares tend to charge higher market power. This is indeed the critical insight of Autor et al. (2020), who relate the widespread labor share decline to the rise of superstar firms. While from an economic theory perspective, low labor shares derive from labor-saving advanced technologies (Karabarbounis and Neiman 2014), the political economic

[3] Usually, the labor share is expressed in terms of value added. However, sometimes it is also defined in terms of revenues, as in Autor et al. (2020)

side of this story is that large corporations can exploit the threat of relocation to decrease the workers' bargaining power and wages (Scheve and Slaughter 2004; Shadmehr 2019).

As discussed, the superstar firm literature focuses predominantly on the US economy. However, the different institutional environment distinguishing Europe and the US define a distinct set of strategies to keep wages below the marginal revenue product of labor. More than the US, Europe is characterized by more robust labor market institutions that put upward pressure on workers' compensation (Baccini et al. 2022). Unions are one of these wage-setting institutions. In the presence of unions, the wage is no longer exogenously determined by competitive forces but is negotiated with the firm. Unions' bargaining power has thus an effect on market power via wages. By demanding higher compensation, unions increase wages compared to the MRPL. Consequently, decreasing market power via increasing markdowns.

This relation can also be understood in terms of labor shares: unions demanding higher wages increase the share of the surplus going to workers, which in turn decreases market power (Bentolila and Saint Paul 2003, Holmes 2012, Grossman and Helpman 2021). A firm can remedy this loss of market power by raising prices and, consequently, passing through the effects of unions onto consumers. This possibility, however, is limited in industries more exposed to international product market competition, where the higher price elasticity of demand limits the price-setting capacity of firms (Desmet and Parente 2009, Tortarolo and Zarate 2018). Therefore, more powerful unions in sectors exposed to international trade tend to reduce market power.

This result is quite intuitive and assumes that the relationship between capital and labor is adversarial (Mertens 2022). Such an assumption seems reasonable for many European countries, given the historical role of industrial relations. Yet, it might not always hold. This is the case for North-Western European countries, with Germany being the case *par excellence*. In these countries, cooperation-enhancing institutions allow to obtain agreements between

corporations and firms (Hicks and Kenworthy 1998, Hall and Soskice 2001, Jager et al. 2021). Country and sectoral-level cooperative institutions can include business confederations and coordinated wage bargaining, while more firm-level institutions can be employment guarantees that favor productivity-enhancing training for workers (Hicks and Kenworthy 1998). These institutions can promote the adoption of "pacts" where unions accept wage restraints (i.e., keeping wages below the MRPL) in exchange for future work-related benefits, such as better pension schemes, healthcare, and training (Hanckè 2013). The long-term nature of these institutions favors the stability of these agreements and discourages defections from the various parts. Wage restraint, however, simply consists of reducing markdowns, and thus it has a positive effect on market power. Apart from the mechanical relationship, this increase in market power can happen because the lower wages increase competitiveness, thereby allowing firms to acquire larger market shares in the European Single Market and beyond. By contrast, the limited presence of cooperative institutions makes it more difficult to establish non-adversarial relationships between capital and labor. Therefore, by demanding higher wages, unions tend to erode firm market power and competitiveness for firms in tradable industries.

The importance of labor-market institutions in determining the distributional consequences of trade is also central in Baccini et al. (2022). The main difference, however, is that they focus on size, measured with the log of revenues, as the outcome of their analysis, while we use *a tout court* measure of market power. Indeed, an increase in size can result from larger markets following trade liberalization and not an increase in the dominant position. Furthermore, we enrich their findings by reserving a critical role for unions within the set of labor market institutions.

A non-always adversarial relationship between unions and corporations can represent a European version of the superstar firm story. For some European superstars, high market power could be neither the result of labor-substituting technologies nor the decreasing workers'

bargaining power. By contrast, large market power can derive from a "labor-capital pact" that corporations and unions have made to favor the expansion of firms in European markets. Before proceeding, however, a clarification is necessary. We do not want to claim that in Europe, no firms consolidate their market power at the expense of labor. But there could also be dominant firms whose prominence results from agreements with unions. Such a version of the superstar firm story is unlikely to be found in the US, given the less widespread and weak labor market institutions. The following prediction summarizes the envisaged relationship between unions, markdowns, and market power:

HP2: In countries with institutions favoring cooperation between workers and firms, unions should increase the market power of firms operating in tradable industries via a reduction in markdowns. By contrast, when these institutions are weak, unions should decrease market power by increasing markdowns.

These labor-capital pacts should, in turn, generate an asymmetric support of the European project among citizens. Where unions and cooperative institutions favor the emergence of labor capital pacts, we should observe not only a rise in firms' market power but also a positive attitude toward further European integration by workers. As shown in Hyman (1997) and later in Hancke (2013), labor movements have attempted to influence the construction of a "social dimension" to economic integration. Cooperative institutions should therefore favor a more equal distribution of gains between capital and labor, whereby workers benefit from the increasing power of their employers. On the contrary, in countries where cooperative institutions are not strong enough, citizens can work in firms that are losing the EU competition game or in firms that are winning but are not sharing the benefits with their employees. Therefore, the Euro has institutions change the strategy set of firms. In turn, domestic institutions not only determine winners and losers of the new institutional-economic landscape but also shape the support of the European project and the Euro as an institution. This argument is summarized by the following prediction:

HP3: In countries with institutions favoring cooperation between workers and firms, unions should increase the support for further European integration by workers in tradable industries.

4. Data and Variables

The dataset used in the empirical analysis contains nearly 10 million firm-year observations for 24 European countries between 1995 and 2018. Given their small economies, we decided to exclude Cyprus, Luxembourg, and Malta, while Greece is excluded because we do not have enough observations. Our data display a multilevel nature, with firms representing the unit of analysis. These are nested into NACE-2d industries, which are grouped into countries.

Market power, Markups, and Markdowns. Our first dependent variable is the firm-level market power mp, which consists of the ratio between the labor output elasticity and the revenue share of labor costs. We have estimated market power using unconsolidated data from Orbis Historical, provided by Bureau van Dijk. Orbis Historical represents the richest source of data for European firms. Following the work of Kalemli-Ozcan et al. (2015), this dataset now matches relatively well information from offices for national statistics. Firm-level data have been employed to estimate the labor elasticity using the control function approach and industry's (gross output) Cobb-Douglas production function (Olley and Pakes 1996; Levinsohn and Petrin 2003; De Loecker and Warzynski 2012; De Loecker et al. 2016, 2020.[4] We have used materials to define the control function in line with Yeh et al. (2022). However, in the case of Denmark, Greece, Ireland, Lithuania, and the UK, a limited number of firms report

[4] We have estimated industry (NACE 2-digit) production functions over 5-year windows to have time-varying elasticities.

material expenditures. Thus, we have obtained material expenditure by subtracting labor costs from the cost of goods sold to increase the dataset size.

Following recent pioneering contributions, such as De Loecker et al. (2020), we have opted for this estimation technique. However, this measure is not free of limitation. Firstly, Orbis data do not report firms' prices, and their omission can bias the results. [5] However, this bias does not seem to affect market power time dynamics and the relationship with firms' characteristics (De Loecker and Warzynski 2012). The issues arising from omitted prices can be amplified by the use of GDP deflators to deflate firm-level variables. In the appendix, however, we estimate market power using industry-specific price deflators. Sector-specific deflators can mitigate the above concerns, as industries likely have peculiar price dynamics. While the results are unchanged using this specification, we still prefer using GDP deflators in the main text because industry-specific reduces the sample substantially.

Another shortcoming of this technique is the presence of fixed labor (i.e., labor not directly employed for production). However, both in the main text and the appendix, we adopt a series of precautions and implement robustness checks to mitigate this concern.

As in Yeh et al. (2022), markups are obtained as the ratio between materials elasticity and the revenue share of this factor of production. We compute markdowns using the formula in section 2.1 by dividing markups by the market power index. Finally, we follow the literature (e.g., De Loecker et al. 2016, Morlacco 2019,) and trim the top and bottom three percent of these indicators to reduce the impact of outliers.

Further European Integration. We use European Social Survey (ESS) data to measure individual support for further integration. This survey contains a variable $euftf$ that asks, "unification go further or gone too far." This variable ranges from 0 to 10, with larger values

[5] We refer to De Loecker and Eeckhout (2018b) for potential criticism and responses to this estimation technique.

denoting more support for further European integration.[6] The ESS is perhaps the richest cross-country survey containing individual-level variables on citizens' attitudes and political preferences. This richness in terms of questions asked and geographical and time coverage comes, however, with the limitations that individuals are not observed over time. However, to the knowledge of the authors, this is one of the richest surveys that asks a similar question and has such a large country and time coverage.

Euro Adoption. Our primary treatment variable is a dummy, which takes the value of 1 the year of the Euro adoption ($euro$) and every subsequent year. We have decided to use the adoption rather than the circulation of the Euro for the following reason: when the Euro was adopted for the first time on 1 January 1999, the exchange rates of the participating countries were locked irrevocably. Even though the Euro was not physically introduced until 1 January 2002, the fixed interest rate had likely started affecting trade and firms' interactions by that time. Therefore, at the time of circulation, firms may have already factored in the effect of the single currency in their strategies. Clearly, since countries adopted the Euro on different dates, $euro$ varies accordingly. Table 1 reports the date of adoption and circulation of the Euro by nation.

[6] We divide the variable by ten to have the same scale of our institutional variables.

Table 1. Euro adoption and circulation by country

Country	Adoption	Circulation
Austria	1999	2002
Belgium	1999	2002
Netherlands	1999	2002
Finland	1999	2002
France	1999	2002
Germany	1999	2002
Ireland	1999	2002
Italy	1999	2002
Luxembourg	1999	2002
Portugal	1999	2002
Spain	1999	2002
Greece	2001	2002
Slovenia	2007	2007
Cyprus	2008	2009
Malta	2008	2009
Slovakia	2009	2009
Estonia	2011	2011
Latvia	2014	2014
Lithuania	2015	2015

Labor Market Institutions. We construct two variables to capture the role of unions: $power$ and $cooperation$ using the OECD-ICTWSS.[7] This dataset codes various institutional aspects characterizing national collective bargaining systems. The variable $power$ is defined following closely the "labor union power" indicator computed by Botero et al. (2004: 1349), which

[7] More details about these two variables are provided in the appendix.

measures the degree of "protection and powers of unions." Concerning $cooperation$, our goal in defining this variable is to capture institutions that make cooperation between corporations and unions easier. We follow Botero et al.'s (2004) technique and define $cooperation$ as the average of the following dummies: (1) if firm-level agreements are possible, (2) if workers' council also include employers, (3) if workers' council have economic and social rights (including codetermination on some issues), and consultation rights, (4) If work councils formally negotiate plant-level agreements or can informally negotiate over working conditions (including pay), (5) if collective agreements include a peace clause.[8] We choose (1) because the possibility of adapting national and sectoral agreements can represent a competitive advantage as it allows wages to be tailored more efficiently to the firm. Dummies (2), (3), and (4) capture the role of workers' councils, that is, firm-level institutions that favor the representation of workers. The inclusion of employers in the work council (2) increases the capacity of these institutions to favor cooperation between workers and management. (3) and (4), instead, capture the power of work councils. Indeed, cooperation would be a façade if these institutions do not have practical powers. Finally, the inclusion of peace clauses (5) favors more stable and less adversarial agreements between capital and labor by making reneging on its promises more costly for unions.

Controls. We include a series of controls that previous authors have used in estimations that use market power, markups, or markdowns as dependent variables. Firstly, since large firms tend to have more market power, we have included revenues to proxy for size (Tortarolo and Zarate 2018, Morlacco 2019). Secondly, productivity can be another critical factor. Indeed, it is the superior productivity of superstar firms that allows them to increase their dominance and

[8] A peace clause is a clause which implies that strikes cannot be called over the terms of the collective agreements while agreements are in force.

market power. We, therefore, include both total factor productivity (estimated using the control function approach) and labor productivity, defined as value added per worker, as in Tortarolo and Zarate (2018). To capture the higher capital intensity and low labor shares of superstar firms, we include the ratios between total fixed assets and employees and between the cost of employees and value-added. Controlling for labor shares also allows us to mitigate the potentially confounding effects of fixed labor. Indeed, Autor et al. (2017) show that labor shares decrease with the share of fixed labor in total output. Thus, labor shares may be mechanically lower for large firms, given their lower share of fixed labor. Since Autor et al. (2017) show that low labor shares are associated with higher market power, this is something we need to account for. This problem, however, might be more severe when testing hypothesis 1 than hypothesis 2 since the amount of fixed labor can correlate with different labor market institutions in a way that does not affect our claims. Moreover, in the appendix, we further control for this potential source of error by restricting the analysis to large firms for which the impact of the fixed labor share is naturally less pronounced given their larger revenues.[9] Finally, we also control for firms' "imperfect pass-through" behavior since it can confound the effect of the Euro on market power (De Loecker et al. 2016). It would be ideal to control for imperfect pass-through using marginal costs, as in De Loecker et al. (2016). However, since Orbis data does not permit estimating the marginal cost, we used the unit variable cost calculated as firms' variable costs over output.[10]

When investigating the effects of labor market institutions on attitudes toward further European integration, we include a series of individual-level controls: years of education, age, household income, left-right scale, and the size of the firm where the individual is working.

[9] It is important to note that we use the revenue share of labor costs to define the market power indicator, while the value-added share as control. Moreover, the revenue share has been corrected following the De Loecker and Warzynski's (2012) procedure. Nevertheless, in the appendix, we re-run our main regression for market power without including the value-added labor share as control and we obtain very similar results.
[10] Firm's output has been obtained by deflating sales using the GDP deflator.

The inclusion of education is particularly important because the literature has shown that it can be an important factor in mediating attitudes toward economic openness (Hainmueller and Hiscox 2006, Mansfield and Mutz 2009).

5. Empirical Strategy and Results

We rely on a difference-in-differences (DID) methodology to identify the effect of the Euro on market power. This technique allows us to draw a comparison on the evolution of market power between firms operating in Euro Zone countries (treatment group) vis-à-vis those not adopting the Euro (control group). Since new firms can enter the market or close during the analysis period, we restrict our sample to treated units observed at least one year before and after the adoption of the Euro. This restriction, however, does not apply to control units. The reason is that the staggered nature of the treatment makes it difficult to clearly identify a pre and post-period for non-Eurozone firms.

Table 2 reports the summary statistics of the main variables expressed in logs as we use them in our estimations. Since tradable industries are critical for our analysis, we report the firm-revenue distribution for these sectors in figure 2. Tradable industries represent a significant share of total revenues in both groups. Thus, the trends for these sectors are critical also for the rest of the economy. However, the tradable industries' weight is higher for countries within the Eurozone. The reason is that the Euro Area countries include 5 of the ten world's main exporting countries (WTO data): Germany (third), Netherlands (fourth), Italy (eighth), France (ninth), and Belgium (tenth). By contrast, the top exporter outside the Euro Area is the UK, which covers only the fourteenth position.

Table 2. Summary statistics

a) Firm-level

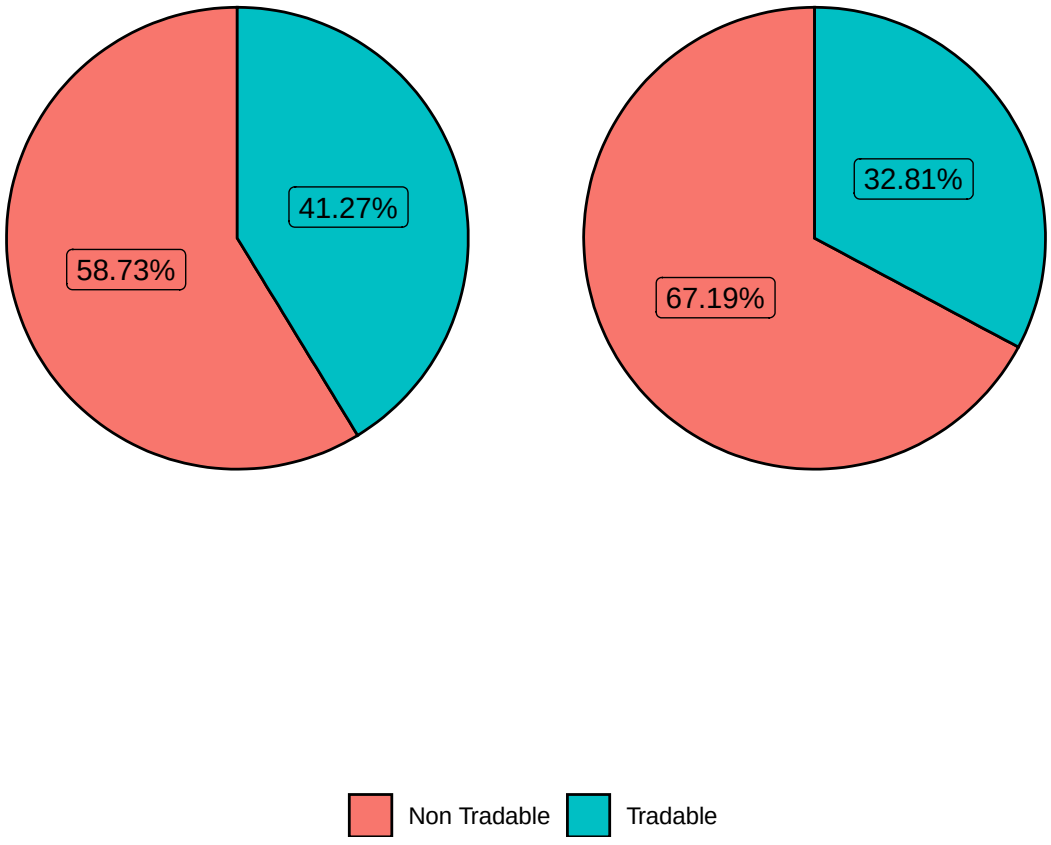
	Eurozone				Non-Eurozone			
	N	**Mean**	**SD**	**Median**	**N**	**Mean**	**SD**	**Median**
Log Market Power	5,121,812	0.548	0.667	0.509	4,574,001	0.917	0.836	0.857
Log Markup	5,121,812	0.006	0.574	-0.113	4,574,001	0.345	0.829	0.113
Log Markdown	5,121,812	-0.542	1.056	-0.574	4,574,001	-0.572	1.211	-0.614
Log Total Factor Productivity	5,121,812	1.911	0.218	1.904	4,574,001	1.793	0.329	1.858
Log Revenues	5,121,812	14.483	1.619	14.415	4,574,001	13.236	2.083	13.06
Log Unit Variable Costs	5,121,812	-0.523	0.386	-0.461	4,574,001	-0.673	0.83	-0.475
Log of Value Added per Worker	5,121,812	10.553	0.705	10.569	4,574,001	8.734	3.377	9.653
Log of Labor Share	5,121,812	-0.337	0.472	-0.28	4,574,001	0.295	2.802	-0.35
Log of Capital-Output Ratio	5,121,812	9.931	1.492	9.948	4,574,001	9.005	1.83	9.067

b) Institutional and individual-level

	Eurozone				Non-Eurozone			
	N	**Mean**	**SD**	**Median**	**N**	**Mean**	**SD**	**Median**
Cooperation	178,380	0.628	0.187	0.600	88,668	0.497	0.220	0.600
Power	178,362	0.654	0.104	0.714	88,668	0.574	0.132	0.571
Further EU Integration	128,121	0.506	0.265	0.500	59,048	0.513	0.270	0.500
Education Years	176,751	12.478	4.259	12.000	87,970	12.568	3.666	12.000
Age	177,868	49.501	17.397	49.000	88,394	49.846	17.524	50.000
Household Income	134,590	5.581	2.614	6.000	69,627	5.552	2.850	5.000
Left-Right Scale	156,469	4.970	2.122	5.000	78,386	5.263	2.294	5.000
Employer Size	173,318	2.453	1.371	2.000	84,769	2.687	1.375	3.000

Note. Euro includes the 19 countries adopting the Single Currency minus Cyprus, Luxembourg, Malta, and Greece. Non-Euro includes the EU countries that did not adopt the Single Currency plus the UK. Statistics are computed on a sample where we simultaneously trim for market power, markups, and markdowns. Therefore, the number of observations is slightly smaller than the regression samples where we trim separately.

a) Eurozone. b) non-Eurozone



Note. Tradable industries include agriculture, mining and quarrying, and manufacturing.

Figure 2. Firm revenue distribution in tradable vs. non-tradable industries

5.1 The Euro and Market Power: Baseline Results

We use the following two-way DID regression as our main specification:

$$(1)\ \ log\ mp_{jict} = \beta euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it},$$

where the subscripts j, i, c, and t, denote firms, NACE 2-digits industries, countries, and years, respectively. The term X includes our firm-level controls expressed in logs. Following standard praxis, we used logs to linearize the relationship between variables. We include firm fixed effects (α_j) to control for time-invariant characteristics such as business location. The variable τ_t denotes year effects, which are used to control for common aggregate shocks. As common in the literature, we cluster standard errors at the country-industry level.[11] Moreover, clustering standard errors at the country-industry level makes sense because the treatment is assigned at the country level and can have a different pact between industries. In addition to the above standard two-way fixed effect (TWFE) specification, we run (1) by weighting observations using inverse probability weights (IPW) and on a "matched sample."

Researchers use inverse probability weighting to limit selection bias in research design where randomization is not feasible (Rosenbaum and Rubin 1983). These weights are defined using the inverse of the propensity score, which is the probability that an observation will be treated. The propensity score has been estimated by regressing the treatment on the above controls via a logit regression. The rationale behind this approach is to create a synthetic control group with characteristics analogous to treated units (Acemoglu et al. 2019). In a similar vein, we have used the propensity score to "match" treated units with control units to

[11] We are aware of the recent literature showing that staggered TWFE DID can generate biased estimates in the presence of heterogenous treatment effects (e.g., de Chaisemartin and D'Haultfœuille 2020, Callaway and Sant' Anna 2021, and Goodman-Bacon 2021). For this reason, we also implement Callaway and Sant'Anna's 2021 methodology in the appendix. However, the thrust of our main results is unchanged.

reduce potential imbalances.[12] Since our dataset is a panel, we have performed the matching by year as in Heyman et al. (2007). The difference with inverse propensity score weighting is that units that are not similar enough are discarded. In addition to the entire sample, we run 1) in two sub-samples: Western and Central & Eastern European countries (i.e., those joining the EU after 2004). We did this split to address a potential critique that the institutions governing firms' interactions can significantly differ between Western and Central-Eastern Europe.

[12] We have performed the match using a caliper of 0.25.

Table 3. The Euro effect on market power

	TWFE	IPW	Matching
		Full Sample	
euro	0.302***	0.278***	0.228***
	(0.045)	(0.050)	(0.037)
Observations	10,037,882	10,037,882	7,846,829
R-squared	0.870	0.880	0.875
		Western Countries	
euro	0.268***	0.234***	0.254***
	(0.055)	(0.063)	(0.060)
Observations	6,893,606	6,893,606	6,746,054
R-squared	0.877	0.890	0.877
		Central-Eastern Countries	
euro	0.155***	0.199***	0.215***
	(0.033)	(0.038)	(0.041)
Observations	3,144,276	3,144,276	1,100,775
R-squared	0.860	0.878	0.878

Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls, firm, and year effects. Standard errors are clustered at the country-industry level.

Table 3 reports the results of this empirical exercise. The first thing to notice is that the Euro adoption has a positive and significant effect on firms' market power in every specification, ranging from an average of 15.5% to 30% in the years following its adoption. This effect is stronger for Western countries and does not vary dramatically within each country grouping. At first glance, this positive market power seems unusual. After all, the Euro has

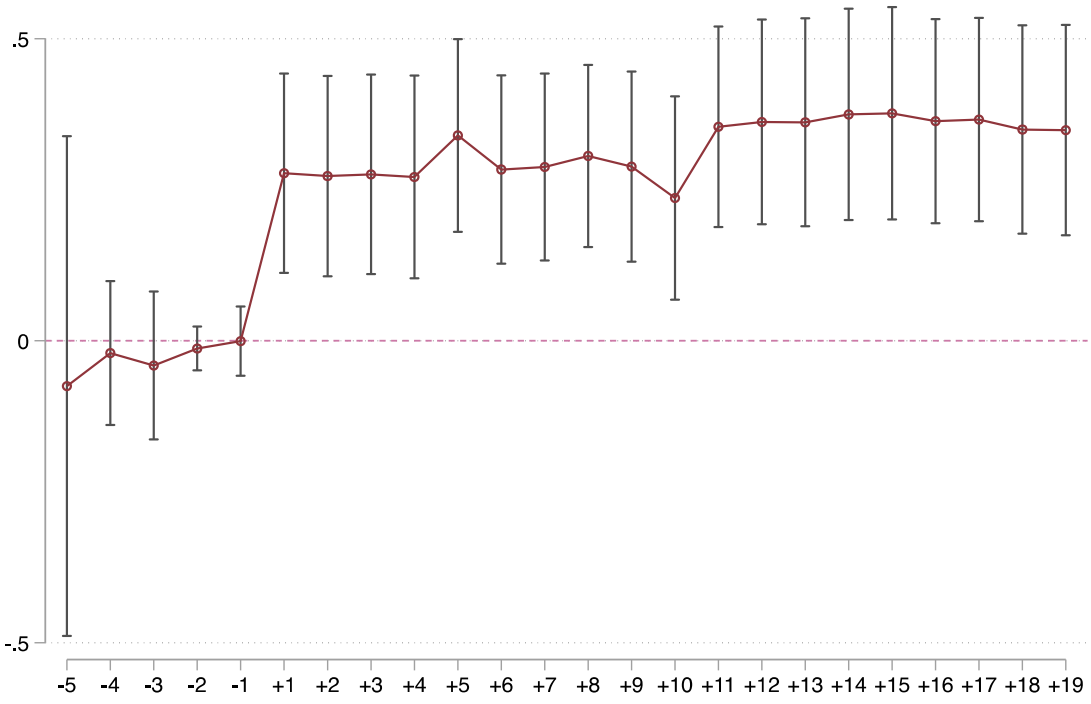
widened markets, making firms compete on a larger scale. However, as discussed in section 3, the increasing openness and trade may also increase market power, potentially outbalancing the pro-competition effects. Firstly, the lower export costs may not have passed into prices (Gillou and Nesta 2014). However, we control for imperfect pass-through, including unit variable costs. Thus, imperfect pass-through does not seem to be the prevalent mechanism explaining the positive effect of the Euro on market power. The second mechanism concerns superstar firms. The Euro may have created a fiercely competitive environment where the most productive firms acquire increasing economic power and market shares (Mayer and Ottaviano 2008, Autor et al. 2020).

However, before further exploring the superstar firm mechanism, we check for "parallel trends," the critical identification assumption of the DID methodology. This assumption requires that market power, once conditioned on covariates, would have evolved similarly in the treatment and the control group without the treatment. The non-satisfaction of parallel trends implies the violation of the "conditional independence assumption" and biased estimates. Following Autor (2003) and Angrist and Pischke (2009), we check for parallel trends by running the following IPW regression:

$$(2)\ \ log\ mp_{jict} = \sum_{v=-5, v\neq 0}^{19} \beta_v D_v\ x\ euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it},$$

where we interact the treatment variable with a dummy for each of the five years before the Euro and each period after. The satisfaction of parallel trends requires that pre-adoption coefficients are statistically insignificant or zero (Cunningham 2021). Finally, as standard in the literature, we plot these coefficients in figure 3.

The parallel trend assumption seems to hold (at least for the five years before the Euro) since every pre-treatment coefficient is statistically not significant.



Note. Vertical bands denote 95% confidence intervals.

Figure 3. Parallel trends

5.2 The Euro and Tradable Industries

If the Euro represents an institutional change that creates a market where superstar firms thrive because of increasing trade openness, then we should find a more pronounced impact in tradable industries. Therefore, we check for a stronger effect of the Euro on market power in these industries by adding to (1) the interaction between $euro$ and an indicator T denoting if the firm operates in tradable sectors. By doing so, the interaction coefficient captures how the Euro effects differ between tradable and non-tradable industries.

Table 4. The Euro effect on market power in tradable industries

	TWFE	IPW	Matching
		Full Sample	
$euro\ x\ T$	0.089***	0.088***	0.081***
	(0.027)	(0.026)	(0.024)
Observations	10,037,882	10,037,882	7,846,829
R-squared	0.870	0.880	0.875
		Western Countries	
$euro\ x\ T$	0.082***	0.086***	0.082***
	(0.024)	(0.024)	(0.024)
Observations	6,893,606	6,893,606	6,746,054
R-squared	0.877	0.890	0.877
		Central-Eastern Countries	
$euro\ x\ T$	-0.047	-0.042	-0.042
	(0.057)	(0.047)	(0.047)
Observations	3,144,276	1,100,775	1,100,775
R-squared	0.860	0.878	0.878

Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls, firm, and year effects. Standard errors are clustered at the country-industry level.

Table 4. shows that the Euro has a stronger effect, between 8% and 9% more, in the full sample and Western countries. Again, the coefficients do not vary particularly between the various specifications within each country group. This larger effect in tradable seems to align with the superstar firm hypothesis. Although the interaction coefficient is significant, the Euro has a lower effect on market power for Central and Eastern European countries is lower than

in the baseline specification. However, this result can still be consistent with the envisaged mechanism. Indeed, these countries tend to export less when compared with Western Europe, and, as shown by De Loecker and Warzinsky (2012), exporting firms usually have larger market power.

5.3 The Euro and Superstar Firms

The superior productivity of superstar firms allows them to thrive in the more expanded market created by the Euro as a supranational institution. Therefore, we should observe a more pronounced increase in market power for the most productive firms. We test this prediction by running the following regression:

$$(3)\quad log\ mp_{jict} = \beta P^1 x euro_{ct} + euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it},$$

$$(4)\quad log\ mp_{jict} = \beta M x\ euro_{ct} + euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it}.$$

The indicators P^1, and M are defined on the average pre-Euro productivity distribution of the Eurozone. The dummy P^1 denotes if the firm belongs to the top 1% of the distribution, while M denotes the bottom half.

Table 5 reports the results of these regressions. In the first three columns, we can see that the increase in market power for the top 1% firms has been between 10% and 16% more compared to other Eurozone firms. In contrast, this effect is negative for firms in the bottom half of the distribution.

Table 5. The Euro and superstar firms

	Top 1%			Bottom 50%		
	TWFE	IPW	Matching	TWFE	IPW	Matching
P^1	0.165***	0.145***	0.101***			
	(0.053)	(0.049)	(0.036)			
M				-0.080***	-0.073**	-0.049**
				(0.031)	(0.030)	(0.024)
Observations	10,037,882	10,037,882	7,846,829	10,037,882	10,037,882	7,846,829
R-squared	0.870	0.880	0.875	0.870	0.880	0.875

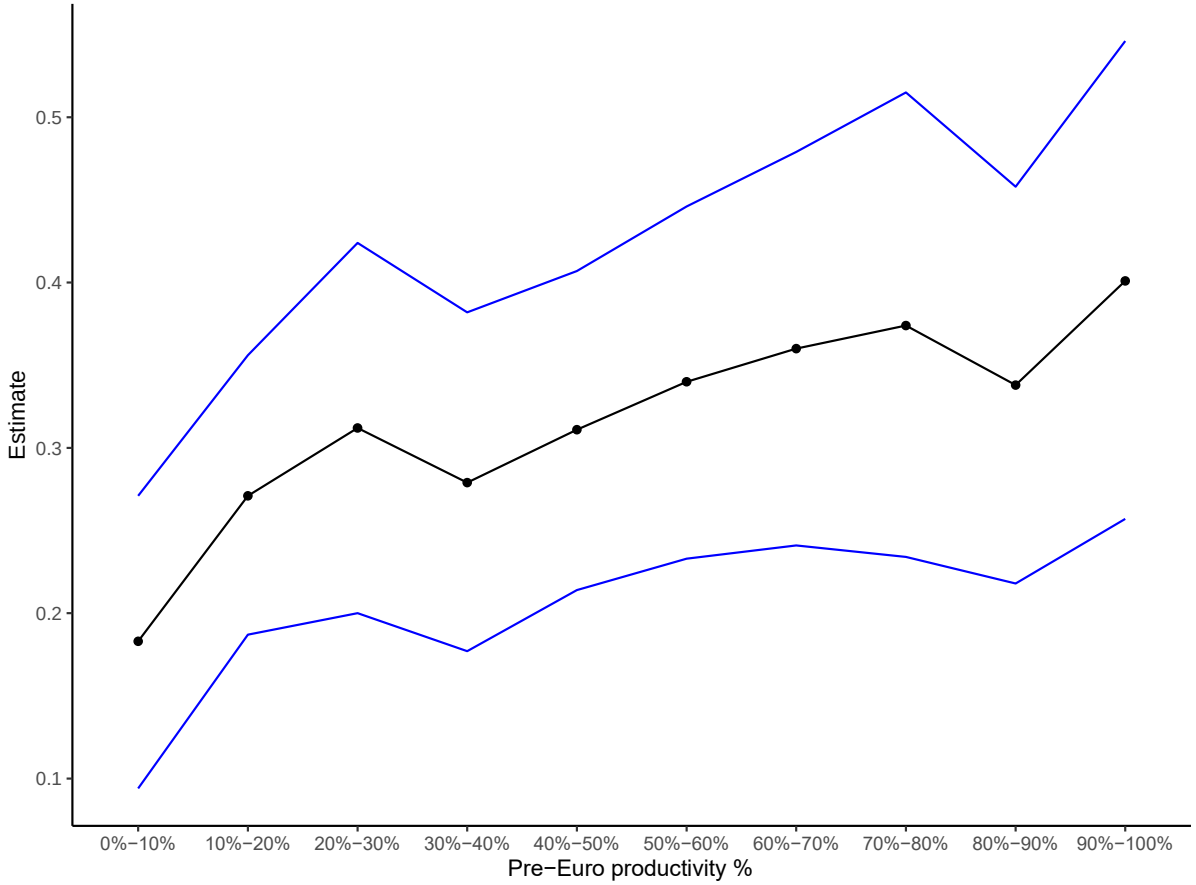
Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls, firm, and year effects. Standard errors are clustered at the country-industry level.

To better understand how the Euro effect differs across the quantiles of the pre-Euro productivity, we also run the following regression:

$$(5)\ \ log\ mp_{jict} = \sum_{v=1}^{10} \beta_v Q^v\ x\ euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it},$$

where we interact $euro$ with the decile of the pre-Euro productivity distribution and plot the estimated coefficient in figure 4. Although not in a perfectly monotonic fashion, the Euro effect

on market power is stronger the larger the firm's pre-Euro productivity. In line with the results of table 5, this effect is the largest for the top 10%. Therefore, these estimates align with the superstar firm explanation since the resulting increase in openness caused by the Euro seems to have favored the most productive firms.



Note. Bands denote 95% confidence intervals. Estimates have been obtained via an unweighted TWFE regression.

Figure 4. The Euro and superstar firms

5.4 The Effect on Product Market Competition

In the previous section, we have shown that the Euro has increased market power and that this effect is stronger in tradable industries and for highly productive firms. Market power, however, can derive from two sources: product or labor markets. Therefore, to understand better the source of market power, we run (1) replacing the market power index with the log of markup.

Table 6. The Euro and Markups

	TWFE	IPW	Matching
euro	-0.267***	-0.216***	-0.146***
	(0.052)	(0.041)	(0.028)
Observations	10,068,612	10,068,612	7,814,280
R-squared	0.821	0.831	0.826

Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls, firm, and year effects. Standard errors are clustered at the country-industry level.

As we can see from table 6, the Euro has a positive impact on product market competition via decreasing markups.[13] This result aligns with the previously discussed literature investigating markups and with Gutierrez and Philippon (2022), and Philippon (2019), who show that product market competition has increased in Europe. However, can we square these last findings with the increases in market power? Given the formula of section 2.1, the overall increase in market power can be explained by diminishing labor market competition that more than compensates for the decline in markups.

[13] We obtain similar results when we restrict the sample on tradable industries, but we do not report them to save to space.

These dynamics concerning markups make the difference between European and US trends even more evident. De Loecker et al. (2020) and Yeh et al. (2022) show that markups have increased in the US over the last decades. However, Yeh et al. (2022) also show that while the aggregate markup displays an increasing behavior over time, monopsony power started decreasing in the early 1980s, and only after 2000 this trend reversed. Therefore, the rise in market power for US firms seems to come predominantly from the product market. By contrast, our results concerning market power and markups hint that the rise in market power following the Euro predominantly derives from labor markets. In the next sections, we further explore this mechanism by focusing on the role of unions and labor market institutions.

5.5 Labor Market Institutions, Market Power, and Support for European Integration

In section 3. we hypothesized that in tradable sectors (where the price-setting capacity of the firm is lower), powerful unions increase wages and, therefore, decrease market power. However, we also conjectured that cooperation-enhancing institutions favor agreements between unions and firms consisting of wage restraint fostering the firm's capacity to expand abroad. We test this prediction by running the following regression:

$$(6)\quad log\ md_{jict} = \delta cooperation_{ct} + \lambda power_{ct} + \beta power_{ct}\ x\ cooperation_{ct} + \gamma X_{jict} + \alpha + \tau_t + \epsilon_{it},$$

where we restrict the attention to tradable industries. Given this specification, the marginal effect of unions' power on the log of markdown is:

$$\lambda + \beta cooperation.$$

Therefore, in line with our second prediction, we expect two things. Firstly, the interaction coefficient β should be negative. Secondly, the overall marginal effect $\lambda + \beta cooperation$ is negative for larger values of the cooperation value.

Table 7. Unions and Markdowns

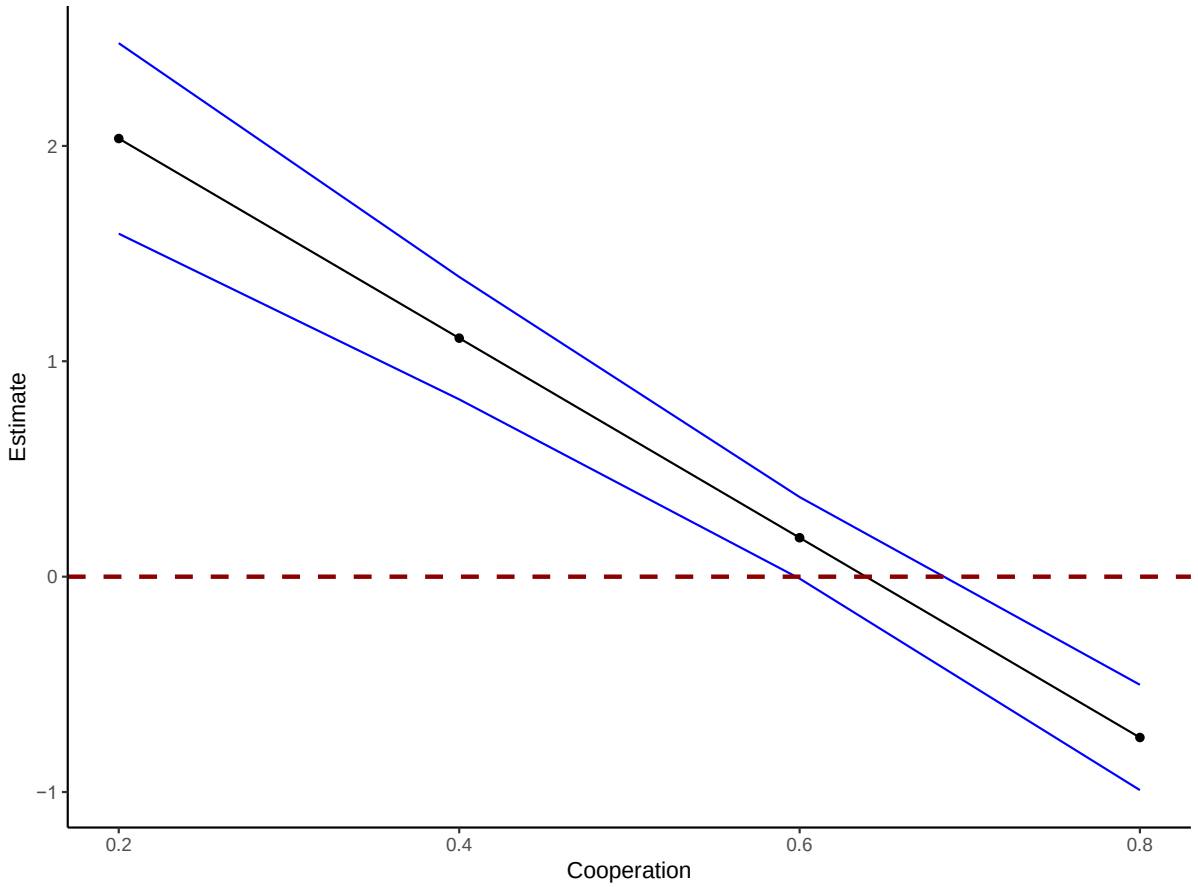
	(1)	(2)	(3)	(4)	(5)	(6)
$cooperation$	3.418***	4.979***	4.485***	3.401***	1.626***	4.107***
	(0.323)	(0.533)	(0.587)	(0.307)	(0.466)	(0.621)
$power$	2.961***	4.542***	4.163***	2.925***	1.367***	3.809***
	(0.314)	(0.546)	(0.586)	(0.301)	(0.509)	(0.619)
$cooperation\ x\ power$	-4.634***	-6.726***	-6.129***	-4.561***	-2.805***	-5.639***
	(0.475)	(0.731)	(0.798)	(0.442)	(0.740)	(0.874)
Firm Effects	Yes	No	No	Yes	No	No
Country-Industry Effects	No	Yes	No	No	Yes	No
Country Effects	No	No	Yes	No	No	Yes
Year Effects	Yes	Yes	Yes	No	No	No
Industry Year Effects	No	No	No	Yes	Yes	Yes
Observations	5,380,177	5,494,385	5,494,394	5,380,177	5,494,394	5,494,394
R-squared	0.862	0.336	0.297	0.864	0.283	0.311

Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. Baseline controls are included. Standard errors are clustered at the country-industry level. Only tradable industries are considered. We cannot use country or country-industry time effects as they will absorb the institutional variables.

Table 7. displays the results of running (6) with different combinations of fixed and year effects. For completeness, we report the coefficient of the interactions and the institutional variables alone. However, we cannot interpret the coefficient of $cooperation$ and $power$ alone as they represent the effect of $cooperation$ ($power$) when $power$ ($cooperation$) is zero. Since these are continuous variables, which are never zero in our sample, interpreting

them individually makes little sense. For this reason, we should focus on the union's power marginal effect specified above.

As we can see, in each specification, the above interactions are significant and have the expected sign. Moreover, if we consider the highest value of the cooperation variable in our sample (i.e., 0.8), the overall marginal effect of union power is always negative, while for low values of this variable, it is positive. To better see this, in figure 5, we plot the marginal effect of unions' power at the different levels of the cooperation variable we find in our sample.



Note. Bands denote 95% confidence intervals. Estimates have been obtained via the specification with firm and year effects.

Figure 5. Marginal effect of union's power on log markdown

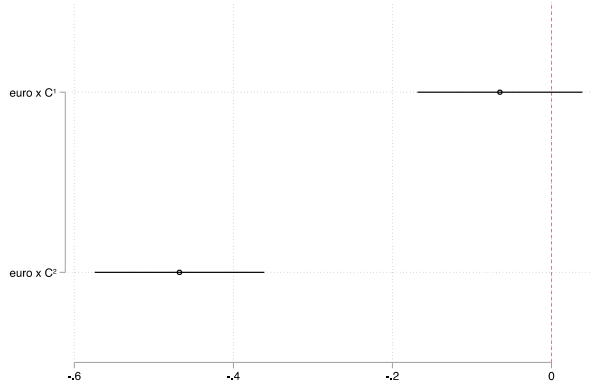
We can interpret this result in support of our prediction. Precisely, powerful unions tend to increase wages in relation to the MRPL when cooperation-enhancing institutions are weak. By contrast, when these institutions are strong, they favor competitiveness-enhancing agreements, which diminish markdown and tend to increase firms' market power.

We investigate whether cooperation-enhancing institutions may have enhanced the market power by decreasing markdowns following the Euro adoption. To do so, we run the following DID regression:

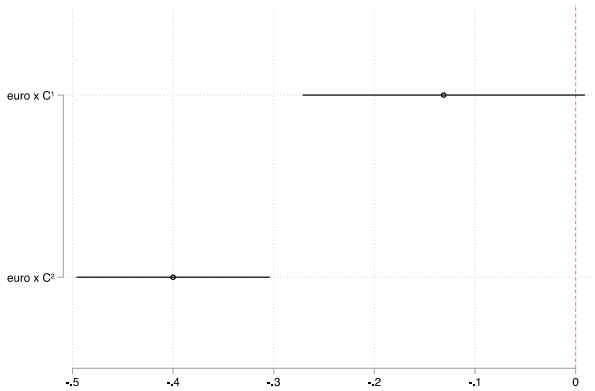
$$(7)\ log\ md_{jict} = \sum_{v=1}^{2} \beta_v C_c^v\ x\ euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it},$$

where C_c^V is an indicator of whether a country belongs to the bottom ($v = 1$) or top half ($v = 2$) of the cooperation variable distribution in the year preceding the adoption of the Euro. The following Figure 6 reports the estimates of the above regression. As we can see, the effect of markdowns is larger for firms in countries with more cooperation-enhancing institutions. Therefore, these institutions could favor the emergence of high market power firms, even in a context where the increasing openness brought by the Euro may have fostered product market competition.

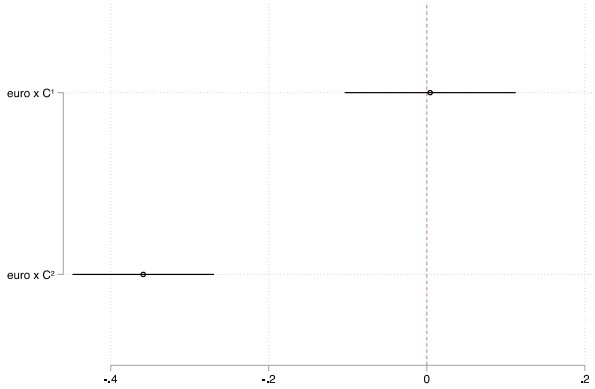
a) TWFE



b) IPW



c) Matching



Note. Vertical bands denote 95% confidence intervals. Only tradable industries are considered.

Figure 6. Cooperative institutions, the Euro, and markdowns

We conclude this section by investigating whether cooperative unions and cooperative institutions can impact the support for further European integration. We hypothesize that if cooperative institutions favor the expansion of firms via labor-capital pacts, increasing their competitiveness via wage restraint. In turn, these workers are compensated with non-wage benefits and find themselves on the winning side of the new institutional-economic environment created by the Euro. Therefore, in countries with more cooperative institutions, unions should make workers in tradable industries of further European integration. By contrast, when these institutions are weaker, there could be conflicts between labor and capital that undermine the competitiveness of firms in line with figure 5. Alternatively, firms can still expand in the Single Market but at the expense of their workers.

We thus test HP 3 by using the following specification for tradable industries:

$$(8)\quad euftf_{jict} = \delta cooperation_{ct} + \lambda power_{ct} + \beta power_{ct}\, x\, cooperation_{ct} + \gamma X_{jict} + \alpha + \tau_{iw} + \epsilon_{it},$$

now j indicates individuals, and X includes a battery of individual characteristics such as years of education, age, household income, left-right scale, and the size of the firm where the individual is working. The time subscript denotes the wave of the ESS survey, while α can be either country or country-industry fixed effects. To account for potential sectoral time-varying factors, we include industry-wave effects τ_{iw}. Moreover, we cluster standard errors at the country-wave level, given the sampling strategy of the ESS data. Again, we expect the marginal effect of unions on attitudes towards EU integration $\lambda + \beta cooperation$ to be positive.

Table 8. Unions, cooperative institutions, and support for further EU integration

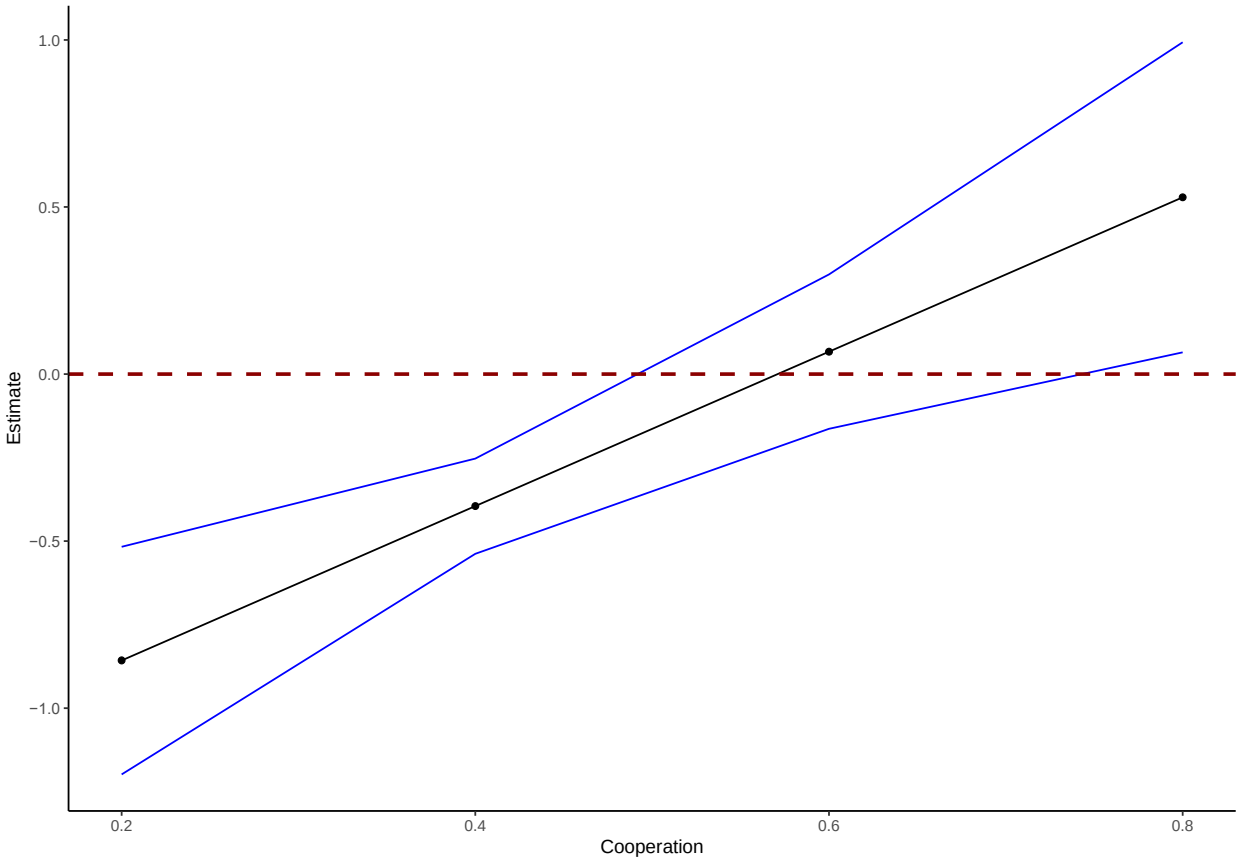
	Full Sample	Eurozone	Non-Eurozone	Full Sample	Eurozone	Non-Eurozone
cooperation	-0.928***	1.606***	-0.297	-0.861***	1.505***	-0.245
	(0.201)	(0.454)	(0.233)	(0.187)	(0.400)	(0.226)
power	-0.839***	-1.460***	-0.112	-0.761***	-1.319***	-0.123
	(0.185)	(0.341)	(0.208)	(0.175)	(0.298)	(0.200)
cooperation x power	1.469***	2.523***	0.036	1.266***	2.310***	0.000
	(0.300)	(0.727)	(0.331)	(0.290)	(0.647)	(0.317)
Country Effects	Yes	Yes	Yes	No	No	No
Country-Industry Effects	No	No	No	No	Yes	No
Industry-Wave	Yes	Yes	Yes	Yes	No	No
Observations	28,651	19,471	9,178	28,621	19,448	9,170
R-squared	0.084	0.069	0.143	0.110	0.093	0.168

Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. Controls included are years of education, age, family income, left-right scale, and the size of the employing firm. Standard errors are clustered at the country-wave level. Only tradable industries are considered.

Table 8 reports these results running (8), differentiating between the full sample, Eurozone, and non-Eurozone countries. For the same reason above, we warn about interpreting the coefficients of *cooperation* and *power* in isolation. As we can see, from the table, the interaction is positive and strongly significant in the full sample, suggesting that unions increase the support for further integration with strong cooperative institutions. However, this effect is larger in Eurozone countries than in non-Eurozone ones, where this effect is not significant. This result is in line with our argument since the Euro has increased market power in the Eurozone compared to countries outside it. Therefore, the size of the pie to be split between capital and labor via labor-capital pacts is larger in the Eurozone.

In figure 7, we plot the marginal effect of unions at different levels of cooperation variables for eurozone countries only. As we can see, the effect of unions increases with cooperation-enhancing institutions. In line with HP 3, the effect is positive for larger values of the cooperation variable. On the contrary, the effect is negative in countries with less established cooperation-enhancing institutions. In these countries, weaker cooperative

institutions can reduce the competitiveness of firms in tradable industries because of the more adversarial relationship between labor and capital. Thus, these firms and their workers lose from the more open economic environment created by the euro.



Note. Bands denote 95% confidence intervals. Estimates have been obtained via the specification with firm and year effects.

Figure 7. Marginal effect of union's power on log support for further EU integration

6. Conclusions

Our analysis has shown that the interaction between supranational (the Euro) and domestic (labor market) institutions is critical to understand the evolution of market power in Europe. We find that the change in the institutional economic landscape created by the Euro can have counterintuitive effects on competition intended broadly (i.e., considering product and labor markets). Firstly, we have found that the increasing integration brought by the Single Currency can deteriorate competition in the long run. This happens because fierce international product market competition makes it harder for low-productivity firms to survive. At the same time, superstar firms consolidate their position and see their market power increase. Furthermore, in line with our expectations, we show that the superstar firm effects of the Euro are larger in tradable industries and for highly productive firms. Our second counterintuitive result is that unions in the presence of cooperative institutions can increase the market power of superstar firms. Cooperative institutions favor the establishment of mutually beneficial agreements between capital and labor. Low wages boost firms' competitiveness and their position in international markets. Once it reaches a dominant international position, workers can reap the accrued benefits. Put together, these two main results depict a European version of the superstar firm story, where firms' consolidation of market power also depends on the capacity to design new strategies that integrate the evolving supranational and domestic institutional environment. Our evidence, therefore, gives an institutional perspective on the global rise in market power and expands the findings of Baccini et al. (2022) on the distributional consequences of trade liberalization across different types of labor market institutions.

We also show that the way in which domestic institutions mediate the effects of the Euro has important consequences for the support of the European project. In other words, the new supranational institutional framework created by the Euro can generate labor market dynamics that endogenously generate diverse support for the EU that varies depending on existing

domestic institutions. In this respect, cooperative institutions, in addition to favoring the competitiveness of firms, ensure that the gains are more fairly split between capital and labor, thereby enhancing the support of workers for the European project.

The present paper has also led to a reconsideration of Gutierrez and Philippon's (2022) and Philippon's (2019) conclusions. While not disputing the validity of their claims concerning product market competition, we point out that market power can increase even when markups remain low. Moreover, the Euro can generate substantial variability underneath their aggregate results for the Single Market. In particular, from our study, it emerges that the Euro may have created diverging paths, with highly productive firms in the Eurozone tradable industries acquiring considerable market power. Our findings point to the need for a more granular approach when studying competition in Europe and show that openness per se is insufficient to preserve competition over time.

A potential critique of our analysis could be that the superstar firm effect already started with the launch of the Single Market. We respond to this in two ways. Firstly, although the Single Market significantly increased economic integration, the Euro, as highlighted by the studies in Sections 2 and 3, delivered a substantial additional increase in trade. Furthermore, our methodology compares Euro Area firms with other EU firms in countries not adopting the Single Currency. Therefore, we should not have seen such differences if the Single Market had been the main cause driving our mechanisms.

Finally, our findings point to two important policy implications: i) when investigating competition law infringements and looking at sources of market power, competition authorities should broaden the scope of their analyses to account not only for product market competition but also for labor market imperfections; ii) the system of industrial relations can play a key role in determining the success of further European integration.

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Appendix

A Market Power, Markups, and Markdowns: Theory and Estimation

We do not offer any new theoretical or empirical contribution in the following two subsections, but we entirely rely on previous existing work.

A.1 Theory

As Tortarolo and Zarate (2018) we assume a cost-minimizing firm with the following production function for firm i:

$$Q_{it} = Q_{it}(X_{it}^1, \dots, X_{it}^V, L_{it}, K_{it}, \omega_{it}).$$

Factors X_{it}^v with $j = 1, \dots, V$ are variable inputs, L_{it} is labor, K_{it} capital, and ω_{it} denotes total factor productivity. Labor is considered a variable input as well and the firm possesses market power in both product and labor markets. The Langragian of the minimization problem is:

$$L_{it}(X_{it}^1, \dots, X_{it}^V, L_{it}, K_{it}, \omega_{it}) = \sum_{v=1}^{V} P_{it}^v X_{it}^v + w_{it}(L_{it})L_{it} + r_{it}K_{it} + \lambda_{it}\big(Q_{it} - Q_{it}(\cdot)\big),$$

Where P_{it}^v, w_{it}, and r_{it}, denote the variable input price, the wage, and the capital cost, respectively. The first-order condition of the cost-minimization problem with respect to labor is:

$$w_{it}\left(\frac{\epsilon_{it}^{Lw} + 1}{\epsilon_{it}^{Lw}}\right) = \lambda_{it} \ \frac{\partial Q_{it}(\cdot)}{\partial L_{it}},$$

where ϵ_{it}^{Lw} is the labor supply elasticity of the firm.[14] The Lagrange multiplier denotes how the minimum cost varies if we vary marginally output. In other words, it is simply the marginal cost. Thus, $\lambda_{it} = \frac{P}{\mu}$, where P is the output price.

The ratio $\frac{\epsilon_{it}^{Lw}+1}{\epsilon_{it}^{Lw}}$ is simply the inverse of the markdown. To better understand this, we use the dual approach and focus on the profit maximization problem of the firm as in Yeh et al. (2022). This problem takes the following form:

$$\max R_{it}(L_{it}) - w_{it}(L_{it})L_{it},$$

where $R_{it}(L_{it})$ denotes revenues when all the inputs apart from labor are evaluated at their optimum. The first order condition for labor is:

$$R'_{it}(L_{it}) = \left(\frac{w'_{it}(L_{it})L_{it}}{w_{it}(L_{it})} + 1\right) w_{it}(L_{it}),$$

which can be rewritten as:

$$\frac{R'_{it}(L_{it})}{w_{it}(L_{it})} = \frac{\epsilon_{it}^{Lw} + 1}{\epsilon_{it}^{Lw}},$$

and so given the definition of markdown as the ratio between the MRPL ($R'_{it}(L_{it})$) and the wage:

[14] $\epsilon_{it}^{Lw} = \frac{\partial L}{\partial w}\frac{w}{L}$ since $w(L)$ is the inverse function of L, $\frac{\partial L}{\partial w} = \frac{1}{w\prime(L)}$. Thus, $\epsilon_{it}^{Lw} = \frac{1}{w\prime(L)}\frac{W}{L}$.

$$MD_{it} = \frac{w_{it}}{R'_{it}(L_{it})} = \frac{\epsilon_{it}}{\epsilon_{it} + 1}.$$

By substituting the expression for the markdown and the Lagrange multiplier in the first-order condition of the cost-minimization problem and by rearranging the terms, we obtain Tortarolo and Zarate's (2018) combined measure of market power:

$$MP_{it} = \frac{\mu_{it}}{MD_{it}} = \frac{\theta_{it}^{L}}{\alpha_{it}^{L}},$$

where θ_{it}^{L} is the labor elasticity of output and α_{it}^{L} is the revenue share of labor costs.

Concerning markups, Yeh et al. (2022: 2105) show that:

$$\mu_{it} = \frac{\theta_{it}^{V}}{\alpha_{it}^{V}},$$

for a generic variable input X_{it}^{V} other than labor if the following 5 assumptions apply.

ASSUMPTION 1: Input X_{it}^{V} is free of adjustment costs.

ASSUMPTION 2: Input X_{it}^{V} is free of monopsony power.

ASSUMPTION 3: Input X_{it}^{V} is chosen statically.

ASSUMPTION 4: The production function $Q_{it}(\cdot)$ is twice differentiable in X_{it}^{V} and respects the Inada conditions:

$\lim_{X_{it}^{V} \to 0} \frac{\partial Q_{it}(\cdot)}{\partial X_{it}^{V}} = +\infty$ and $\lim_{X_{it}^{V} \to +\infty} \frac{\partial Q_{it}(\cdot)}{\partial X_{it}^{V}} = 0,$

for all possible values of the total factor productivity. Furthermore, the demand schedule is twice differentiable and strictly decreasing.

ASSUMPTION 5: Input X_{it}^{V} is used only for the production of output.

Estimation Procedure

To recover the market power index and the markup we need the output elasticities and revenues share of labor and a variable input. We follow Yeh et al. (2022) and choose materials to recover markups. However, while the revenue shares are directly observable in Orbis data, elasticities require the estimation of a production function. To do so, we follow the procedure of Levinsohn and Petrin (2003), and its adaptation to the markups case by De Loecker and Warzynski (2012) and De Loecker et al. (2016, 2020).[15]

Consider the following (gross) log Cobb-Douglas production function:

$$y_{it} = \beta_{it}^{l} l_{it} + \beta_{it}^{k} k_{it} + \beta_{it}^{m} m_{it} + \omega_{it} + \epsilon_{it}$$

where l_{it}, k_{it}, m_{it} are labor, capital, and materials expressed in logs, while ω_{it} is the firm's total factor productivity. This term is unobserved to the researcher but known by the firm. To obtain y_{it} , k_{it}, m_{it}, we have deflated operating revenues, total fixed assets, and material costs from ORBIS using the OECD GDP deflator, while for l_{it}, we have used the number of employees. Since very few firms report material expenditures in the case of Denmark, Greece, Ireland, Lithuania, and the UK, we have recovered this variable by subtracting labor costs from the cost of goods sold to increase the dataset's size.

The production function has been estimated at the NACE 2-digit industry level for five-year windows.[16] Therefore, the various coefficients denote the different time-varying industry elasticities associated with the related inputs. A crucial assumption is that the generic variable

[15] We implement the production function estimation in Stata MP using the Mollisi and Rovigatti's (2018) prodest package.
[16] We have considered all the NACE 2-digit apart from public sector administration (84) and extraterritorial activities (99).

input demand is a function of the state variable (capital), productivity, and other market factors $\boldsymbol{z_{it}}$.[17] As in Yeh et al. (2022), we have used materials as variable input:

$$m_{it} = m(\omega_{it}, k_{it}, \boldsymbol{z_{it}})$$

If the function m is invertible, then we can express the unobserved firm productivity as:

$$\omega_{it} = h(m_{it}, k_{it}, \boldsymbol{z_{it}})$$

This technique is called the "control function" approach and allows us to obtain a proxy of ω_{it} to include in our estimation. Otherwise, ignoring productivity will lead to biased estimates since it creates a correlation between the regressors and the error term. The procedure is divided into two stages.

First Stage

We define the function ϕ

$$\phi(l_{it}, k_{it}, m_{it}, \boldsymbol{z_{it}}) = \beta_{it}^{l} l_{it} + \beta_{it}^{k} k_{it} + \beta_{it}^{m} m_{it} + h(m_{it}, k_{it}, \boldsymbol{z_{it}}),$$

Which substituted in the production function gives:

$$y_{it} = \phi(l_{it}, k_{it}, m_{it}, \boldsymbol{z_{it}}) + \epsilon_{it}.$$

Then we regress y_{it} on a third order polynomial expansion of $\phi(l_{it}, k_{it}, m_{it}, \boldsymbol{z_{it}})$ in all its terms and store $\hat{\epsilon}_{it}$ and $\hat{\phi}_{it}$.

[17] As Yeh et al. (2022) $\boldsymbol{z_{it}}$ includes year fixed effects.

Second Stage

Productivity is assumed to follow a Gauss-Markov process of order 1

$$\omega_{it} = g(\omega_{it-1}) + \xi_{it}.$$

The error term ξ_{it} can be used to define the following moment conditions:

$$E\left[\xi_{it}(\boldsymbol{\beta})\begin{pmatrix} l_{it-1} \\ m_{it-1} \\ k_{it} \end{pmatrix}\right] = 0.$$

We can now recover the parameters of interest using a generalized method of moments estimation. We follow De Loecker and Warzinsky (2012) and allow for measurement errors in output and unobserved shocks to the production function which are combined in ϵ_{it}. Therefore, we divide revenues by $\hat{\epsilon}_{it}$ to get corrected expenditure shares for labor and materials. Since the coefficient of the log Cobb-Douglas correspond to elasticities we now have all the ingredients to compute market power and markups plus markdowns as a ratio between the two indicators. Finally, we recover firm-level total factor productivity as follows:

$$\hat{\phi}_{it} - \hat{\beta}^{l}{}_{it} l_{it} - \hat{\beta}^{k}{}_{it} k_{it} - \hat{\beta}^{m}{}_{it} m_{it}$$

B Union's Power & Cooperation Variables

Table B1 shows our mapping between Botero et al. (2004) and the OECD-ICTWSS dataset that we used to code the variable $power$, while table B2 the construction of our cooperation variable. The second column of both tables simply shows the corresponding OECD-ICTWSS variable and its description as it is reported in the user guide.

Table B1. Union's power variable

Botero et al. (2004) Dummy	**OECD-ICTWSS Variable**	**Coding**
(1) if employees have the right to unionize	RA_m: Right of Association, market sector 3=Yes 2=yes, with minor restrictions 1=yes, with major restrictions 0=no	Power=1 if RA_m=3
(2) if employees have the right to collective bargaining	CB_m: Right of Collective bargaining, market sector 3=Yes 2=yes, with minor restrictions 1=yes, with major restrictions 0=no	Power =1 if CB_m=3
(3) if employees have the legal duty to bargain with unions	WC_negot: involvement of works councils (or similar structures) in wage negotiations 4 = works councils (or mandated representatives) formally negotiate (plant-level) collective agreements, alongside or instead of trade unions. 3 = works councils (or mandated representatives) formally negotiate (plant-level) collective agreements, if no union is present (and/or subject to ballot).	Power=1 if WC_negot=1.

	1 = works councils is formally (by law or agreement) barred from negotiating (plant-level) agreements and involvement of works councils in negotiating (plant-level) agreements is rare. -99 = not applicable (no works councils)	
(4) if collective contracts are extended to third parties by law	Ext: Mandatory extension of collective agreements to non-organized employers (or a functional equivalent) 3 = extension is virtually automatic and more or less general (including enlargement) 2 = extension is used in many industries, but there are thresholds and Ministers can (and sometimes do) decide not to extend (clauses in) collective agreements 1 = extension is rather exceptional, used in some industries only, because of absence of sector agreements, very high thresholds (supermajorities of 60% or more, public policy criteria, etc.), and/or veto powers of employers 0 = there are neither legal provisions for mandatory extension, nor is there a functional equivalent. -99 = not applicable (no sectoral agreements)	Power =1 if Ext=1.
(5) if the law allows closed shops	UWRep: Do companies have a union workplace representation separate from works council? 0 = no or exceptional 1 = yes, but only in companies/establishments where unions are recognised and have negotiated a collective agreement 2 = yes, this is mandatory or guaranteed under a basic general agreement between unions and employers	Power=1 if UWRep=1 or 2.
(6) if workers, or unions, or both have a right to appoint members to the Boards of Directors	WC_rights: rights of works councils or employee representatives 3 = economic and social rights, including codetermination on some issues (e.g., mergers, take-overs, restructuring, etc.) 2 = economic and social rights, consultation (advice, with possibility of judicial redress) 1 = information and consultation rights (without judicial redress) 0 = works council or similar (union or non-union) based institutions of employee representation confronting management do not exist or are exceptional.	Power=1 if WC_rights=1.
(7) if workers' councils are mandated by law	WC: status of works council 2 = existence and rights of works council or structure for (union and non-union based) employee representation within firms or establishments confronting management are mandated by law or established through basic general agreement between unions and employers;	Power=1 if WC_rights=2

	1 = works councils (etc.) are voluntary, i.e. even where they are mandated by law, there are no legal sanctions for non-observance 0 = works council or similar (union or non-union) based institutions of employee representation confronting management do not exist or are exceptional.	

Note. Dummy 3 takes the value of 1 when WC_negot is 1 because in this way workers negotiations happens primarily via unions.

Table B2. Cooperation Variable

Dummy	OECD-ICTWSS Variable	Coding
(1) if firm-level agreements are possible	Multilevel: The combination of levels at which collective bargaining over wages takes place. 7 = cross-sectoral (entire economy or private sector), with centrally determined binding norms, minima or ceilings to be respected by all further agreements, which can only implement central agreements 6 = cross-sectoral (entire economy or private sector) and sectoral, with sectoral agreements that specify and can deviate from central agreements, guidelines or targets 5 = cross-sectoral (entire economy or private sector), sectoral and company, with company agreements that specify and can deviate from sector agreements, and sector agreements that specify and can deviate from central agreements 4 = cross-sectoral (entire economy or private sector) and company, with company agreements that specify and can deviate from central agreements 3 = sectoral (separate branches of the economy), with sectorally determined binding norms, minima or ceilings to be respected by all further agreements and company or enterprise agreements that can only implement sector agreements. 2 = sectoral (separate branches of the economy) and company, with company agreements that specify and can deviate from sectorally agreed norms, guidelines or targets 1 = company (or units thereof).	Cooperation=1 if Multilevel=5, 4, 2, or 1.
(2) if workers' councils also include employers	WC_type: type of works council 2 = works councils is composed of employees (employee-only council) 1 = works councils are composed of employees and employer (or employer representative), or chaired by (or on behalf of) employers (joint council) 0 = works council does not exist or is most exceptional.	Cooperation =1 if WC_

		type =1
(3) if workers' council have economic and social rights and consultation rights	WC_rights: rights of works councils or employee representatives 3 = economic and social rights, including codetermination on some issues (e.g., mergers, take-overs, restructuring, etc.) 2 = economic and social rights, consultation (advice, with possibility of judicial redress) 1 = information and consultation rights (without judicial redress) 0 = works council or similar (union or non-union) based institutions of employee representation confronting management do not exist or are exceptional.	Cooperation =1 if WC_rights =3 or 2.
(4) If work councils formally negotiate plant-level agreements or can informally negotiate over working conditions	WC_negot: involvement of works councils (or similar structures) in wage negotiations 4 = works councils (or mandated representatives) formally negotiate (plant-level) collective agreements, alongside or instead of trade unions. 3 = works councils (or mandated representatives) formally negotiate (plant-level) collective agreements, if no union is present (and/or subject to ballot). 1 = works councils is formally (by law or agreement) barred from negotiating (plant-level) agreements and involvement of works councils in negotiating (plant-level) agreements is rare. -99 = not applicable (no works councils)	Cooperation =1 if WC_negot =4,3, or 2.
(5) if collective agreements include a peace clause	Peace: Do collective agreements imply a peace obligation and/or typically include a peace clause? 2 = strikes may not be called over the terms of the collective agreement while the agreement is in force (which implies a peace clause) 1 = there is no (implicit or explicit) legal obligation, but in practice most (private sector) collective agreements contain a peace clause 0 = no peace obligation or peace clause	Cooperation =1 if Peace=2 or 1.

C Robustness Checks

C.1 Main Results without Trimming and with Industry Deflators

In the main text we have trimmed the top and bottom 3% percent of observations according to the distribution of the dependent variable used in the regression. To show that our

main results are not affected by this sub-setting, we re-run (1) (both with market power and markups as dependent variables), and (7) without trimming.[18]

Table C1. Main results without trimming

	Log Market Power	Log Markup	Log Markdown
$euro$	0.357***	-0.338***	
	(0.056)	(0.065)	
$euro\ x\ C^1$			-0.101*
			(0.055)
$euro\ x\ C^2$			-0.513***
			(0.059)
Observations	10,672,583	10,665,469	2,908,568
R-squared	0.893	0.794	0.841

Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls and report the estimates of the TWFE regression. Standard Errors are clustered at the country-industry level. The last column considers tradable industries only.

By looking at table C1, we can see that the thrust of our findings is unchanged. The main effect of not-trimming is that coefficients increase in magnitude. However, this is something to expect. Since our mechanisms involve superstar firms, trimming the top of the distribution is likely to scale down their impact.

[18] In this appendix, for every estimation concerning market power we consider the full-sample and we do not separate between Western and Central-Eastern countries as we did in some cases in the main text.

In table C2, we report the main results obtained via a production function specification that uses industry-specific deflators. Even in this case, the thrust of the main results is unchanged.

Table C2. Main results with industry-specific deflators

	Log Market Power	Log Markup	Log Markdown
$euro$	0.314***	-0.112**	
	(0.072)	(0.044)	
$euro\ x\ C^1$			-0.076
			(0.053)
$euro\ x\ C^2$			-0.726***
			(0.145)
Observations	1,837,030	1,842,060	664,340
R-squared	0.878	0.826	0.856

C.2 Accounting for Heterogenous Treatment Effects

A potential source of concern is that staggered DID designs with several pre and post-periods and that employ time and fixed effects can generate biased estimates in presence of heterogeneous treatment effects (e.g., de Chaisemartin and D'Haultfœuille 2020, Callaway and Sant' Anna 2021, and Goodman-Bacon 2021). We thus follow Callaway and Sant' Anna (2021) and employ their methodology to account for these potential sources of error.

Table C3. Callaway and Sant'Anna (2021) DID

	Log Market Power	Log Markup
euro	0.231***	-0.330***
	(0.004)	(0.003)
Observations	10,278,736	10,315,229

Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include control and bootstrapped standard errors. Estimators use the regression outcome model.

In table C3 we report the results of running (1) (both with market power and markups as outcomes) with pre-treatment control variables.[19] Concerning market power, the effect of the Euro is not particularly different from table 3: approximately -6.7% for the unweighted TWFE estimation, -4.7% for IPW, and +0.3% for the matched sample. However, although the sign of the effect is the same, the differences are greater when the outcome is the log markup. While these differences are not particularly severe for TWFE and IPW, they are larger for the matched sample. This difference might be partly explained by the reduced number of observations used in the matched sample and by the fact that Callaway and Sant' Anna's (2021) methodology uses time-invariant covariates. Finally, we do not repeat (7) because it is difficult to capture interacted treatment effects with Callaway and Sant' Anna's (2021) methodology.

C3 Alternative variables

A possible critique of our empirical strategy is that the dependent variables are estimated and require several assumptions for their validity. In this respect, we re-run (1) with more "conventional" variables as outcomes. Firstly, we consider firms' sectoral (NACE 2-digit) revenue share, where industries are defined over the entire European economy. Secondly,

[19] Callaway and Sant 'Anna's (2021) methodology requires time-invariant pre-treatment covariates. Therefore, controls are set to their value the year before the Euro adoption.

we use price-cost margins. Price-cost margins can be defined as the difference between the price and marginal cost, divided by the price (Tybout 2003). Therefore, price-cost margins are very similar to markups and are not directly observable. Several papers adopt an "accounting" approach to get over this issue (e.g., Sembenelli and Siotis 2008, Weche 2018). We thus align this approach and obtain price-cost margins following Weche (2018) as the difference between revenues and the sum of employees and material costs divided by revenues.[20]

Table C4. Effect of the Euro on market shares and price cost margins

	Sectoral Revenue Share			Price-Cost Margin		
	TWFE	IPW	Matching	TWFE	IPW	Matching
euro	9.22*10^{-5}***	8.66e*10^{-5}***	7.97e*10^{-5}***	-0.119***	-0.068***	-0.044***
	(2.67e-05)	(2.69e-05)	(2.10e-05)	(0.022)	(0.017)	(0.012)
Observations	10,676,617	10,676,617	8,304,477	10,090,179	10,090,179	8,063,586
R-squared	0.863	0.917	0.843	0.905	0.980	0.943

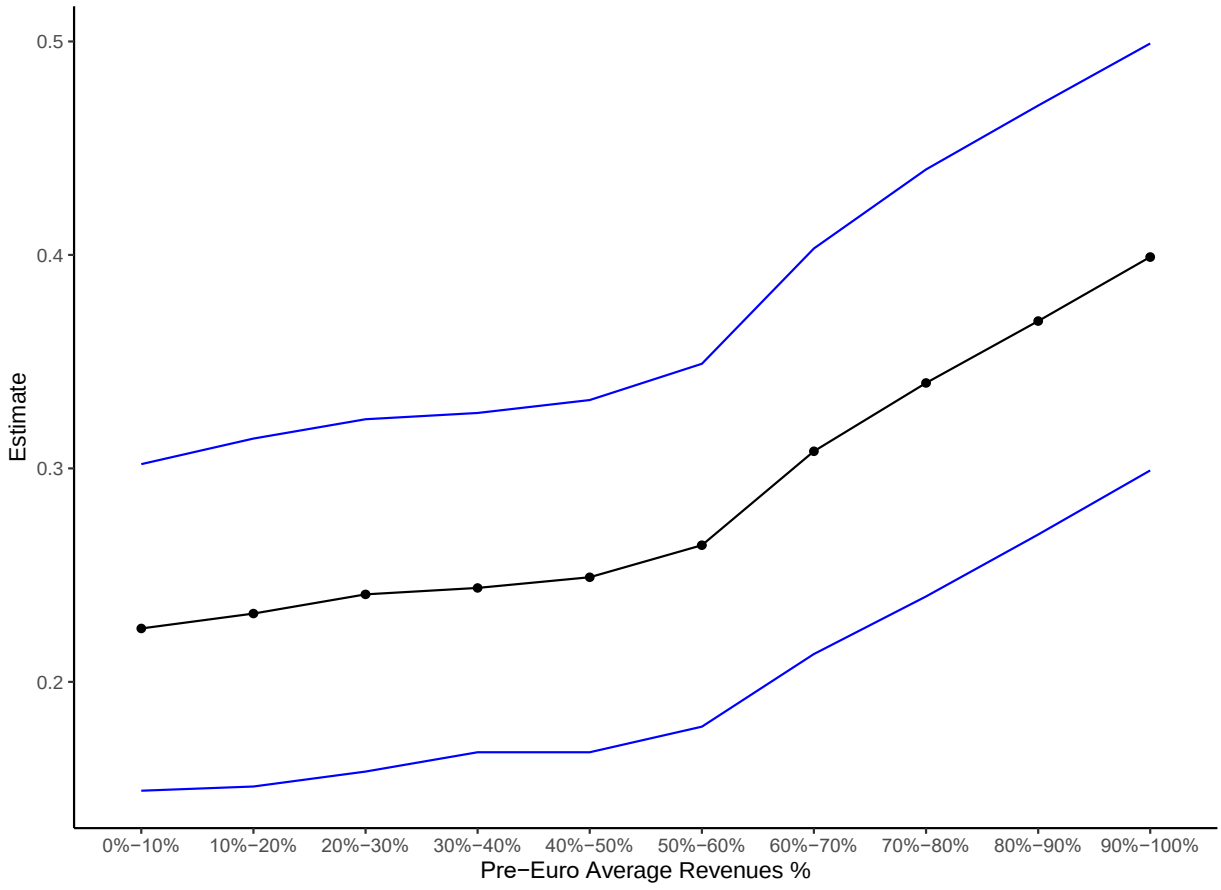
Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls, firm and year effects. Standard Errors are clustered at the country-industry level.

Table C4 displays a positive effect of the Euro on sectoral shares. Although coefficients may seem tiny, they amount to an increase between 56% and 65% compared to the pre-Euro average sectoral share in the Eurozone (1.43*10^{-4}). These results suggest that, on average, Eurozone firms, have increased their economic weight compared to firms outside the Eurozone and thus align with the dynamics found for market power. By contrast, the effect of the Euro on price-cost margins is negative. Since price-cost margins tend to capture product market power, this effect is consistent with the markup dynamics. Furthermore, these findings align with the

[20] We trim the bottom and top 3% of the price-cost margin distribution to avoid the effect of outliers. However, the sign of coefficients does not change when we do not trim but only their magnitude.

Gutierrez and Philippon's (2022) results showing that sectoral profit margins have declined in Europe. Therefore, this robustness check brings more evidence in support of the claim that firms' market power may have increased in Europe despite the increase in product market competition.

Section 5.3 shows that the effect of the Euro on market power has been larger for Eurozone firms at the top of the pre-Euro productivity distribution. We interpreted these results in support of our superstar firm explanation since high-productivity enterprises tend to increase their economic power in more open markets. As a robustness check, we proxy superstar firms by revenues instead of productivity and so we re-run (5) with Q^v defined on the pre-Euro average revenue distribution.



Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls, firm and year effects. Standard Errors are clustered at the country-industry level.

Figure C1. The Euro and large firms

As in the case of productivity, the Euro has a greater effect on market power the larger was the firm before the Single Currency. However, in contrast to productivity, this effect increases monotonically. Again, this dynamic is consistent with the superstar firm dynamics since large corporations may have exploited the increasing openness to expand and consolidate their market power.

C4 Different Tradable Classification

When evaluating our claims for tradable industries we relied on the standard definition that includes agriculture, mining and quarrying, and manufacturing. As a robustness check, we re-run our estimations following Mian and Sufi (2014) who also consider the information and communication sector as a tradable industry. Specifically, we re-run (1) with the inclusion of $euro\ x\ T$ (table C5), (6) (table C6), and (7) (figure C2). As we can see from the below results, the inclusion of the information and communication sector do not significantly change the magnitude of the estimates.

Table C5. Euro and market power in tradable industries (Mian and Sufi 2014 classification)

	TWFE	IPW	Matching
$euro\ x\ T$	0.074***	0.074***	0.067***
	(0.027)	(0.026)	(0.024)
Observations	10,037,882	10,037,882	7,846,829
R-squared	0.870	0.880	0.875

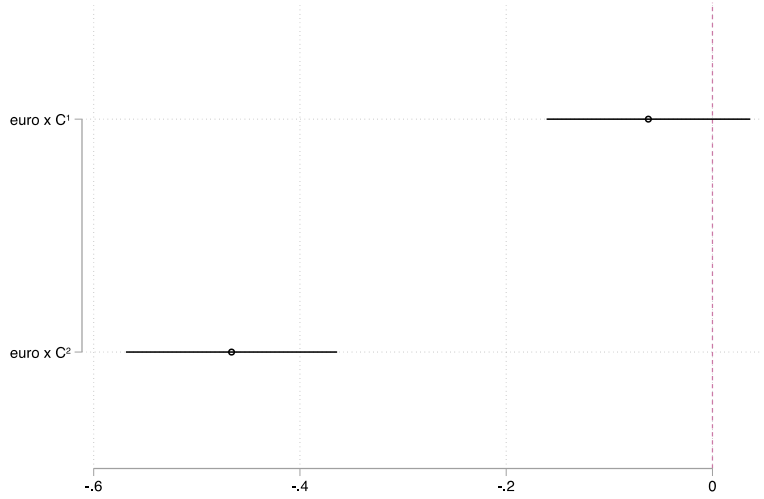
Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls, firm and year effects. Standard Errors are clustered at the country-industry level.

Table C6. Unions and markdowns (Mian and Sufi 2014 classification)

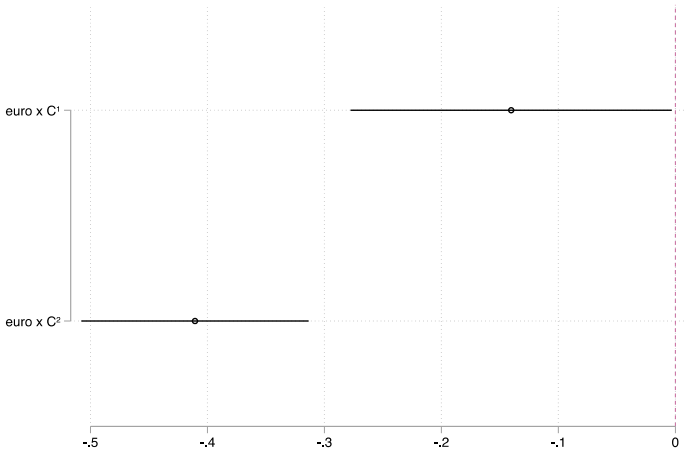
	(1)	(2)	(3)	(4)	(5)	(6)
cooperation	3.378***	1.638***	4.406***	3.373***	1.514***	3.937***
	(0.317)	(0.439)	(0.561)	(0.298)	(0.422)	(0.566)
power	2.948***	1.364***	4.122***	2.905***	1.220***	3.667***
	(0.305)	(0.480)	(0.556)	(0.293)	(0.458)	(0.571)
cooperation x power	-4.525***	-2.814***	-6.001***	-4.447***	-2.579***	-5.359***
	(0.453)	(0.707)	(0.744)	(0.424)	(0.672)	(0.801)
Firm Effects	Yes	No	No	Yes	No	No
Industry Effects	No	Yes	No	No	Yes	No
Country Effects	No	No	Yes	No	No	Yes
Year Effects	Yes	Yes	Yes	No	No	No
Industry Year Effects	No	No	No	Yes	Yes	Yes
Observations	6,022,937	6,173,513	6,173,513	6,022,937	6,173,513	6,173,513
R-squared	0.853	0.265	0.269	0.856	0.271	0.292

Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls. Standard Errors are clustered at the country-industry level. Only tradable industries are considered.

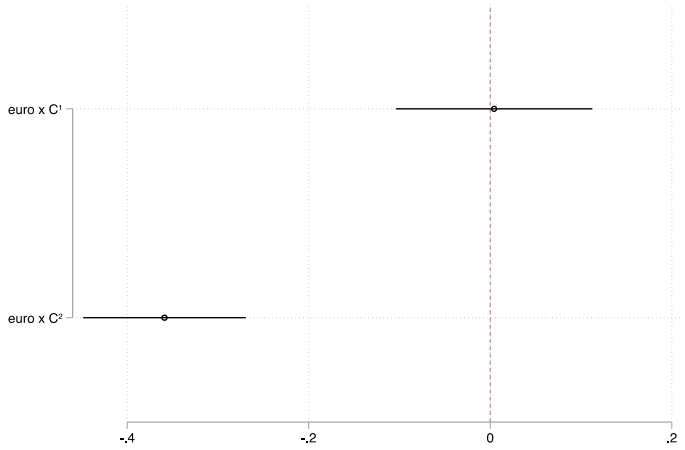
a) TWFE



b) IPW



c) Matching



Note. Vertical bands denote 95% confidence intervals. Only tradable industries are considered.

Figure C2. The effect of cooperation institutions following the Euro (Mian and Sufi 2014 Classification)

C5 Accounting for Fixed Labor

Autor et al. (2017) in the working paper version of their published manuscript (i.e., Autor et al. 2020) show that superstar firms' labor share decreases in the output share of fixed labor (i.e., not directly employed in the production). Clearly, the fixed labor share is mechanically lower the larger the firm. However, the presence of fixed labor may create some concerns if it confounds Euro's effect on market power, given the inverse relationship between labor shares and firms' market power (Autor et al. 2020). This concern, however, is partly accounted for by controlling for the firm's labor shares in our regressions. Nevertheless, to further limit this issue,

we run (1) on a subsample of large firms, whose revenues between 1995 and 2018 have been in the top 10%. By restricting our attention to large enterprises, the impact of the fixed labor share is limited, given the large revenues.

Table C7. Euro effect on market power for large firms

	TWFE	IPW	Matching
	0.222***	0.250***	0.214***
	(0.027)	(0.035)	(0.026)
Observations	2,863,839	2,863,839	2,562,518
R-squared	0.863	0.879	0.875

Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls. Standard Errors are clustered at the country-industry level. Only firms whose average revenues over the entire sample are in the top 10% are considered.

Table C7 continues to show a positive effect of the Euro on market power around 22%. The estimates, although not particularly, are lower with respect to the baseline. The lower estimates might be due to the fact that we are focusing only on large firms and thus Euro effect on market power can be lower with respect to the case when also smaller firms are considered.

C6 Main Results without Value-Added Labor Share as Control

Although the labor shares used to compute the market power index are corrected and defined using revenues, while the one used as control using value-added, we re-run (1) without including the latter as control. As we can see from table C8, coefficients change very little.

Table C8. Euro effect on market power without value-added labor Shares

	TFWE	IPW	Matching
euro	0.253***	0.305***	0.250***
	(0.046)	(0.052)	(0.047)
Observations	10,037,882	10,037,882	7,846,829
R-squared	0.800	0.800	0.805

Note. *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls. Standard Errors are clustered at the country-industry level.

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