Essays in the Political Economy of Competition

Aligned Interests, Institutions, and Market Power in Europe

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Declaration

I certify that the thesis I have presented for examination for the PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

I declare that my thesis consists of approximately 50,079 words.

Statement of Co-Authored Work

I confirm that Chapter 4 was jointly co-authored with Doctor Angelo Martelli and I contributed 50% of this work.

Abstract

European competition policy has undergone a significant transformation over the last forty years. Economic barriers, public monopolies, and discrimination against foreign firms, once widespread practices, have given way to a European competition legislation that experts consider the most advanced in the world. This 'Great Reversal' (Philippon 2019) is highly relevant for political economists as it affects the balance of power across two critical dimensions: governments versus the European authorities and states versus markets. Governments transferred considerable powers to the EU over policies that were used to promote national interests. This change in the policy paradigm exposed large sectors of the economy and "National Champions," once jealously shielded, to international economic forces. This puzzling transformation can be broken down into a number of questions. Who are the primary actors driving this change in the policy paradigm? Have these reforms effectively enhanced competition? Moreover, does the adoption and impact of this competition policy package vary at the country and sectoral level? This thesis proposes a political-economic framework based on aligned interests between European and national actors and the interplay of supranational and domestic institutions. I argue that this new policy paradigm was supported by a winning coalition based on the convergence of interests of the European Commission, liberal governments, and competitive firms. The European Commission's promotion of market integration aligns with the ambition of competitive firms that want to expand into other European economies and the agenda of more economically liberal governments. The interplay between supranational and domestic institutions, in turn, shapes the way these interests are represented in national legislation, contributing to policy variation across countries. This interaction,

however, also plays a crucial role in determining different economic outcomes as it alters how firms compete. In this respect, the thesis reveals that competition has evolved very unevenly across countries and industries. While some sectors have shown a general increase in competition, others have witnessed a rise in monopsony power, concealed by improving competition in the product market.

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1. Introduction

Adam Smith concludes chapter eleven of The Wealth of Nations by writing (Smith 1776: Chapter XI page 348)[2000]: "To widen the market may frequently be agreeable enough to the interest of the public; but to narrow the competition must always be against it, and can serve only to enable the dealers, by raising their profits above what they naturally would be, to levy, for their own benefit, an absurd tax upon the rest of their fellow-citizens." The Scottish moral philosopher, widely regarded as the father of political economy and classical economics, already recognized the importance of *free competition* intended as the absence of any obstructions to market entry or exit (Kurz 2016).[1] For Smith free competition was not only crucial for the functioning of markets but also "is seen to realize as best as possible the principles of 'equality, liberty, and justice'" (Kurz 2016: 619). What is more, however, is Smith's emphasis on the tension between the interests of firms and the realization of what he believes is a well-functioning market. While markets operate properly when competition is high, firms want to restrict competition to increase their profits. In a similar vein but from a very different perspective, Marx also individuates a similar tension and recognizes the importance of competition, or rather, the absence of it. In this respect, Marx and Engels (1848)[2008] emphasize the natural tendency of capitalism towards economic concentration and monopolies, which would eventually lead to its collapse by increasing the discontent of the proletariat and fomenting a revolution. The intuition emerging from these classical thinkers is that there is no reason to believe that competition will survive in a capitalist system without interventions directed at its preservation. Therefore, the inherent political-economic nature of competition arises from

[1] This concept, although similar, is different from the concept of *perfect competition*, which came together with the mathematical formalization of economics.

the underlying tension between private business interests and collective benefits, which creates room for public intervention. John Stuart Mill (1848: 274)[2000] goes further in emphasizing the political-economic connotation of competition by arguing that "only through the principle of competition has political economy any pretension to the character of a science."

The notion of free competition gains considerable importance when we consider it in the context of the European project. The founding countries believed that it was impossible to set up a common market without establishing a level playing field between European firms (Baldi 2006). Competition policy, in fact, has always represented a tool to promote market integration via the abatement of domestic barriers and discrimination between firms. It is, therefore, not surprising that the first elements of competition policy were already present in the 1951 Treaty of Paris. This treaty contains provisions against monopolies, cartels, and the abuse of a dominant position. These articles aimed to remove any discrimination based on national grounds (Motta 2004), highlighting from the outset the function of European competition policy as an economic integration tool.

Despite the ambitious provisions of the Treaty of Paris, the European economy, was far from being an integrated competitive market in the three decades following the Treaty. Domestic economies were protected by considerable barriers to entry, and firms of national interest were favored through generous state funding. Mergers were tolerated, if not promoted, to favor the emergence of "national champions" - large firms that dominated their respective industries with strong political ties (Buch-Hansen and Wigger 2011). Domestic competition policies also served social goals disconnected from economic efficiency as these national champions employed a considerable share of the workforce (Levi-Faur 1999). These Keynesian policies came together with a period of high growth for the European Economy (Eichengreen 2006). Why then change this winning horse for a free-market and high-competition paradigm? Therefore, the ambitious pro-competition provisions of the founding Treaties remained a dead letter.

With the economic turmoil of the seventies, however, things started to change.

Throughout the 1980s, there was a noticeable shift in the economic paradigm as a result of a series of ambitious pan-European competition policies. These policies encompassed a range of measures, from the introduction of more centralized antitrust enforcement with the 1989 merger regulation to the liberalization of numerous industries and the elimination of legal monopolies in the nineties. This legislative and economic revolution was so radical that the economist Thomas Philippon (2019) dubbed it the "Great Reversal:" the EU, once a laggard, now has the most advanced and strict competition system in the world. This change not only introduced new rules and regulations but also created highly competitive markets in Europe according to Philippon (2019) and Gutierrez and Philippon (2023). Increasing product market competition from the mid-nineties and early thousands was recorded by several studies across different dimensions, including concentration (Kalemli-Ozcan et al. 2015), profit margins (Gutierrez and Philippon 2023), and price cost markups (Christopoulou and Vermeulen 2012, Weyerstrass and Jaenicke 2011).

From a national government point of view, the efficiency gains from openness are not a *free lunch* in terms of policy levers. The Great Reversal, in particular, resulted in a significant loss of government agency in areas that were considered crucial for national interests. This rebalance of power involves two critical dimensions: states vs. markets, and Member States versus the EU. Several sectors of the economy that were previously jealously shielded from global competition were suddenly exposed to it. National champions became the targets of foreign takeovers thereby exposing them to international market forces and actors with objectives profoundly different from the pursuit of national interests (Sandholtz and Zysman 1989). Member States transferred considerable powers to the Commission. Competition policy - once a tool to promote national economic goals - became increasingly centralized in the Commission's hands (Warlouzet 2016). At the same time, the Commission started enjoying considerable powers in merger enforcement and industries dominated by state-owned monopolies; critical policy areas where Member States had for a long time resisted transferring powers (Buch-Hansen and Wigger 2011).

In light of the considerable national interests at stake, it is puzzling why governments ever agreed to this double loss.

This thesis will try to shed light on the political-economic dynamics leading to this radical change in European competition. I will do so, through the lens of political economy and by proposing a theoretical framework in which policies result from a bargain between supranational and domestic actors. In this framework, the interaction between supranational and domestic institutions is critical in shaping both the content of policies and their impact on competition by influencing the strategies of different actors. Contrary to the existing scholarship, which considers the European competition revolution as mainly deriving from the Commission's initiatives, I argue that policy change is instead the result of a convergence of interests between the Commission, governments, and internationally oriented firms.

In what remains of the introduction, section 1.1 formulates the research puzzle. Section 1.2 analyzes the existing scholarship while 1.3 discusses its limitations. The theoretical framework and empirical strategy are presented in section 1.4. Section 1.5 discusses the contribution and structure of the thesis. Finally, section 1.6 contains the concluding remarks for this introduction.

1.1 A Puzzling Reversal

1.1.1 The Great Reversal

Philippon (2019) labels evocatively the spectacular increase in competition characterizing the European economy as the "Great Reversal." What is reversed for Philippon (2019) is the primacy in competition between Europe and the US. While Europe started transforming itself in the late eighties, competition in the US was fading as American markets were becoming increasingly more concentrated in the hands of a restricted circle of dominant firms (Autor 2020, De Loecker et al. 2020)

While this dissertation focuses on Europe, a brief comparison with the US is highly

telling as it highlights the magnitude of the European transformation even more. The US, in fact, was considered by many economists and policymakers the model to which Europe should aspire to revitalize its economy (Alesina and Giavazzi 2008). Some authors see a mix of globalization and technical changes as the cause of declining competition in the US (Arkolaikis 2019, Autor et al. 2020, Tambe 2020). Philippon (2019), however, has a different view in this regard. American firms are not more productive in relative terms than they were in the past (Gutierrez and Philippon 2019). What changed instead is the increasing capture of US competition authorities by business interests Philippon (2019). Kwoka and White (2017) indicate that American Competition Authorities have become increasingly favorable towards large businesses. During the Bush administration, American antitrust law has been relaxed, and the Department of Justice has changed its guidelines to make it more difficult to sue large corporations for anti-competitive actions (Cassidy 2013). These changes resulted in fewer and fewer merger investigations and enforcement actions (Kwoka 2017).

For Philippon (2019) and Gutierrez and Philippon (2023), competition authorities are responsible for the diverging European and American trends. While in the US, the Federal Trade Commission and the Department of Justice - the two leading competition authorities - were increasingly subservient to powerful firms' interests, the European Commission enforced competition policy rigorously and independently. Independence is, therefore, the critical factor behind the Great Reversal. But independence from what? Undoubtedly, for Philippon (2019), independence from business interests is key. However, independence from Member States also plays a critical role. For Philippon (2019), the Commission was able to advance an ambitious reform agenda by opposing the domestically circumscribed interests of Member States. This opposition for Gutierrez and Philippon (2023) was evident in the block of the Siemens and Alstom merger. The merger involved prominent firms from the two largest European economies, Germany and France, putting considerable political pressure on the Commission. Yet, the Commission blocked the merger, claiming that it would have seriously diminished competition.

1.1.2 Research Puzzle

The Great Reversal has brought about a radical transformation of the European political and economic landscape and shaken the foundations of European economic policymaking. This process entailed a series of policies that caused a loss of government agency in sectors of the economy that, for a long time, were considered vital for the national interest. On the one hand, governments have transferred increasing powers to the Commission. On the other, the grip that international market forces had on national economies augmented substantially.

Concerning the first dimension of this loss, the Commission acquired increasing powers in many areas of competition policy. Cartels and mergers control were increasingly centralized in the Commission's hands (Buch-Hansen and Wigger 2011, Warlouzet 2016) and the fight against concentration, trade barriers, and oligopoly became its categorical imperative (Buch-Hansen and Wigger 2010, 2011). The national champions - for a long time nurtured and protected by governments - became the target of the Commission's pro-competition initiatives. Furthermore, the Commission began to leverage its powers, which were granted by the Treaty of Rome, to liberalize several industries that were previously considered "off-limits" by Member States. These industries were not only economically significant but also had security-related implications (Pollak and Slominski 2011). It is enough to think that liberalization directives affected critical energy sectors, such as electricity and gas, thereby touching one core interest behind the foundation of the European Union: the management of natural resources.

This series of policies significantly exposed companies of national interest to the risk of foreign takeovers. Vivendi, a French Mass Media company, became the main shareholder of Telecom Italia - the leader in the Italian telecommunications sector. Foreign takeovers increased remarkably in the energy sector as a consequence of the 2003 second liberalization directive (Bulfone 2020: 103). In 2007, Enel (Italy) and Acciona (Spain) took over Endesa (Spain). Initially, the Spanish government led by Zapatero supported the move since the presence of Acciona in the deal ensured that a part of Endesa's

ownership would remain Spanish. However, in 2009, amid the financial crisis, Acciona sold its shares of Endesa to Enel, making *de facto* Endesa a subsidiary of the Italian company.

This wave of foreign acquisitions was met with opposition and resistance from governments. On some occasions, these government's efforts successfully blocked foreign takeovers. In 2017, the Italian authorities blocked Vivendi from acquiring Mediaset. Similarly, in 2000, the Spanish government opposed the proposed merger between Telefonica, the Spanish telecommunications giant, and KPN, a Dutch company, as KPN would have held the majority of shares (Bulfone 2020: 99). However, in other cases, the main shareholder of important national firms becomes a foreign company, as in the previously discussed cases of Telecom Italia and Endesa.

The stark juxtaposition that this series of reforms marked with the past makes the Great Reversal even more puzzling, raising critical questions on the nature of the phenomenon. What led governments to agree to what seems to be a significant loss of power over critical areas of economic policymaking? Who are the main actors or coalition promoting this radical shift? Have these policies been so effective in promoting competition, as claimed by Philippon (2019), or their effects are more varied and nuanced? Addressing these questions is a challenging endeavor as it requires a holistic theoretical framework that encompasses not only the political and institutional factors that lead to policy changes but also accounts for the economic consequences of such policies. In the next section, I will discuss how the existing literature has tried to answer these questions.

1.2 Delegation, Centralization, and Convergence

1.2.1 Delegation as an Insurance Mechanism

A first attempt to build such an ambitious framework that considers the political and economic dimensions of the questions sketched in the previous section lies in the seminal contributions of Philippon (2019) and Gutierrez and Philippon (2023). In the theoretical

architecture of Philippon (2019) and Gutierrez and Philippon (2023), the Commission is the central actor within the European competition constellation. Member States, on the contrary, have only a limited and peripheral role. What is surprising, however, is that this loss of agency over competition policy is a convenient and deliberate choice for Member States. Gutierrez and Philippon (2023) give theoretical substance to this counterintuitive assertion via a game-theoretic model of supranational bargain over competition policy. The object of this bargain is the degree of powers to give to the Commission as a supranational competition regulator. Every Member State would, in principle, want the common regulator to serve its domestic interests. At the same time, Member States do not want the regulator to be captured by another country. Gutierrez and Philippon (2023) show that for each Member State, the risk of the regulator being captured by a rival country is higher than the chances of controlling it. For this reason, Member States prefer to give a highly independent mandate to the Commission. Therefore, centralization happens because the lack of trust among countries ironically makes the Member States delegate competition policy to a central institution, which is tougher and more independent than national authorities. In other words, delegation represents a form of insurance from the risk that competition policy will serve the interests of a restricted circle of countries.

The delegation to an independent agency increases competition through two main channels. Firstly, it guarantees that businesses' interests do not capture the enforcement of competition policy. Secondly, this independence ensures that Member States' pressures do not sway the Commission when designing and implementing competition-enhancing reforms. According to Philippon (2019) the empirical evidence corroborating this theoretical apparatus lies in the series of ambitious liberalization policies championed by the Commission, which made the Single Market highly competitive, together with the ability of this authority to resist the pressure of governments and powerful businesses in many cases, such as the Siemens-Almstom merger.

1.2.2 European Political Economists & the Great Reversal

The novelty of the framework proposed by Philippon (2019) and Gutierrez and Philippon (2023) is the capacity to address both the politics and the economic effects of the European competition revolution. What is not new, however, is the prominence given to the Commission. This hegemonic characterization is in fact prevalent among several political economists studying the evolution of competition policy in Europe. These scholars see the primacy of the Commission as the result of two institutional developments: the convergence of national statutes on harmonized European law and the centralization of competition policy. According to Gerber (1998), EU competition law is the source of centripetal forces favoring the convergence of domestic systems to European standards. Similarly, Dumez and Jeunemaitre (1996) argue that the primacy of the Commission over national authorities creates pressures for vertical convergence. Wardeen and Drahos (2002) contribute to this scholarship by arguing that convergence results from the combined actions of European authorities and a community of legally trained professionals. According to these authors, the Commission and the European Court of Justice exerted a "subtle" top-down correction on Member States by overruling the decisions of national competition authorities that were not aligned with Community goals. At the same time, professionals with legal training formed a community that favored the interpretation of information in the light of similar ideas. Baldi (2006) argues that convergence also happened in the UK; the country perhaps more resistant to Europeanization. In 1998, the Labor government enacted an extensive reform of competition policy, which finally marked the transition to European standards (Baldi 2006).

Convergence went side by side with centralization. Warlouzet (2016) analyzes the evolution of the European merger policy in 1956-1991, adopting a historical institutionalist approach. He argues that the centralization of merger control in the Commission's hands is the consequence of the path dependencies created with the 1962 cartel regulation. According to Wilks (2005, 2007), the centralization of competition policy continued even after regulation 1/2003, which gives more weight and space to national competition

authorities in applying European and domestic competition laws. Wilks (2007: 437) argues that what can appear as decentralization is indeed a "strategic coup" organized by the Commission to marginalize national laws.

Centralization has often been framed in terms of a principal-agent relationship. In this relationship, Member States (the principals) delegate competition policy to the Commission (the agent). However, the agent should, in principle, act in the principal's interest within the boundaries of the "contractual relationship." According to McGowan and Wilks (1996), the Commission has gradually gained more power over competition policy, continuously limiting the role of its principals. Wilks (2005: 433) goes even further by arguing that the Commission has "escaped" its agency constraints to take on a quasi-constitutional status as a "trustee" - an entity that has obtained complete control over competition policy.

According to this literature, evidence of the Commission's hegemony over competition policy is widespread. Pollak and Slominski (2011) argue that the Commission was able to exploit the Treaty of Rome and the threat of sanctions to overcome the resistance of Member States over the liberalization of the energy sector. In a similar vein, Eising and Jabko (2001), as well as Eising (2002), argue that the European Commission effectively utilized the institutional framework of the European Union to influence Member State preferences in a manner that served its objectives. These authors portray the Commission as an astute negotiator, capable of persuading the Member States that the policy outcomes achieved are the result of their own choices, whereas, in reality, they reflect the Commission's preferences. Moving to merger enforcement, Barros et al. (2013) conceptualize the Commission as the conductor who gives the tempo to an orchestra composed by national competition authorities. By analyzing cross-national merger enforcement data, the authors find that changes in the Commission's approach affect the enforcement of national competition authorities.

1.3 Limitations of the Existing Theories: Economic Variability, Institutions, Domestic Interests, and the Labor Market

The scholars discussed seem to agree that the revolution of competition policy results from a highly independent and powerful Commission driven by the principle of free competition and market integration. What is remarkable is that this consensus involves studies using highly different approaches, such as rational choice (Wilks 2007, Philippon 2019, Gutierrez and Philippon 2023), bounded-rationality (Eising 2002), and historical institutionalism (Warlouzet 2016).

Throughout this dissertation, I will refer to this body of literature that shares the prominence attributed to the Commission as the EU-Centric account. I am well aware, however, that this nomenclature choice does not render full justice to the varied and sometimes, in contrast, causal mechanisms explaining the Commission's supremacy, which these studies individuate. In the rational-choice account of Philippon (2019) and Gutierrez and Philippon (2023), Member States voluntarily transferred powers to the Commission because as a form of insurance from the risk of competition policy captured by a single country. This Member States' willingness to transfer powers to the Commission seems in contrast with Wilks (2007), who argues the Commission acquired its prominence through a "strategic coup" of which Member States were not particularly happy. For Eising (2002) - who departs from the more demanding rationality constraints of Wilks (2007), Philippon (2019), and Gutierrez and Philippon (2023) - the Commission's success is the result of a skillful and lengthy act of persuasion directed at changing Member States preferences. Finally, Warlouzet (2016) even questions the extent to which this Commission's supremacy is the result of deliberate actions, arguing that the power of the supranational authority over competition policy is the result of legislative path dependencies.

From this EU-centric account, it is possible to extrapolate a series of observable predictions concerning the evolution of policies, economic trends across countries, and the role of domestic actors. Firstly, domestic institutional and policy variability in this Commission-centered system should considerably reduce over time. Alternatively, if differences persist, they should not be particularly relevant. Secondly, if increasing competition results from the Commission's initiative, institutional and policy homogeneity should be associated with more homogenous economic trends in competition. Thirdly, the high independence and power of the Commission should be associated with a decreasing capacity of domestic actors to see their interests represented in competition policy.

1.3.1 Institutional & Economic Variability

While the adoption of a common legal framework has led, unsurprisingly, to some convergence between Member States, significant institutional variability still exists.

Guidi (2014) reveals the presence of considerable variation concerning the degree of independence of national competition authorities. For Guidi (2014), independence is a function of how much external investors find the country economically attractive. The more an economic system is attractive per se, the less is the need to convince external investors that all firms will be treated equally with an independent competition authority. This institutional variability is also confirmed by other studies that compute national competition law scores (Hylton and Deng 2007, Alemani et al. 2013, Bradford and Chilton 2018).

Variability is also pervasive when it comes to liberalization policies. Schuster et al. (2013) find a general tendency towards a general retreat of the state in OECD countries. However, they also show that the speed of liberalization varied consistently across countries. Sector-specific studies also confirm this pronounced variation. The Netherlands' government has fiercely advocated for the liberalization of the road haulage sector, given the highly competitive firms in this industry (Hèritier 1997). At the same time, Italy was more cautious in liberalizing this industry as Italian enterprises were less ready to com-

pete abroad. Large variation is also observed in the energy sector liberalization. Some countries, including France, adopted a minimalistic approach and only met basic EU standards, while Germany tailored reforms to fit its own economic and institutional environment (Humphreys and Padgett 2006). Such institutional and legislative differences do not square properly with the EU-centric account. A hegemonic competition-oriented Commission should have indeed corrected laggard countries and pushed them to achieve more competition.

One could argue that national differences are merely a facade in an EU-centered system where only the Commission matters. However, evidence suggests that the differences in competition policies between countries could have significant implications. According to Guidi (2015), competition authorities that are more independent tend to attract greater foreign direct investments and are associated with lower price levels. Holscher and Stephan (2009) suggest that although central and eastern European countries have adopted the EU competition blueprint, there is still a considerable gap in terms of effectively enforcing competition policies when compared to Western Europe.

This substantial policy and institutional variability can align with the highly heterogeneous competition trends observed at the domestic level. Several studies reveal that European countries follow different competition trajectories in terms of economic concentration, prices, and market power (Weyerstrass and Jaenicke 2011, Cook 2011, Bighelli et al. 2023). This variability is even more pronounced when looking at a more granular level, such as sectors (Christopoulou and Vermeulen 2012, Altomonte and Nicolini 2012, Cavalleri et al. 2019) or firms (Gillou and Nesta 2014, Drivas et al. 2020).

1.3.2 Domestic Interests

The limited role of government characterizing EU-centric studies seems incompatible with the institutional architecture shaping the competition policy process. Although the Commission has strong constitutional power over competition law, several policies are negotiated in the Council, giving governments a chance to advance their interests. Council

negotiations often try to achieve a broad consensus in order to reach an outcome that is fair in relation to the variegated interests of its members (Eising 2002). Furthermore, Member States have some degree of leniency in transposing competition policy domestically. Thus, governments can, in principle, exploit these margins to make domestic legislation aligned with their national interests.

Again, EU-centrism can still be consistent with this legislative discretion if this is *de facto* precluded by a hegemonic Commission. However, there is considerable evidence that Member States have extensively used the available legislative spaces of maneuver to adapt European laws to the national goals. The considerable variation in national competition laws (Hylton and Deng 2007, Alemani et al. 2013, Bradford 2018), according to Guidi (2014), can be the result of governments' strategies to attract foreign investments. In the realm of European competition policy, however, liberalization stands out as an area where domestic interests are most prominently reflected. Several studies, in fact, show that governments strategically design liberalization depending on the chances of domestic firms to successfully expand abroad (Clifton et al. 2006, Bulfone 2019, 2020). According to Jordana et al. (2006), different economic opportunities and preferences shaped diverse liberalization trajectories in Portugal and Spain. A similar conclusion is also reached by Levi-Faur (2003, 2004) for a broader set of countries.

In addition to economic interests, Heritier and Knill (2000) and Bartle (2002) argue that the predominant system of domestic beliefs concerning policymaking (i.e., interventionism vs liberalism) is reflected in national liberalization. In line with its characteristic *etatism*, France shaped the transposition of electricity in the name of "public service" and to protect, within the limit of European directives, Électricité de France - its National Champion - from external pressures (Humphreys and Padgett 2006: 389). Similarly, France, together with Italy, adapted European directives to the public service goals during the liberalization of railways as well. In Britain, the extensive liberalization of the telecom and electricity sector reflected the liberal orientation of this country (Bartle 2002). Germany, on the other hand, took a consensus-oriented approach, with liberalization policies

reflecting the interests of various interest groups at the national and sub-national levels (Bartle 2002, Humphreys and Padgett 2006).

Probably influenced by the comparison with the US, Philippon (2019) and Gutierrez and Philippon (2019) argue that at the core of the Great Reversal, there is the Commission's independence from businesses. This immunity from corporate interests, however, contrasts with the history of competition policy in Europe. Buch-Hansen and Wigger (2010), in their extensive account of the evolution of European competition policy, analyze several cases where the Commission has often been willing to listen to the instances of powerful industrial interest groups. The European Roundtable of Industrials (ERT) described the Commission as "extremely open to the business community" when Brittan was the Commissioner for Competition (Janssen 2000 in Buch-Hansen and Wigger 2010: 35). The Commission's openness to the business community is reflected in the Merger Regulation of 1989, where the ERT obtained two desired clauses: the "one-stop-shop" clause, which reduces the likelihood of conflicting rulings between MSs, and "objective" decision criteria that limit the government's ability to intervene for social reasons (Buch-Hansen and Wigger 2010). Other large European interest groups, such as BDI and UNICE, advanced and partially obtained analogous requests in the 2003 merger policy regulation (Budzinski and Christiansen 2005). Similarly, Sandholtz (1998: 19) argues that the instances of UNICE were echoed in the Commission's green paper on the liberalization of the telecom industry.

1.3.3 Product versus Labor Market Aspects of Competition

Another aspect that is often left out by the previously discussed scholarship is the labor market dimension of competition. In her seminal contribution, Robinson (1969) introduced the notion of monopsony, which is the flip side of a monopoly, where only one buyer exists. In a competitive labor market, employers pay a wage that matches the productivity of their workers. By contrast, workers who are paid less than their productivity are a symptom of monopsony power. Market power can thus stem from two sources:

product and labor market power (Tortarolo and Zarate 2018, Morlacco 2019, Yeh et al. 2022). This distinction is particularly relevant in the European Single Market. According to Tortarolo and Zarate (2018), even in a highly open economic environment with low product market power, firms can still have market power if labor market frictions permit them to pay workers less than their productivity. Moreover, in Europe, the vast array of labor market institutions and actors (e.g., EPL, minimum wages, unions) significantly impact the relationship between wages and productivity, thereby affecting firms' monopsony power. Therefore, looking only at the product-market side can produce a limited picture of competition. In other words, what Philippon (2019) calls a Great Reversal needs to be re-assessed by evaluating the labor market dimension of this phenomenon.

1.4 Theoretical Framework & General Empirical Strategy

Above, I have discussed various reasons why considering the European competition revolution as a result of the Commission's powers and independence alone does not provide a satisfactory answer. Therefore, in this section, I will outline the fundamental components of the alternative theoretical framework proposed by this dissertation to address the previously discussed puzzle.

1.4.1 Bargaining and Institutions

In the framework I propose, I conceptualize the Commission as an agent seeking to promote market integration and competition. However, I argue that while still powerful, it cannot achieve its goals in isolation, and government and industrial interests continue to exert their influence on competition policy. Governments have various goals, including economic ambitions such as promoting domestic firms internationally (Bulfone 2019, 2020), as well as ideological motives that depend on the prevailing system of beliefs (Héritier and Knill, 2000). Similarly, firms and economic interest groups also aim to

influence competition policy as it can significantly impact their profit opportunities and strategies.

In a system where no single agent has the power to impose their will on others, policy outcomes are shaped by strategic interactions between various actors. Following Moravcsik (1998), the EU is conceived as a platform for negotiations, where influential actors bargain in order to promote their individual interests. Bargaining is especially crucial when it comes to competition policies. From the liberalization of state-owned utilities (Eising 2002) to merger control regulations such as the 1989 and 2003 ones (Buch-Hansen and Wigger 2011, Budzinski and Christiansen 2005), these policies have been the product of extensive negotiations in the Council. Negotiations, in turn, are shaped by institutions, intended as the formal and informal rules that determine the strategies and preferences of individuals (North 1991). Therefore, institutions are critical for both the political and economic aspects of competition. For instance, the "consensus rule" adopted by the Council during the liberalization of the electricity sector has granted a more equal representation of interests in the final policy. At the same time, new laws can entail a novel set of institutions that alter the markets in which companies compete and, consequently, their opportunities.

The remaining part of this section will explain in more detail the importance of bargaining and institutions for the critical explanatory mechanisms proposed in this dissertation.

1.4.2 Mechanisms

Aligned Interests

In this political-economic system, the successful enactment of policies is contingent upon the formation of a winning coalition consisting of agents whose interests are aligned.

Coalitions between the European Commission and a critical mass of governments have been crucial for advancing an ambitious reform agenda. The North European countries, led by Germany and the UK, except for France and Belgium, strongly advocated

for more liberalization of the telecommunications sector (Héritier 1999). Regarding road haulage liberalization, the Netherlands strongly supported the Commission, seeing this as an opportunity for its productive firms to expand abroad. Leaving aside liberalization, let us consider again the Siemens-Almstom merger (section 1.1.1), used by Gutierrez and Philippon (2023) as an example to illustrate the Commission's capacity to resist the requests of powerful Member States, such as Germany and France. As these authors argue, however, "a critical part of the story—but one that is often forgotten—is that all the other EU countries supported the decision of the Commission" (Gutierrez and Philippon 2023: 255). It thus appears that the critical factor behind the Siemens-Alstom merger decision was the ability to build a coalition of Member States rather than the Commission's independence.

Governments may be willing to advance their national agenda, but they may lack the strength to overcome resistant vested interests without the support of the Commission. In this regard, the European dimension can be utilized to pursue domestic pro-competition goals. This can be achieved by genuinely conforming to European standards or by strategically using European authorities as an external "alibi" to impose the government's agenda (Börzel 1999, Héritier 1999). This approach was adopted in France, where the EU alibi was used to minimize the opposition to the liberalization of telecom services (Thatcher 1999).

The Commission often built coalitions with industrial interests as well to advance its goals. The Commission coalesced with powerful transnational corporations that see telecom liberalization as an opportunity to access new markets and expand abroad (Sandholtz 1993, Héritier 1999). These firms, thus, effectively pressured their Member States to open this industry, thereby serving and representing a vehicle of the Commission's ambitions. Furthermore, major multinational corporations were strongly in favor of centralizing merger enforcement under the Commission's authority via the 1989 Merger Regulation because this measure decreased the likelihood of a merger being obstructed for political considerations (Budzinski and Christiansen 2005, Buch-Hansen and Wigger 2010).

Paradoxically, alliances with economic interests rather than independence have allowed the Commission to obtain more ambitious reforms. The analysis, therefore, departs from Philippon (2019) and Gutierrez and Philippon (2023) and their a priori characterization of business as inherently opposed to competition. The characterization of these authors follows a tradition started with Stigler's (1971) seminal contribution, in which firms lobby to obtain more protection via regulation and try to achieve monopoly rents. However, this depiction of business interests fits only partly the European case, where some of the most ambitious competition reforms were realized with the support of large firms.

The Commission, therefore, more than the "immaculate benevolent dictator" of Philippon (2019) and Gutierrez and Philippon (2023) seems a skillful "Machiavellian" negotiator who is able to favor the emergence of coalitions supporting its policy goals. The members of these coalitions, however, varied depending on the policy. The Netherlands, for instance, actively supported the liberalization of segments of the transport sector (Héritier 1997), but was initially against opening the electricity industry (Eising 2002). At the same time, the interest groups supporting the various policies changed over time.

The Interaction between European and Domestic Institutions

The EU-centric account has largely focused on the significance of European institutions for the radical transformation of European competition policy. Pollak and Slominski (2011) argue that the rules of the Rome Treaty gave the Commission substantial leverage to advance its interests. Similarly, Eising (2001) claims that the Commission artfully exploited the European institutional rules to change the preferences of Member States regarding the liberalization of the energy sector. However, this literature strand often overlooks the importance of domestic institutions and their interaction with supranational ones.

Domestic institutions influence the coalitions achievable in European fora and the strategies needed to support them. Countries with more consensual-oriented and decentralized institutions like Germany (Bartle 2002) are characterized by the presence of

several formal veto points, like unions and Länder (Héritier and Knill 2000). These veto points constrain the positions of governments during international negotiations (Putnam 1988). Thus, a coalition with Germany requires the interests to be aligned not only between the Commission and the German government but also with the other critical veto players. In more centralized countries, such as France and the UK, by contrast, there are less formal veto players and coalitions involve a lower number of actors.

Domestic institutions, thus, are also critical during national transposition. In countries with consensus-oriented and decentralized institutions, governments can use discretion during the transposition phase to make concessions to various veto points. Domestic institutions, however, also determine the facility to receive European legislation. Adapting the highly ambitious competition reforms may be easier in a country with an already established competition law and independent regulators since such an institutional apparatus aligns with the Commission's pro-competition goals. By contrast, it might be harder to transpose European legislation effectively in countries with less experience in competition law.[2] The importance of compatible institutions aligns with Mukand and Rodrik's (2005) critical account of Washington Consensus reforms in Latin America. The authors argue that simply implementing one-size-fits-all policies is ineffective if the country does not have institutions suitable for these reforms. Similarly, I argue that opening up an industry to enhance competition may not have the desired effects in Europe if the country does not possess compatible domestic competition institutions, such as independent regulators. In fact, in this case, the powerful incumbent can still continue to exert their grip over the policy outcome, and liberalization can remain only a facade.

1.4.3 Aligned Interests, Institutional Complementarities, and the Evolution of Competition

As Gutierrez and Philippon (2023), the proposed theoretical framework deals not only with the politics but also the economics of competition. Governments whose interests are

[2] For many years, most European countries (with the exception of Germany and the United Kingdom) did not have an autonomous competition regime (Guidi 2014).

aligned with the Commission may be willing to espouse the Commission's pro-competition ambitions and can design a series of ancillary national reforms that favor the reception of EU legislation. These reforms can thus enhance the effectiveness of European directives in increasing competition. By contrast, the effectiveness of European reforms may be diminished when governments are less aligned with the Commission's objectives, as they can limit the transposition of EU directives to the minimal requirements.

Institutional complementarities are equally crucial for economic outcomes. Consider, for instance, strong domestic competition institutions exemplified by independent competition authorities and sector regulators. These institutions align with the Commission's pro-competition agenda by safeguarding European directives against distortion from vested interests during their transposition. Moreover, they serve as a deterrent against prospective attempts by businesses to manipulate competition policies ex-post. Consequently, institutional complementarities can amplify the pro-competition effect of supranational legislation.

The policy variability caused by diverse aligned interests and domestic institutions translates into heterogeneous economic trends. Thus, the theoretical framework proposed here can complement the one of Philippon (2019) and Gutierrez and Philippon (2023) by reconciling the radical transformation of European competition policy with institutional and economic heterogeneity. The interaction between domestic and supranational institutions plays a crucial role in determining the rules of competition between firms. European legislation has created a more open economic environment, which has expanded the opportunities available to businesses. However, the existing domestic institutions heavily influence how companies respond to these new opportunities. Strong competition authorities and diverse labor market institutions can alter firms' strategies and opportunity space, ultimately changing how they compete and the evolution of competition across countries.

1.4.4 Empirical Strategy

Given the paper-based structure of this dissertation, the empirical strategy changes according to the specific paper. Thus, this introduction will discuss only its general underpinnings. The empirical approach has a quantitative nature and is typically centered on quasi-experimental methodologies. Although the research questions investigated and the mechanisms tested are fundamentally macro, the empirical strategy is often micro-founded, as it heavily relies on individual and firm-level data as the key inputs. The adoption of a micro-founded empirical approach parallels the theoretical analysis in which policies result from the interactions of different agents. By adopting such a micro-founded approach, it is possible to gain valuable insights into the complex relationships between various macro-level institutional factors, thereby enabling a better understanding of the underlying mechanisms at play.

1.5 Thesis Structure & Summaries of the Papers

The thesis is divided into three stand-alone research papers that aim to shed light on the startling revolution of European competition policy. These papers will present evidence supporting the significance of aligned interests and the interaction between supranational and national institutions for competition policy and its related economic impacts.

1.5.1 Structure

Paper 1

The first paper aims to provide empirical evidence for the economic importance of aligned interests and the interaction between supranational domestic institutions for competition. In particular, the paper has the goal of showing that institutional and policy variability is still critical for competition in Europe. In the overall dissertation scheme, this paper provides empirical evidence against the EU-centric apparatus and thus motivates an alternative framework. This goal is accomplished by focusing on the liberalization of

state-owned public monopolies. The case selection is justified by the fact that in this policy area, it is particularly possible to appreciate the interaction between EU legislation and national reforms. This interaction is critical as European directives are more effective in increasing competition in countries that have undergone preceding reforms.

Preceding reforms evidence the importance of aligned interests between European and domestic actors and complementarities between the Commission's objectives and domestic institutions. The willingness of Member States to reform their industries captures their readiness to espouse the competition goal. It is shown that competition has increased the most in sectors where there was more cooperation between the Commission and different domestic actors. At the same time, domestic institutions such as strict competition law and independent regulators are critical for the adoption of EU legislation and shield it from future distortions. The analysis backs this claim by showing that the pro-competition effects of European directives grow with the strength of domestic competition law. These findings contribute to challenging the "EU-centric" account and question convergence theories since the Commission's reforms were less effective in countries with weaker competition institutions.

Paper 2

While the first paper shows the economic effects of aligned interests, the second paper defines a theoretical model to show how aligned interests shape competition policy. In this model, more ambitious competition results from a winning coalition composed of the Commission, pro-market governments, and productive firms. As paper 1, the model is applied to the liberalization of state-owned public monopolies.

More economically liberal governments benefit from allying with the Commission as they can use it as an external alibi in an "inverted two-level game" to impose their domestic agenda (Putnam 1988). At the same time, economically liberal governments represent an important constituency supporting the Commission's pro-competition ambitions in the Council.

Highly productive firms perceive barriers in the EU as a constraint to their interna-

tional expansion. Thus, these firms may serve the Commission's interests by pressuring their government in the Council to obtain more EU-wide liberalization. The gains from this alliance are mutual. Indeed, EU legislation can open up markets to a certain degree, even in countries with opposing interest groups, thereby serving the international ambition of productive firms.

The conclusions of the theoretical model are supported by two main findings. Firstly, European directives reduce average legislative domestic barriers to competition, thereby favoring the goals of more economically liberal governments and productive firms. Secondly, aligned domestic interests favor the Commission's ambitions as the reduction of barriers is larger in countries with pro-market governments and productive industries.

Paper 3

Paper 3 (coauthored with Angelo Martelli) sheds additional light on the importance of the interaction between supranational and domestic institutions for the shape of competition trends in the EU. It differentiates from the first paper by focusing on a larger set of industries and by including labor market market institutions. The paper frames the Euro as a supranational institution due to its establishment of shared authorities and rules, such as a common central bank, which influence coordination and cooperation among governments over economic policy (Sandholtz 1993, Schneider and Slantchev 2018). In turn, this shared set of rules radically influences competition by enhancing market integration (ECFIN 1990, Frieden 2002) and, thus, the way in which firms compete.

The critical insight emerging from this study is that labor market institutions mediate the strategies developed by firms to acquire market power in response to the evolving European institutional and economic framework. We start this investigation by revealing a paradox: while greater openness in the Single Market boosted product market competition, market power has increased. This increase in market power may seem inconsistent with the studies revealing increasing competition. However, these studies focus on only the product-market side, while this paper considers both product and labor market

power.[3] We show that this increase has its origin in the labor market and the enhanced capacity of firms to pay workers less than their productivity (i.e., wage restraint). Wage restraint, in turn, allows firms to become more competitive and increase their dominance in the Single Market. Counterintuitively, we reveal that for some firms, their expansion in the Single Market rests upon labor-capital pacts, where unions accept wage restraint for future benefits. These pacts are favored by cooperation-enhancing institutions promoting mutually beneficial agreements between workers and firms. Finally, we demonstrate that the support for further European integration is larger among workers benefiting from these pacts. Therefore, the interaction between European and domestic institutions contributes to varying support for the European project among workers by influencing the distribution of gains resulting from the European competition game.

1.6 Concluding Remarks

This thesis investigates the revolution in European competition policy and its economic effects through the lens of political economy. What makes this change puzzling is the extent of the Commission's *de facto* powers vis-à-vis other actors such as governments and economic interest groups. In a system where the Commission is driven by the promotion of market integration and enjoys hegemonic powers it is not surprising to observe this Great Reversal. Industry barriers and the promotion of national firms via competition policy represent an obstacle to an integrated single market that contrasts with the goal of this hegemonic agent and thus should be removed. On the contrary, observing such a change should be more surprising in a system where agents that are not driven by the pursuit of more competition continue to exert significant influence.

This dissertation tries to answer this puzzle by proposing a framework that rests upon aligned interests and the interaction between supranational and domestic institutions. In line with several of the previously discussed studies, I recognize a critical role to the Commission. However, the Commission is more a coalition-maker rather than a

[3] A thorough measure of competition is also adopted in paper 1

despotic central competition regulator. The winning coalitions sustaining policy change in turn are based on the convergence of interests between the Commission, governments, and industrial interest groups. It would be wrong, however, to think that only the Commission strategically exploits the aligned interest of domestic actors to advance its goal. In fact, aligned domestic actors exploit the Commission to the same extent they are used by this authority. Firms can ally with the Commission to bring down barriers in other countries and expand their international reach. At the same time, governments can benefit from the Commission as an ally or alibi to tackle domestic resistance to their agenda.

The way in which supranational and domestic institutions interact is critical in shaping the goals and strategies of different actors. Therefore, this interaction deeply shapes policies and the evolution of competition. Domestic institutions affect the way in which the interests of diverse domestic actors are reflected in the transposition of European competition policies. At the same, while firms compete against each other in the same European economic environment, national competition laws and domestic labor market institutions create inherently national competition trajectories.

2. Reinforcing Each Other: How the Combination of European and Domestic Reforms Increased Competition in Liberalized Industries[1]

Abstract

There is a consensus over Europe's transformation into a highly competitive economy through a series of ambitious pro-competition reforms. However, both the European Commission and national actors have legislative authority over competition policies. Thus, who are the critical actors behind this legislative and economic transformation in this multi-level system? Focusing on the liberalization of state-owned industries and using a staggered difference-in-differences approach, the paper shows that the effectiveness of European directives in decreasing firm-level market power increased with the extent of preceding domestic pro-competition reforms. For every unit increase of the early domestic reform index, EU directives decrease market power in liberalized industries by an additional 7.8%. However, this effect is not significant in countries that did not reform their industries ex-ante. This finding contradicts the established view in the literature identifying the Commission as the dominant force driving this transformation, which implemented ambitious reforms by often overcoming the resistance of reluctant national governments. Instead, it is shown that the effectiveness of the Commission's reforms depends on the support of domestic actors and compatible national institutions.

Keywords: Political Economy, Market Power, Competition Policy, Liberalization, Single Market.

[1] A version of this paper was published in the European Journal of Political Economy.

2.1 Introduction

Numerous scholars argue that a revolution has occurred in European competition policy (McGowan and Wilks 1996; Wilks 2005, 2007). Formerly dominated by oligopolies and entry barriers, Europe has now adopted a stringent competition regime that is widely regarded as the most pro-competition system globally (Hylton and Deng 2007; Alemani et al. 2013). These institutional changes have been accompanied by a notable increase in competition. European economies, previously characterized by low levels of competition (Alesina and Giavazzi 2008), have undergone a significant transformation. Industries have witnessed a decrease in concentration (Kalemli-Ozcan et al., 2015; Gutierrez and Philippon 2023; Philippon 2019), and powerful incumbents have experienced a decline in their market power (Badinger et al. 2007; Holland 2009; Weyerstrass and Jaenicke 2011). Philippon (2019) argues that the magnitude of this increase in competition has been so significant that he refers to it as a "Great Reversal."

Gutierrez and Philippon (2023) and Philippon (2019) have made significant contributions to our understanding of the profound changes in European competition. According to these authors, the bargain among countries in a free trade area leads to the formation of a supranational competition regulator with greater toughness and independence than national authorities. By agreeing to a high degree of independence, governments aim to minimize the risk of regulatory capture by another nation. This fully independent regulator enforces competition policy strictly, leading to the establishment of highly competitive markets. Gutierrez and Philippon (2023) apply their theoretical framework specifically to the European context, demonstrating how European Member States (MSs) willingly transferred substantial powers to the European Commission regarding competition policy. These powers have been utilized to enforce strict competition regulations, often opposing the interests of both MSs and businesses. As a result, European markets have become more competitive.

Although the significance of the Commission in promoting competition cannot be

denied, Gutierrez and Philippon's (2023) limited role attributed to domestic actors appears to be overly minimalistic, failing to capture the historical institutional variability that has long characterized European domestic competition regimes (Doern and Wilks 1996; Waarden and Drahos 2002; Baldi 2006; Guidi 2014; Warlouzet 2016; Ergen and Kohl 2019). This institutional variability frequently manifested in divergent reform trajectories and varying economic outcomes, with certain countries displaying greater willingness to liberalize their economies compared to others (Hèritier 1997; Humphreys and Padgett 2006; Schuster et al. 2013), and competition statistics evolving unevenly across different economies (Christopoulou and Vermeulen 2012; Cook 2011; De Loecker and Eeckhout 2018*a*).

This paper builds upon Gutierrez and Philippon's (2023) explanation by emphasizing the significance of domestic factors in explaining the effectiveness of pro-competition directives in Europe. While acknowledging the importance of the Commission's pro-competition agenda, I argue that domestic actors play a crucial role through ancillary domestic reforms that lay the groundwork for EU policies. Early reforms are critical as they evidence two key mechanisms that amplify the effectiveness of European directives: the alignment of interests between European and domestic actors and complementarities between the Commission's goal and domestic institutions.

On the one hand, the alignment of interests between the Commission and domestic actors is essential in the EU institutional context, where national governments are responsible for transposing reforms and adapting them to the domestic legislative framework. Thus, the willingness of national actors becomes crucial for the effectiveness of European directives. On the other hand, institutional complementarities consist of strong domestic competition institutions, exemplified by independent competition authorities and sector regulators. These institutions align with the Commission's pro-competition agenda by safeguarding European directives against distortion from vested interests during their transposition. Moreover, they serve as a deterrent against prospective attempts by businesses to manipulate competition policies ex-post. Consequently, institutional

complementarities can amplify the pro-competition effect of supranational legislation. This mechanism contrasts with the findings of Gutierrez and Philippon (2023: 267), who contend that countries with weaker ex-ante competition institutions benefit the most from the Commission's interventions.

The mechanisms above are tested by focusing on the impact of liberalization reforms on formerly state-owned regulated monopolies, such as telecommunications, electricity, postal services, and railways. Among the various competition policies, liberalization reforms are particularly suitable for the analysis due to their multi-level nature. On the one hand, Article 86 of the Rome Treaty empowers the Commission to liberalize state-owned industries through directives. On the other hand, the implementation of the liberalization goals outlined in the Lisbon Strategy lies within the jurisdiction of Member States, resulting in variations across countries (Humphreys and Padgett 2006). Therefore, examining liberalization policies can provide insights into the interplay between European and domestic authorities and its impact on competition.

The paper utilizes a staggered difference-in-differences methodology to examine the significance of domestic reforms in enhancing the effectiveness of EU directives. Drawing on recent contributions in industrial organization (Tortarolo and Zarate 2018; Morlacco 2019; Yeh et al. 2022), the primary dependent variable operationalizes competition at the firm level using a market power indicator. This comprehensive measure incorporates both product and labor market power, acknowledging the importance of considering both dimensions of competition. In this respect, Crescioli and Martelli (2023) show that overall market power can rise despite increased product market competition. Thus, the paper extends the analysis of Gutierrez and Philippon (2023), who primarily focus on product market competition. The critical treatment variable is a dummy that takes the value of 1 in the year of the transposition deadline of a European liberalization directive. This variable captures the impact of European reforms on competition. The treatment variable is interacted with an OECD index that measures the intensity of early domestic pro-competition reforms implemented before the EU directives to capture the combined

effect of European and national dimensions. This domestic index, computed before the transposition deadline of European directives, serves as a proxy for autonomous national legislative efforts.

The empirical analysis reveals that the intensity of preceding national reforms strengthens the pro-competition effects of European liberalization policies. For every unit increase of the domestic reform indicator, EU directives decrease market power in liberalized industries by 7.8% in the baseline specification. This finding suggests that the common European framework can engender divergent dynamics and underscores the significance of early reforms. Subsequently, the analysis delves into the significance of two key mechanisms contributing to effective reforms: aligned interests and institutional complementarities. The baseline results show that European directives decreased market power by 51% more in industries where domestic actors were more willing to embrace liberalization. Additionally, the study shows that a 0.1 increase in the strength of domestic competition institutions augments by 2.8% the pro-competition effect of EU directives. These findings suggest that EU directives were most successful in industries where domestic actors were more cooperative and in countries with stronger competition institutions.

The paper contributes to the literature highlighting the importance of domestic institutions in explaining the varying implementation and effectiveness of macroeconomic policies. In this regard, Mukand and Rodrik (2005) raise questions regarding the efficacy and convergence effects of one-size-fits-all policies in economies characterized by significant institutional heterogeneity. Acemoglu et al. (2008) show the limited effectiveness of central bank independence in controlling inflation when domestic institutions, such as constraints on the executives, are not strong enough. Baccini et al. (2022) highlight the importance of labor-market institutions for determining the winners and losers of trade liberalization.

The significance of aligned interests adds to existing research emphasizing the importance of preferences and ideological alignment in a union of states. Scholars such as Berry and Berry (2007), Volden et al. (2008), Wang and Yang (2021), and Della Vigna

and Kim (2022) have underscored the role of these factors in the diffusion and effectiveness of policies within such systems.

This paper also speaks to the political economy literature on competition policy in the EU by highlighting the significance of aligned interests for reforms (Hèritier 1997; Levi-Faur 1999; Bartle 2002; Eising 2002; Humphreys and Padgett 2006; Pollak and Slominski 2011). In this aspect, the paper diverges from the perspective of Gutierrez and Philippon (2023) by illustrating the Commission's more limited capacity to achieve its objectives in the presence of reluctant MSs.

Finally, this paper also contributes to the literature examining the effects of liberalization policies on competition (Levinsohn 1993; Blanchard and Giavazzi 2003; Tybout 2003; Griffith et al. 2010; Lu and Yu 2015; Gutierrez and Philippon 2023; Besley et al. 2021). Furthermore, several papers show that liberalization can generate other desirable economic effects in addition to the promotion of competition, such as increasing productivity (Arnold et al. 2016), innovation (Impullitti and Licandro 2018), investments (Alesina et al. 2005), and growth (Chen and Funke 2008; Barone and Cingano 2011). However, in line with Amoroso and Martino (2020), the present analysis cautions against treating liberalization as a one-size-fits-all policy and reveals the importance of national regulatory structures.

The remaining sections of the paper are organized as follows. Section 2.2 explains the data and variables used in the analysis. The empirical strategy and the results are discussed in Section 2.2. Finally, Section 2.4 presents the study's conclusions. A separate appendix is available that includes further information on the data and variables, as well as further robustness checks.

2.2 Data & Variables

The dataset used in the empirical analysis contains nearly 1.8 million firm-year observations for ten European countries between 1995 and 2018.[2] Since most liberalization

[2]The countries considered are Belgium, Finland, France, Germany, Italy, the Netherlands, Portugal, Spain, Sweden, and the UK. This selection depends on the availability of data necessary to estimate

reforms happened in the nineties and early 2000s, I exclude Eastern European countries because they were not EU members at the time.[3] These data have an inherently multi-level nature. At the top, there are European directives affecting all countries in the same year. The second level of aggregation is countries within which we have industries. Finally, firms operating in each sector are the ultimate unit of analysis.

Market Power. The primary dependent variable used is a firm-level index of market power *mp*. Following recent contributions in industrial organization (Tortarolo and Zarate 2018; Morlacco 2019; Yeh et al. 2022), this index takes into account both dimensions of market power: product market and monopsony power. Market power has been estimated using firm-level data from Orbis historical archives. The Orbis dataset is provided by Bureau van Dijk and contains balance sheet information for European firms. These data have been used to implement an estimation technique based on the control function approach (Olley and Pakes 1996; Levinsohn and Petrin 2003; De Loecker and Warzynski 2012; De Loecker et al. 2016, 2020). This technique requires estimating a 2-digit industry production function and modeling the evolution of unobserved firms' productivity.[4] As in De Loecker and Warzinsky (2012) and De Loecker et al. (2016), the control function is defined on material costs.

This market power indicator can have limitations. For instance, unobserved firms' prices can cause an omitted variable bias. Fortunately, this bias neither affects the evolution of market power over time nor the correlation between this variable and firm-level characteristics (De Loecker and Warzynski 2012). In the appendix, I also re-estimate production functions using industry-specific deflators since using sectoral deflators can mitigate the problem due to unobservable prices. However, the use of industry-specific deflators reduces the sample substantially since these are available only for a limited set of industries over time. Yet, despite the significantly more limited number of observations, the thrust of the main results is unchanged. Another concern is due to the use

production functions.

[3] However, these countries are used in the appendix for a placebo test.

[4] I have estimated five-year country-industry (NACE 2-digit) production functions to obtain elasticities that vary with time. More information about the estimation process and data used are found in the appendix.

of gross-output production functions. As noted by Ackerberg et al. (2015), the estimation of production functions might be biased under scalar unobservable assumptions. Hence, I re-estimate market power in the appendix using value-added production functions. Again, the main results remain unchanged. Finally, the top and bottom 5% of the markup distribution have been trimmed to avoid outliers that could bias the empirical analysis. However, the appendix shows that the main results are robust to different levels of trimming.

European Directives. The process of liberalizing regulated industries started during the late 1980s. These sectors, characterized by the need for fixed infrastructure, presented significant barriers to entry and competition. Consequently, governments historically addressed this market failure through public management. However, technological advancements and the imperative to enhance the competitiveness of European firms vis-à-vis foreign competitors lead to a reconsideration of the industrial organization characterizing these industries (Nicolaïdis and Vernon 1997; Foreman-Peck 2006).

The Commission contributed to this significant restructuring of the European economy through a series of directives. European directives impacted six sectors: aviation, electricity, gas, postal services, railways, and telecom. Aviation, however, is excluded from the analysis since the liberalization of this industry started in 1987, a period where Orbis Historical has insufficient data coverage.

I have used the timing of liberalization directives to code a treatment variable (eu) that varies across liberalized industries. This variable takes the value of 1, the year of the deadline for the transposition of the first liberalization package.[5] Table 2.1 assigns an industry NACE code to each liberalized industry following the mapping in Gutierrez and Philippon (2023: 26). However, unlike these authors, I adopt a more granular industry definition for electricity, gas, and railways using 3-digit instead of 2-digit codes. This

[5]In the case of telecom, I have considered the "full liberalization directive," which sets the deadline for full liberalization on the 1st of January 1998.

choice allows me to more precisely assign financial information from Orbis to firms in these industries. Indeed, two-digit codes make it impossible to separate electricity and gas, although two different directives liberalized these industries.

Table 2.1: European Directives Timeline

Liberalized Industry	Directive	Year	Transposition/Effectiveness	NACE Code
Telecom	96/19/EC	1996	1998	61
Electricity	96/92/EC	1996	1999	351
Gas	98/30/EC	1998	2000	352
Postal	97/67/EC	1997	1999	53
Railways	2001/12/EC	2001	2003	491

Domestic Reforms. Following the literature, I have defined a variable capturing the intensity of domestic reforms in liberalized industries starting from the OECD Product Market Regulation (PMR) indicator (Alesina et al. 2005; Belloc et al. 2014; Gutierrez and Philippon 2023). The OECD provides this indicator for several network industries and professional services at the country level (more details in Nicoletti and Scarpetta 2003 and Alesina et al. 2005). The overall PMR comprises four different sub-indicators measuring entry barriers, public ownership, the market share of dominant players, and vertical integration. These sub-indicators have been firstly computed at the most granular industry definition available. Then, they are aggregated for each network industry using simple or revenue-weighted averages. Finally, the overall PMR score is computed as a simple average between the four components. This indicator ranges from 0 to 6, where higher values denote more restriction to competition.

Instead of using the PMR in levels, I have used its change between the year of a liberalization directive and the first year of availability (ΔPMR).[6] Therefore, if, for instance, a given directive happens in year t, this index reflects the overall change in domestic pro-competition reforms in a specific industry between the first year of availability of PMR (1975 in most cases) and t.

The overall change in PMR is preferred to adopting a specification relying on a time-varying PMR as it allows better separation of European legislation from domestic

[6] Here, I consider the year of the Commission's directive, not the transposition year. Moreover, ΔPMR has been multiplied by -1, so larger values denote more pro-competition reforms.

pro-competition reforms. European directives, in fact, were explicitly tailored to abate national restrictions to competition, making it difficult to separate the domestic from the supranational dimension after the implementation of EU legislation. Using the change in PMR before a Commission's directive takes place, therefore, can help capture the intrinsically national component of pro-competition reforms. As shown in figure 2.1, MSs started reforming their industries before European directives. Furthermore, this figure shows the significant heterogeneity at which the European countries decreased restrictions to competition. In line with Schuster et al. (2013), while there is a general tendency towards lower restrictions, the timing, speed, and intensity at which these reforms take place varies significantly across countries and industries.

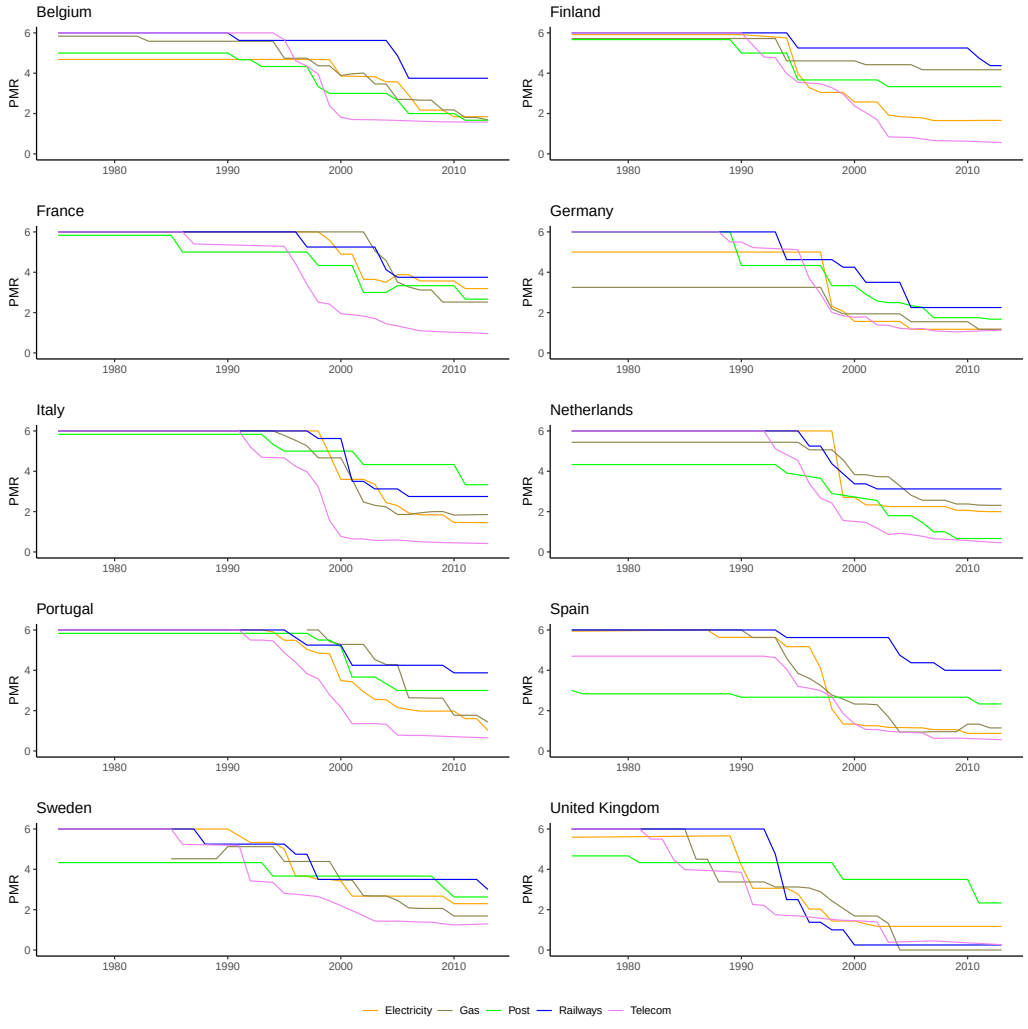


Figure 2.1: Evolution of PMR index across countries and liberalized industries

Domestic Competition Institutions. To assess the strength of national competition institutions, I employ Bradford's and Chilton's (2018) competition law index (CLI). This index measures the de jure stringency of competition law at the country level. One of the advantages of using the CLI is its wide coverage over time, spanning from 1889 to 2010. Unlike many competition statistics that cover only limited periods (e.g., Hylton and Deng 2007), the CLI provides a long-term perspective, allowing for a more comprehensive analysis of competition law trends. Furthermore, the CLI has a notable advantage in that MSs' competition law scores reflect solely their national law (Bradford and Chilton 2018). Thus, this variable enables capturing inherently national features of domestic competition law regimes that are distinct from EU legislation.

Controls. To identify the causal effect of policy and institutional variables, I have included a series of covariates that can control for alternative economic mechanisms affecting market power. Larger and more productive firms tend to have more market power (Autor et al. 2020; De Loecker et al. 2020). Therefore, I include revenues (as a proxy size) and productivity to control for these potential confounding factors.[7] I also control for firms' capital intensity since firms with lower labor shares tend to have more market power (Autor et al. 2020).[8]

In addition to firm-level controls, the analysis will use for robustness a series of macroeconomic and institutional factors that can influence the adoption of structural reforms (Duval et al. 2021; Bonfiglioli et al. 2022). These variables include the GDP growth rate (OECD), a dummy for financial crises (Jordà et al. 2017), stock price volatility (World Bank), and an index of employment protection legislation (EPL, OECD).

[7] Firm-level productivity has been estimated using the same methodology adopted for market power. More details are found in the appendix.

[8] Capital intensity is computed as the ratio between total fixed assets and number of employees

2.3 Empirical Strategy & Results

In this study, I employ a staggered differences-in-differences (DID) methodology to assess the impact of domestic and European reforms. This approach allows for a comparison between treatment and control units before and after the intervention, enabling the identification of divergent outcomes attributable to the policy. The treatment group consists of firms operating in industries liberalized through European directives, while the control group encompasses firms in sectors that have not undergone such liberalization. The treatment is "staggered" due to the varying timelines of liberalization directives, with different industries experiencing liberalization at different periods.

The dataset is an unbalanced panel due to the entry and exit of firms over time. To address this issue, the treatment group includes only firms with observations at least one year before and after the treatment. However, identifying a pre and post-treatment period for the control group becomes challenging due to the staggered nature of the treatment. Consequently, I include only those firms that are continuously observed each year from 1997 (the year before the first liberalization transposition deadline) to 2003 (the year by which the last liberalization directive had to be transposed). By doing so, I can create a stable and comparable control group, enabling a more reliable evaluation of the treatment effect.

Table 2.2 reports the summary statistics of covariates in the treatment and control groups. At first glance, certain variables, such as revenues, may seem to present imbalances. However, in the rest of the paper, I use techniques to remediate potential issues concerning treatment and control group imbalances.

Table 2.2: Summary Statistics

	Control Group						Treatment Group					
	N	Mean	SD	Min	Median	Max	N	Mean	SD	Min	Median	Max
Market Power	1798194	2.19	1.37	0.48	1.81	8.83	19934	2.52	1.71	0.48	2.01	8.82
Change in PMR	1798194	NA	NA	NA	NA	NA	19934	1.56	1.22	0.00	1.38	5.75
CLI (1980)	1798194	0.34	0.27	0.00	0.39	0.83	19934	0.35	0.25	0.00	0.39	0.83
Productivity	1798194	7.25	1.56	0.06	7.02	23.06	19934	8.63	1.78	1.10	8.64	16.51
Revenues	1798194	21 318 520.75	199 743 154.67	1.00	4 261 000.00	58 034 486 974.00	19934	83 145 781.34	729 089 475.39	361.00	3 266 878.00	23 591 443 000.00
CLR	1798194	10.06	1.44	−4.34	10.08	21.90	19934	11.15	2.24	−0.17	11.14	18.45
EBITDA/Revenues	1784776	−0.10	122.94	−153 000.00	0.06	3783.53	19530	0.02	6.67	−706.59	0.10	19.00
UVC	1798194	0.88	127.98	0.00	0.73	150 918.20	19934	0.73	9.05	0.00	0.68	1048.60
Value Added p.w.	1679068	57 209.73	449 736.52	−51 439 926.00	45 588.24	483 318 416.00	18393	114 692.13	610 104.22	−24 885 161.80	58 285.71	64 494 503.50
Growth Rate	1798194	1.77	1.88	−8.07	1.83	6.33	19934	2.08	2.18	−8.07	2.45	6.33
Crisis Dummy	1798194	0.04	0.19	0.00	0.00	1.00	19934	0.03	0.18	0.00	0.00	1.00
Volatility	1715116	22.25	7.33	8.17	22.20	54.62	19232	22.10	7.78	8.33	22.12	54.62
EPL	1798194	2.51	0.46	1.35	2.52	4.58	19934	2.34	0.46	1.35	2.36	3.02

2.3.1 The Joint Effect of Early Domestic Reform and European Directives on Competition

To gauge the effect of European and domestic reforms on market power, I run the following DID model:[9]

$$\log mp_{jict} = \gamma eu_{it} + \beta eu_{it} \times \Delta PMR_{ic} + \phi X_{jict} + \alpha_j + \tau_t + \epsilon_{it}, \tag{2.1}$$

where in addition to controls, I also use firm fixed-effects (α_j) to account for time-invariant firm-level characteristics (e.g., location) and year effects (τ_t) to control for time-varying factors that are common across firms (e.g., economic shocks).[10]

Recent advancements in the DID literature (de Chaisemartin and D'Haultfœuille 2023, for a review) show that two-way fixed effect (TWFE) estimation can be biased in staggered design when treatment effects are heterogeneous. In particular, De Chaisemartin and D'Haultfœuille (2020) demonstrate that the treatment coefficient obtained via a TWFE regression is the weighted average of the average treatment effect in each treatment cohort (i.e., liberalized industries in this case). The authors show that heterogeneous treatment effects among different cohorts pose a problem, as they may result in negative weights. Negative weights are a concern because they allow for the possibility of estimating an overall negative effect despite each cohort-specific effect being positive.

Given the issues associated with the canonical TWFE estimation, the empirical specifications follow Gardner's (2022) two-stage DID methodology. Gardner's (2022) approach accounts for heterogenous treatment effects and involves two main steps. Firstly, the outcome variable is regressed on group and time-fixed effects to obtain the adjusted outcome. This regression is performed on a subsample that considers only untreated and yet-to-be-treated observations. Secondly, the treatment effect is estimated by regressing

[9] Standard errors are clustered at the EU-wide sector level (NACE 1-digit industry) given the nature of the treatment (i.e., EU liberalization directives). Industry clustering is also in line with previous studies (e.g., De Loecker et al. 2016). Clustering standard errors is also useful as it avoids autocorrelation issues affecting DID studies with several periods (Bertrand et al. 2004). Moreover, I use the log of economic variables to linearize possible non-linear relationships between the dependent and the independent variables.

[10] Baseline controls are the log of revenues, productivity, and capital intensity, and subscripts have the following meaning: j denotes firm, i industry, c the country, and t the year.

the adjusted outcome on the treatment indicator in the full sample. One key advantage of Gardner's (2022) methodology over other alternative techniques in the field, such as Callaway and Sant' Anna (2021), is that it is more flexible concerning interactions between the treatment and other relevant variables, especially for continuous variables.[11]

The key coefficients of interest are γ and β. The first one captures the effect of European directives in state-owned industries where national governments did not implement reforms before these directives (i.e., when $\Delta PMR = 0$). Domestic industries for which $\Delta PMR = 0$ are a non-negligible amount, representing 16% of the sample. β, instead, shows the combined impact of European legislation and domestic reforms preceding the directives. Therefore, the overall (marginal) effect of European directives on firm-level market power is $\gamma + \beta \Delta PMR$.

Table 2.3 presents the results of running model (2.1). The first column displays the model without any controls, while the second column represents the baseline specification, which includes relevant covariates. The third column considers a pre-European Debt Crisis sample (i.e., before 2010) to address the potential impact of the Crisis on market power. In the fourth column, I include country-sector-year effects to account for different country-industry-specific macroeconomic dynamics (e.g., technological advancement and shocks) that can impact the adoption of domestic reforms. Following Besley and Burgess (2004), the fifth column introduces industry-time trends to account for the pre-existing decreasing trend in market power across sectors. Finally, in the same spirit, the sixth column uses country-time trends to control for ex-ante trends in that vary across countries.

As observed in all these specifications, the variable eu is not statistically significant. However, the interaction term $eu \times \Delta PMR$ is always negative and strongly significant. In the baseline specification, for every unit increase in ΔPMR, European directives lead to an additional 7.8% reduction in market power. Moreover, the interaction coefficients remain relatively stable across the six different models, suggesting robustness in the results. The non-significant coefficient of eu implies that European directives may not have

[11] In section 2.3.4 I will adapt the main specification to apply Callaway and Sant' Anna (2021). Moreover, in the appendix, I follow Prager and Schmitt (2021) and implement a robustness check in the spirit of Callaway and Sant' Anna (2021) which takes into account the fact that the treatment is interacted.

a particularly strong impact on promoting competition in industries where domestic governments have not implemented significant legislative efforts beforehand. Conversely, the negative and significant coefficient of the interaction term suggests that early domestic reforms amplify the effect of European directives.

Table 2.3: Effect of European and domestic reforms on (log) market power

	(1)	(2)	(3)	(4)	(5)	(6)
eu	−0.020	−0.045	−0.075	0.002	−0.006	−0.077
	(0.054)	(0.040)	(0.051)	(0.010)	(0.011)	(0.048)
$eu \times \Delta PMR$	−0.066***	−0.077***	−0.064***	−0.031***	−0.072***	−0.046***
	(0.015)	(0.008)	(0.011)	(0.009)	(0.008)	(0.017)
Controls	No	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	No	Yes	Yes
Before crisis	No	No	Yes	No	No	No
Country-Industry-Year Effects	No	No	No	Yes	No	No
Industry time trends	No	No	No	No	Yes	No
Country time trends	No	No	No	No	No	Yes
Observations	1 818 093	1 818 093	1 351 042	1 818 128	1 818 093	1 818 093

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (2.1) using a two-stage DID (Gardner 2022). The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

The significance of these results is twofold. Firstly, they go against the primacy and centrality of the Commission in Gutierrez and Philippon's (2023) framework. Indeed, such a powerful regulator should have had the capacity to increase competition substantially, even in countries where national executives implemented limited reforms. Secondly, the reinforcing effect of domestic reforms on European directives can be interpreted as evidence of aligned interests and institutional complementarities. Indeed, the decrease of restrictions pre-EU directives can signal the willingness of domestic actors to embrace the Commission's liberalization agenda. At the same time, these early reforms can reveal the existence of a set of pro-competition institutions and laws, such as independent competition authorities and utility regulators, which are compatible with the highly competitive Single Market envisaged by the Commission and thus facilitate the transposition of EU legislation. Furthermore, it is worth emphasizing that the amplifying effect of early domestic reforms on EU directives is not a trivial or obvious result. Indeed, in countries that have already opened their industries, the scope for additional reforms in increasing competition may be more limited than in countries where reforms have not occurred. In other words, EU directives could have instead generated convergence dynamics

in countries where governments did little or no reforms.

Parallel Trends and Selection Bias

The correct specification of a DID design requires the treatment and the control group to be on "parallel trends": absent the treatment, outcomes in both groups should change at the same rate. The non-satisfaction of parallel trends results in the conditional independence assumption violation and a biased causal effect. Unfortunately, there is no standard way to check for parallel trends. For this reason, I follow common practice in the literature by plotting leads and lags of the $eu \times \Delta PMR$.[12] Evidence of statistically insignificant pre-treatment coefficients is usually interpreted to support parallel trends.

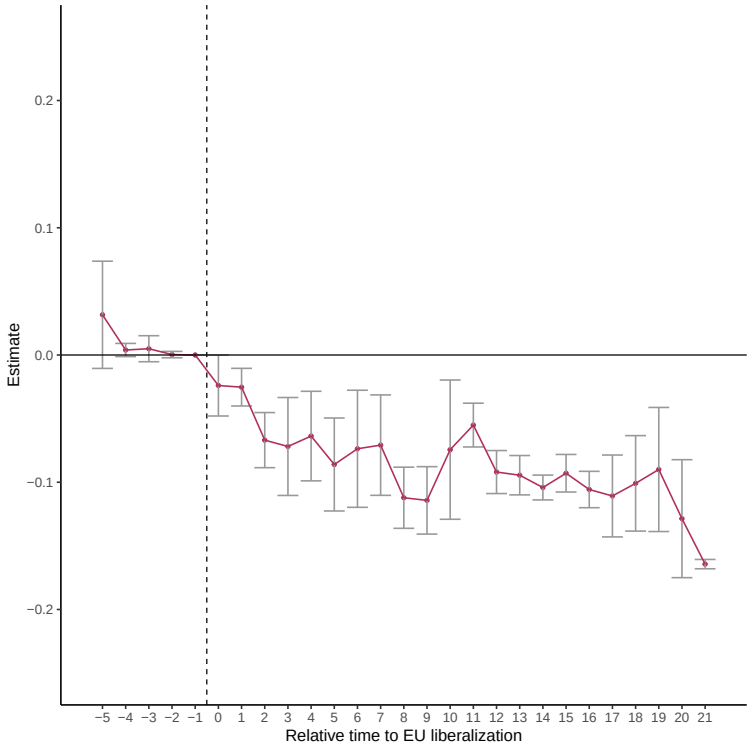


Figure 2.2: Leads and lags of $eu \times \Delta PMR$

Note: The figure reports the results of running model (2.1) adding leads and lags of $eu \times \Delta PMR$ and using a two-stage DID (Gardner 2022). 95% confidence intervals are shown.

Figure 2.2 brings some evidence in line with the existence of parallel trends since

[12] In principle, the number of pre-treatment periods is 8. However, given the timing of liberalization in table 2.1 and the fact that the dataset starts in 1995, only very few firms in the railway industry have a pre-treatment period -6, -7, and -8. Thus, these periods are excluded from the analysis. Following common practices, the pre-treatment period -1 is taken as the baseline.

every pre-intervention coefficient is not significant. Besides being a helpful check for parallel trends, lagged coefficients also serve as a "placebo test."[13] The rationale behind placebo tests is to improve the soundness of the research design by checking whether a fictitious treatment affects the outcome. In this specific case, a placebo test using lagged treatment coefficients allows checking for Granger's (1969) causality by investigating whether "causes happen before consequences" (Angrist and Pischke 2008: 237). This test seems satisfactory since pro-competition policies reduce market power only after their implementation. Finally, figure 2.2 shows that the combined pro-competition effect of domestic and European reforms strengthens over time. This behavior seems plausible since these reforms often radically change the industrial organization of a sector, whereby they need time to manifest their effects entirely.

As previously mentioned, it is impossible to test for parallel trends directly; thus, non-significant pre-treatment coefficients are usually not enough to ensure the soundness of the research design. A concern regarding the present specification is that firms in liberalized industries inherently differ from the rest of the economy. These differences could potentially influence trends in market power between the treatment and control groups, leading to selection bias and biased estimates.

Inverse probability weighting is a technique that can limit selection bias in non-randomized design (Rosenbaum and Rubin 1983). The first step of this procedure involves estimating the treatment model, where the treatment indicator is regressed on a set of covariates that can influence the treatment assignment. This first regression allows me to estimate the propensity score, representing the probability that units received the treatment. The estimated propensity scores are then used to define regression weights that vary inversely with the treatment probability. In this way, more weight is assigned to untreated (treated) units with a high (low) probability of becoming treated.

As treatment is assigned at the sector level, I estimate the propensity score using a logit model that uses industry-average variables.[14] In addition to the (average) baseline

[13] An additional placebo test is conducted in the appendix.
[14] Industry classification is based on NACE 3-digit codes, following the mapping provided in Table 2.1.

controls, I include the values relative to the entire sample mean of industry productivity, EBITDA/revenue ratios, and unit variable costs. I also consider three lags of the industry market power indicator and year effects. The inclusion of relative values of these variables accounts for potential factors influencing the Commission's decision to liberalize specific industries, as they may correlate with the treatment. These variables are likely to correlate with the treatment since the leitmotiv of liberalization was to increase the relatively low productivity and profitability of state-owned industries while remedying their cost-inefficiencies (Buch-Hansen and Wigger 2011). Furthermore, including lags of the market power indicator helps assess whether trends in industry market power influenced the decision to liberalize an industry.

The treatment model is estimated over the period 1995-2003, which corresponds to the time frame in which the liberalization directives were implemented. Once propensity scores have been estimated, these are used to define industry inverse probability weights.[15]

As a second check for sample selection and pre-treatment differences, I have created a new control group with firms belonging to the same NACE 1-digit industry segment of liberalized industries. The reason is that firms within the same NACE 1-digit code are expected to have more comparable characteristics, thereby serving as a better control group for liberalized industries. In a similar vein, as the third and last check, I have run (2.1) using only firms in industries that eventually will be liberalized.

Table 2.4 shows the results of this robustness exercise. The interaction of European directives with national reforms is negative and strongly significant in all three specifications. Concerning the IPW model in the first column, it is worth noting that when estimating the treatment model, the lags of market power do not influence the probability of liberalizing an industry.[16] This result can be interpreted as further evidence supporting the parallel trends assumption since the dynamics concerning pre-treatment outcomes seem to not influence the probability of receiving the treatment. Overall, the

[15] This procedure produces time-varying industry propensity scores, of which I take the yearly average to have a unique time-invariant indicator for each industry. This time-invariant propensity score has been used to define the industry inverse probability weights. Since the treatment model is estimated at the industry level, all firms in the same industry share the same weight.

[16] The table can be checked in the appendix.

results mitigate the concern that the paper's main results are biased by sample selection and inherent differences between treatment and control units.

Table 2.4: Accounting for selection bias and pre-treatment differences

	IPW	Same NACE 1-Digit control group	Only liberalized industries
eu	−0.041	−0.036	0.263
	(0.033)	(0.044)	(0.190)
$eu \times \Delta PMR$	−0.090***	−0.063***	−0.071**
	(0.004)	(0.012)	(0.029)
Controls	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Observations	1 818 093	124 784	8558

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (2.1) using a two-stage DID (Gardner 2022). The first column uses inverse probability weighting. In the second column, the control group includes firms in the same NACE 1-digit industry, while in the third, the regression sample includes only liberalized industries. The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

2.3.2 Aligned Interests & Cooperation

After having shown the importance of early domestic reforms for European directives, this section tries to bring more evidence on one of the key underlying mechanisms: the alignment of interests between the Commission and domestic actors.

A body of sector-specific studies on liberalization consistently agrees on the greater willingness of domestic actors to liberalize the telecommunication sector compared to the electricity one. This higher willingness is underpinned by three key factors. Firstly, technological developments in telecommunication technologies made the services of this sector more easily tradable than electricity, resulting in fewer constraints to competition (Levi-Faur 1999; Bartle 2002; Humphreys and Padgett 2006). Secondly, the higher growth rates of the telecom industry made it less susceptible to job losses following liberalization (Levi-Faur 1999; Pollak and Slominski 2011). As a result, governments perceived lower political risk in liberalizing the telecom industry. Thirdly, large European businesses recognized significant opportunities in the liberalization of the telecom sector as it allowed them to access services at more affordable rates and facilitated their entry into the market (Sandholtz 1998; Levi-Faur 1999).

The alignment of interests between the European Commission, on the one hand, and

politicians and firms, on the other, further facilitated the liberalization of the telecom sector. Consequently, I expect that EU directives would have a larger effect on competition in the telecom than in the electricity sector. This claim is tested by running the following regression:

$$\log mp_{jict} = \gamma telecom_i \times eu_{it} + \beta electricity_i \times eu_{it} + \phi X_{jict} + \alpha_j + \tau_t + \epsilon_{it}, \qquad (2.2)$$

where I interact the EU liberalization variable with two dummy variables for the telecom and electricity industries, respectively.[17]

Table 2.5 presents the results of three different specifications. The first column shows the results of running Equation (2.2). Columns 2 and 3 report the results of the IPW model and the specification with industry-time trends, respectively. Notably, in each specification, the effect of European directives is significantly larger in the telecom than in the electricity industry. These findings can be interpreted as evidence supporting the importance of aligned interests in fostering the effectiveness of European directives. The convergence of interests between the European Commission, politicians, and firms in the telecom sector contributed to a smoother and more successful implementation of pro-competition policies, resulting in a more substantial impact on competition.

Table 2.5: Effect of European directives on (log) market power in the telecommunications and electricity industries

	Baseline	IPW	Baseline plus industry-time trends
$eu \times telecom$	-0.236^{***}	-0.222^{***}	-0.205^{***}
	(0.028)	(0.030)	(0.013)
$eu \times electricity$	-0.156^{***}	-0.158^{***}	-0.064^{***}
	(0.033)	(0.033)	(0.008)
Controls	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Observations	1 811 868	1 811 868	1 811 868

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (2.2) using a two-stage DID (Gardner 2022). The first column reports the baseline specification. The second column uses inverse probability weighting, and the third column adds industry-time trends to the baseline. The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

[17] The other liberalized industries are excluded from the regression sample since, otherwise, they will be included in the control group.

Disentangling Domestic Liberalization & Privatization

Until now, I have used the term pro-competition reforms rather than liberalization to refer to national policies. This semantic choice is motivated by the fact that domestic reforms can involve both liberalization and privatization. Indeed, these two terms are often used interchangeably since these policies tend to be highly correlated (Belloc et al. 2014). For this reason, it is necessary to examine the role of privatization as well when investigating liberalization policies.

There is a rich literature on the economic and political determinants of privatization policies, of which Obinger et al. (2016) represents an excellent overview. Among the economic factors, this literature investigates the role of economic growth (Boix 1997; Bortolotti et al. 2001; Belke et al. 2007; Zohlnhöfer et al. 2008; Schmitt 2011; Roberts and Saeed 2012; Schuster et al. 2013), public finances (Brune et al. 2006; Henisz et al. 2005; Bortolotti et al. 2001; Fink 2011; Schmitt 2014), unemployment (Belke et al. 2007), and inflation (Meseguer 2004; Roberts and Saeed 2012). The political determinants explored include the role of parties (Schmidt 2000; Biais and Perotti 2002; Megginson et al. 2004), interest groups (Obinger and Schmitt 2011; Bortolotti and Pinotti 2008) and institutions (Bortolotti and Pinotti 2008).

Concerning the above literature, the present paper focuses more on how political and institutional factors shape the effect of EU liberalization directives and domestic pro-competition reforms rather than the determinants of these policies. Nonetheless, a neat distinction between liberalization and privatization is highly relevant for the analysis. European directives aimed at reducing entry barriers without any element of privatization. The reason is that the EU must be ownership neutral: its role is limited to ensuring that effective competition is achieved in a specific sector (Clifton et al. 2006, Article 220 of the EC Treaty). However, MSs, when implementing domestic reforms, can combine both policies. Although these policies have often been paired, their mix varies substantially across countries. For example, countries like Ireland and the United Kingdom have privatized their industries significantly more than France and Germany (Clifton et al.

2006).

The timing and inherently domestic nature of privatization can be exploited to bring additional evidence in favor of aligned interests. Privatization, on average, started one decade in advance of European liberalization. As Clifton et al. (2006) argue, some MSs autonomously privatized their industries to facilitate the reception of European liberalization directives. Therefore, showing that privatization increased competition - when considered in conjunction with liberalization directives - would further corroborate the importance of early reforms and aligned interests for European competition. Moreover, the inherently national nature of privatization can further defend the analysis from the potential critique that domestic reforms – despite their heterogeneity – are simply the result of the Commission imposing its will on MSs, which, otherwise, would not have implemented those policies.

Privatization, however, is also important as it affects competition. Privatization alone means that state-owned enterprises become private, but it does not require reducing entry barriers to competition. As argued by Belloc et al. (2014), privatization per se is not conducive to more competition, but it can simply transform a public into a private monopoly. Thus, for privatization to promote competition, it needs to be combined with some degree of liberalization.

When combined with liberalization, as it is for European economies, privatization can reinforce the effect of liberalization policies. Despite liberalization, foreign firms might be discouraged from investing in countries where powerful incumbents are publicly owned since they could feel a lack of a level playing field. In fact, governments tend to support more state-owned firms, which also have higher access to insider information (Sarkar et al. 1999; Bonardi et al. 2004).

To assess the role of privatization, I decompose ΔPMR into sub-indicators disentangling the economic effects of liberalization and privatization. As in Alesina et al. (2005), I define a variable capturing the intensity of domestic liberalization (Δlib) by averaging the entry barriers and vertical integration components of the PMR score. The extent of

privatization ($\Delta priv$) is captured by considering only the public ownership component of the PMR score. Then, I run the following model:

$$\log mp_{jict} = \gamma eu_{it} + \beta eu_{it} \times \Delta lib_{ic} + \theta eu_{it} \times \Delta priv_{ic} + \phi X_{jict} + \alpha_j + \tau_t + \epsilon_{it}, \quad (2.3)$$

Table 2.6: Effect of European reforms and domestic reforms on (log) market power, decomposing between national liberalization and privatization

	Baseline	IPW	Baseline plus industry-time trends
eu	−0.035	−0.043	0.008
	(0.047)	(0.034)	(0.022)
$eu \times \Delta lib$	−0.057***	−0.063***	−0.056***
	(0.015)	(0.003)	(0.018)
$eu \times \Delta priv$	−0.020***	−0.021***	−0.019***
	(0.004)	(0.003)	(0.001)
Controls	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Observations	1 818 093	1 818 093	1 818 093

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (2.3) using a two-stage DID (Gardner 2022). The first column reports the baseline specification. The second column uses inverse probability weighting, and the third column adds industry-time trends to the baseline. The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

At this stage, it is necessary to clarify the interpretation of the various interaction terms. The variable $eu \times \Delta priv$ combines the effects of European liberalization with domestic privatization. Instead, $eu \times \Delta lib$ accounts for the combined impact of liberalizations at the national and European levels. Finally, the previously used $eu \times \Delta PMR$ captures the joint impact of European directives with domestic pro-competition reforms, combining both elements of privatization and liberalization.

The results of this empirical exercise are reported in table 2.6 with the usual three specifications: baseline, IPW, and baseline plus industry-time trends. Privatization has a negative and strongly significant effect on market power when combined with European directives. Yet, this effect is lower than the combination of "pure" liberalization ($eu \times \Delta lib$). In turn, both $eu \times \Delta priv$ and $eu \times \Delta lib$ are lower than $eu \times \Delta PMR$ (table 2.3).

In line with the aligned interest argument, early privatization efforts are important for competition as they amplify the pro-competitive effects of European directives.

However, this effect was greater when governments combined privatization with domestic liberalization. Thus, this result is in line with Belloc et al. (2014) and the fact that foreign firms may prefer to enter an industry where the dominant players do not hold strong government ties.

After having shown the relevance of privatization for competition, it is important to note that a crucial factor determining the adoption of such reforms is policy learning and diffusion (Obinger et al. 2016). The importance of policy diffusion is empirically investigated by studies like Fink (2011) and Schmitt (2011, 2014). For this reason, the appendix implements a robustness test that consists of adding the interaction between eu and an indicator that for each country represents the weighted PMR of trading partner countries, where the weight is the share of trading volume with a partner as a percentage of the total trading volume. As the appendix shows, the thrust of the main result is unchanged.

2.3.3 Institutional Complementarities

The second key mechanism proposed in this framework involves institutional complementarities between the European and domestic dimensions, which facilitate the adoption of EU legislation and shield it from future distortions. To test this mechanism, I run (2.1) while substituting the PMR indicator with the CLI score, which serves as a proxy for the strength of national competition institutions. A potential concern is that domestic competition institutions may already incorporate elements of European legislation. However, as discussed in section 2.2, the CLI is specifically designed to consider only elements of national legislation, thereby capturing distinct characteristics of domestic competition institutions. Additionally, I choose the value of the CLI in 1980 as the reference point, a period during which European competition law was not extensively developed.[18]

[18] In the appendix, other reference years are considered.

Table 2.7: Effect of European reforms and domestic competition institutions on (log) market power

	Baseline	IPW	Baseline plus industry-time trends
eu	−0.069	0.005	−0.001
	(0.045)	(0.040)	(0.017)
$eu \times CLI$	−0.275***	−0.559***	−0.336***
	(0.057)	(0.066)	(0.042)
Controls	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Observations	1 818 093	1 818 093	1 818 093

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (2.1) with the CLI index and using a two-stage DID (Gardner 2022). The first column reports the baseline specification. The second column uses inverse probability weighting, and the third column adds industry-time trends to the baseline. The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

Table 2.7 presents the results of three different specifications: the baseline model, the inverse probability weighting (IPW) model, and the one with industry-time trends. As in the case of early reforms, domestic competition institutions amplify the pro-competition effects of European directives. For every 0.1 increase in the CLI index,[19] European directives bring down firm-level market power by an additional 2.8%. These results can be interpreted as evidence of the importance of institutional complementarities in ensuring the effective transposition and implementation of EU directives. In this respect, they align with Mukand's and Rodrik's (2005) critique of adopting one-size-fits-all reform packages, such as IMF reforms in America Latina, in countries where institutions were not strong enough. Similarly, the present results show that European directives were more effective in decreasing market power in countries with solid competition institutions that were already compatible with the legislative framework designed by the Commission to create a competitive Single Market.

2.3.4 Robustness Checks

Section 2.3.1 has addressed some issues concerning the possible selection into treatment. However, there could be other concerns regarding the other critical independent variable capturing the intensity of domestic reforms. An issue could be reverse causality since

[19] The index is bounded between 0 and 1.

high market power firms can influence domestic reforms. Second, the Commission may have influenced the design of reforms in certain countries; thereby, the variable may not capture any more inherently domestic factors. Both concerns, however, can be mitigated by the fact that ΔPMR is computed before EU directives and by showing the importance of domestic privatization reforms, on which the Commission exerts no formal power.

Another issue concerns the existence of macroeconomic and institutional factors that can drive structural reforms. In this respect, the literature has shown that economic growth, or better, the lack of thereof, and economic instability are correlated with the adoption of major reforms (Duval 2021; Bonfiglioli et al. 2022). Moreover, pro-competition reforms tend to go hand in hand with labor market reforms. To control for these potential confounding factors, I run model (2.1) where I progressively add the interaction between eu and the national growth rate ($growth$), a crisis dummy ($crisis$), stock price volatility ($volatility$), and EPL (EPL).

Table 2.8 presents the results of this robustness exercise. The pro-competition effect of European directives and national reforms survive the progressive inclusion of these interactions while coefficients are relatively stable across the different specifications. As before, the effect of European directives in industries where MSs did not engage in early reform is not significant.

Table 2.8: Effect of European and domestic reforms on (log) market power controlling for macroeconomic and institutional factors

	(1)	(2)	(3)	(4)
eu	−0.033	−0.027	−0.007	0.300
	(0.042)	(0.041)	(0.060)	(0.203)
$eu \times \Delta PMR$	−0.076***	−0.076***	−0.067***	−0.090***
	(0.009)	(0.009)	(0.010)	(0.014)
$growht$	0.000	0.000	0.002***	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)
$eu \times growth$	−0.008	−0.009	−0.008	−0.007
	(0.008)	(0.008)	(0.010)	(0.011)
$crisis$		−0.010***	−0.005***	−0.009***
		(0.001)	(0.001)	(0.001)
$eu \times crisis$		−0.085*	−0.097*	−0.081
		(0.047)	(0.053)	(0.050)
$volatility$			0.000***	−0.001***
			(0.000)	(0.000)
$eu \times volatility$			0.000	0.002**
			(0.001)	(0.001)
EPL				0.007***
				(0.002)
$eu \times EPL$				−0.135*
				(0.078)
Controls	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	1 818 093	1 818 093	1 733 670	1 733 670

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (2.1) using a two-stage DID (Gardner 2022). The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

As previously mentioned, the adoption of Gardner's (2022) approach to account for heterogenous treatment effects is preferred to Callaway and Sant' Anna (2021), another popular technique to address this issue, given its flexibility to accommodate interactions with continuous variables. However, as a further robustness check, I modify the main specification to adapt it to the Callaway and Sant' Anna (2021) case.[20] More specifically, I estimate the following model three separate times using Callaway and Sant' Anna (2021), where the main variable of interest is the interaction between eu and $\Delta PMRQ^v$, with $v \in \{1, 2, 3\}$ representing the tertile of the ΔPMR distribution:[21]

$$\log mp_{jict} = \beta^v eu_{it} \times \Delta PMRQ^v_t + \phi X_{jic} + \epsilon_{it}. \tag{2.4}$$

[20] Callaway and Sant' (2021) is implemented using the doubly robust estimand of Sant' Anna and Zhao (2020). The doubly robust method is advantageous compared to alternatives such as inverse probability weighting and the regression outcome model because it requires fewer modeling assumptions.

[21] Callaway and Sant' Anna (2021) does not allow to estimate more than one treatment parameter at a time. For this reason, I run three different estimations for each tertile of ΔPMR. However, in the appendix, I run a similar model using Gardner's (2022) technique, considering the three interactions together and obtaining similar results. Another difference between Callaway and Sant' Anna (2021) and Gardner's (2022) is that the first methodology allows for pre-treatment time-invariant controls only, which in this case are set at their value in the last pre-treatment period.

Table 2.9: Effect of European and domestic reforms on (log) market power using Callaway & Sant' Anna (2021)

	(1)	(2)	(3)
$eu \times \Delta PMRQ^1$	-0.022		
	(0.047)		
$eu \times \Delta PMRQ^2$		-0.154***	
		(0.018)	
$eu \times \Delta PMRQ^3$			-0.183***
			(0.023)
Controls	Yes	Yes	Yes
Observations	1 802 713	1 807 394	1 804 379

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (2.1) using Callaway and Sant' Anna's approach (Callaway and Sant' Anna 2021). The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

Table 2.9 presents the results of applying Callaway and Sant' Anna's (2021) methodology to estimate the effect of European and domestic reforms on market power. This effect is non-significant for the first tertile, while it is strongly significant for the second and the third, with the latter displaying the larger effect. These results are in line with those obtained by applying Gardner's (2022) technique as they reveal that the effect of European directives grows with the extent of early reforms, being non-significant in countries with limited ex-ante reform efforts.

2.4 Conclusions

This paper has tried to clarify the political-economic factors that contributed to the rise in competition in Europe. The analysis has focused on the effect of European liberalization directives on firm-level market power. This effect has been estimated using a staggered DID approach where the EU directive variable has been interacted with an index of earlier domestic reforms. The main finding is that European directives decrease firm-level market power by an extra 7.8% for each domestic reform indicator unit increase. By contrast, in countries that engaged in limited legislative efforts before EU legislation, the effect of European directives on competition is much more limited. While not disproving

it, this result imposes a reconsideration of Gutierrez's and Philippon's (2023) individuation of the Commission as the hegemonic critical actor behind the European increase in competition. In particular, the Commission, although probably the engine behind this economic transformation, continues to require the support of domestic actors to advance an effective reform agenda.

The analysis has then proceeded to investigate the mechanisms behind the willingness of national governments to support EU legislation: aligned interests and institutional complementarities.

Early reforms signal the willingness of domestic actors to espouse the Commission's agenda. This support is essential for drafting more ambitious European directives and the later effective transposition into national statutes. The analysis supports this claim by showing that European directives decreased market power by 51% more in the telecom than in the electricity industry. This finding is consistent with the sectoral studies comparing these industries and showing the higher willingness of governments and large businesses to liberalize this sector. Again, these results contrast with Gutierrez's and Philippon's (2023) characterization of an independent Commission, able to superimpose its will over reluctant political and corporate interests.

Early reforms were also possible because of complementarities between national competition institutions and the Commission's ambitions. Solid domestic competition institutions in the form of independent competition authorities and sectoral regulators prevent distortions of EU legislation during the implementation and ex-post. Therefore, such institutions are highly compatible with the legislative framework the Commission intended to create to support a competitive Single Market. Based on the baseline specification, European directives are shown to reduce firm-level market power by an additional 2.8% for every 0.1 increase in the CLI index. In this respect, this result aligns with Mukand and Rodrik (2005), who argue that adopting standardized reform packages does not produce the desired results in countries that do not possess institutions compatible with these policies.

3. Robinson Crusoe or Machiavelli? The Importance of Aligned Interests for European Competition Policy

Abstract

One of the defining features of the European legislative framework in recent decades has been the radical revolution in competition policy. The established view in the literature conceptualizes the European Commission as the critical agent independently advancing this ambitious reform agenda, often in contrast to domestic political and economic interests. Yet, national governments have historically been jealous of their strategic sectors and reluctant to open them to competition. At the same time, powerful industrial interest groups have often had a strong influence over European competition policy. What is then the role of governments and industrial interests in this unparalleled change in competition policy? I answer this question by developing a model where policies result from a multilevel bargain between the European Commission, governments, and national champions. The main contribution of the model is that more ambitious policies result from aligned interests between the Commission, productive firms, and more pro-market governments. The model is applied to the liberalization reforms affecting historically shielded industries in the 1990s and early 2000s, and the predictions are tested using a reduced-form empirical strategy that relies on event-study difference-in-differences.

Keywords. Competition policy, Intergovernmental Bargain, EU, Supranational Institutions.

3.1 Introduction

Philippon (2019) and Gutierrez and Philippon (2023) claim that the European economy has completed a momentous transition in recent decades. They argue that competition in

Europe has radically changed since the late eighties, and markets have become increasingly more competitive and dynamic. Philippon (2019) claims that Europe has even surpassed the US in terms of competition, dubbing this phenomenon the "Great Reversal." The Great Reversal, however, came unexpectedly to the eyes of many since, according to Philippon (2019) is the result of a revolution in competition policy that marked the transition from laws tolerating large economic barriers and anti-competitive practices to a highly independent and pro-competition European system.

Despite not everyone fully agreeing with Gutierrez and Philippon's (2023) and Philippon's (2019) economic results (e.g., De Loecker and Eeckhout 2018*a*), while others have tried to assess their robustness concerning different definitions of competition (Crescioli and Martelli 2023), there is a widespread consensus over the legislative revolution in European competition policy. McGowan and Wilks (1996: 225) summarize this institutional change evocatively: "DG IV (DG competition) had transformed itself from a sleepy, ineffectual backwater of Community administration into a formidable machine for economic integration," and legal scholars now claim that Europe has the strongest competition law in the world (Hylton and Deng 2007: 273).

The Great Reversal has great relevance for international political economy scholars studying international organizations. Gutierrez and Philippon (2023) put at the center of their argument the European Commission, one of the key international organizations in Europe. It was indeed the Commission that, because of its independence and pro-competition ambitions, the Great Reversal took place. For these authors, this international organization was able to advance its reform agenda, often opposing the domestically circumscribed interests of European Member States and firms.

What is less clear, however, in this EU-centric account is why governments and industrial interests renounced so easily their influence over competition policy. European governments, for a long time, have been reluctant to open up industries to competition and expose strategic firms to the risk of foreign takeovers (Buch-Hansen and Wigger 2011). Thus, competition policy has always represented a strategic asset for governments

to promote domestic enterprises (Thatcher 2014). Furthermore, the government's almost complete loss of agency on competition policy, envisaged by Gutierrez and Philippon (2023), seems inconsistent with the EU institutional framework. Indeed, the design and approval of several competition policies result from lengthy negotiations in the Council, which try to achieve a broad consensus (Eising and Jabko 2001; Eising 2002). At the same time, it is difficult to imagine a European Commission completely insulated from business interests. As argued by Buch-Hansen and Wigger (2010), large industrial interest groups have often been *habitué* of the DG Competition under different Commissioners. During Brittan's term as Competition Commissioner, the members of the European Roundtable of Industrials (ERT) described the Commission as "extremely open to the business community" (Janssen 2000 in Buch-Hansen and Wigger 2010: 35).

In this respect, while highlighting a fundamental institutional change in Europe, the Great Reversal seems to fall short in developing a broader framework that attributes the proper weight to actors different from the Commission. If anything, the Commission's pro-competition stance and its powers are only part of a more complex picture. What emerges from the previous literature and the European institutional framework is that the Commission may not have had the strength to advance such an ambitious reform package alone. However, why are national governments and industrial interests support, or at least not oppose, this ambitious legislative change?

I try to answer this question by proposing and testing a multi-level game-theoretic bargaining model between the Commission, national governments, and firms. The model is applied to the liberalization of state-owned industries such as utilities, telecommunications, and transportation. Liberalization was among the several reforms that contributed to the Great Reversal, and several studies found that these policies were particularly effective in promoting competition (Griffith et al. 2010; Gutierrez and Philippon 2023; Crescioli 2023). Beyond competition, however, the study of European liberalization reforms appeals to political economists because they profoundly altered the balance of power along two critical dimensions: state vis-à-vis market and Member States (MSs) vis-à-vis

Europe. Indeed, these industries are critical for economic vitality and national security. For this reason, MSs have tended to shield these sectors jealously with high barriers to entry and organized them through a Keynesian public-management paradigm. These barriers allowed governments to structure these industries as monopolies often dominated by a single firm, the so-called "national champion." Nevertheless, this paradigm, once the norm came under pressure in the wake of the oil shocks of the seventies and the incapacity of European firms to fill the productivity gaps vis-à-vis global competitors (Sandholtz 1998; Foremen-Peck 2006; Buch-Hansen and Wigger 2011). At the same time, globalization and technological change made competition easier in these inherently less dynamic industries. The Commission rode these trends to advance a pro-market liberalization agenda aimed at restoring competitiveness and remedying the inefficiencies of these sectors (Buch-Hansen and Wigger 2011). To do this, it leveraged the Rome Treaty to design a common European framework for state-owned industries via liberalization directives.

In line with its function (McGowan and Wilks 1996), the model envisages the Commission as an agent promoting liberalization to increase market integration and endowed with considerable powers such as initiative and monitoring over the liberalization process. However, the Commission is not the "Robinson Crusoe benevolent dictator" of Gutierrez and Philippon (2023), acting in isolation and whose independence insulates it from political and business interests. Instead, the Commission adopts a more "Machiavellian" approach and is willing to make policy favors to national champions as long as "ends justify the means." To understand this conceptualization of the Commission, consider, for instance, the debate before the approval of the 1989 Merger Regulation - a pan-European competition law that substantially centralized the Commission's power. As illustrated by Buch-Hansen and Wigger (2011: 82-85), MSs were initially firmly opposed to expanding the Commission's authority over merger policy. Under the direction of Competition Commissioner Sutherland, the Commission overcame this intransigence by forging alliances with industrial interests such as the European Roundtable of Industrials (ERT). The ERT obtained two desired clauses in the final regulation in exchange for its

support. Firstly, the "one-stop-shop" clause, which gives more control to the Commission over pan-European mergers, consequently limiting the probability of contradictive ruling between MSs. Secondly, the ERT also obtained more "objective" decision criteria based on competition, which restricts the government's space for political intervention.

The main result of the model is that the degree of liberalization in each country-industry is not the superimposition of the Commission's will. By contrast, the various levels of domestic liberalization can be thought of as "equilibrium agreements" reflecting an alignment of interests between the Commission, national champions, and governments. Two components characterize these liberalization agreements: common European requirements agreed upon in the Council and included in directives and domestic reforms.

In this model, national champions are not always lobbying for more restrictions. Instead, when these firms are particularly productive relative to the European average, they prefer lower EU-wide restrictions to increase their possibilities to expand in other European markets. Thus, firms may represent a vehicle for the Commission to obtain more liberalization in an industry than what governments would agree in the Council. However, productive industries also benefit from this "alliance" with the Commission. The Commission's oversight of the policy process minimizes the divergence between domestic barriers and EU legislation, allowing more productive firms to expand in markets with less productive industries (in line with Krugman's 1982 insights).

The model also implicitly allows governments to play an "inverted two-level game" using European authorities as an external constraint to impose their domestic agenda (Putnam 1988). This can happen when a government would like to reform an industry but lacks the strength to win an opposing industrial firm. In that, the model aligns with Börzel's (1999) and Héritier's (1997) insights that MSs can exploit the Commission as an ally (or an alibi) to tackle consolidated interests in strategic industries. At the same time, more economically liberally oriented governments bring down the level of restrictions decided in the Council. Thus, these MSs can represent powerful allies supporting the Commission's pro-competition ambitions.

In line with the aligned interests hypothesis, the model predicts that the Commission's reforms ensure, on average, a lower level of restrictions (prediction 1). Therefore, the Commission's actions can serve both the goals of productive enterprises willing to expand in other European countries and domestic governments that wish to liberalize their industries but lack the political capital to overcome domestic resistance. The second prediction of the model is that European directives reduce barriers more in countries with aligned domestic interests, such as productive national champions and economically liberal governments (prediction 2). Finally, the model also predicts that the profits of highly productive firms decrease in overall EU-wide restrictions; thereby, these firms can potentially represent a powerful ally supporting the Commission's liberalization initiatives (prediction 3).

To assess predictions 1 and 2, I construct a dataset in which domestic sectors are the unit of interest, and liberalization policy is operationalized via the entry component of the OECD product market regulation index. The third prediction is tested using a firm-level approach, which investigates how firms' productivity mediates the effect of average EU-wide restrictions on profits. Using the OECD entry component allows me to distinguish liberalization from privatization. For liberalization, I mean the removal of restrictions to competition in contrast to privatization, i.e., the reduction of state ownership in key firms. This distinction matters because European directives were implemented to decrease entry barriers in sectors dominated by state-owned firms without directly addressing governments' ownership. Indeed, the degree of privatization varied substantially across European countries since it is primarily a domestic policy (Clifton et al. 2006).[1]

Industry productivity has been estimated using firm-level Orbis historical data, while Comparative Manifesto Project data and the Bradford and Chilton (2018) competition law index are used to proxy the government's ideology and the strength of competition institutions, respectively. I then use this data to test the model's predictions using an event study differences-in-difference approach, where the treatment variable is

[1] Another important clarification is that liberalization in Europe did not mean deregulation since the abatement of barriers was pursued with additional regulations.

European directives.

In line with the first prediction, I estimate that European directives decrease domestic restrictions between -13% and -20% with respect to the pre-liberalization average. Consistent with the second prediction, this effect is larger in countries with more productive industries and economically liberal governments. Finally, the empirical analysis reveals that the more productive a firm is, the larger the loss in profits due to EU-wide barriers, confirming the third prediction.

The main contribution of the present model is to re-frame Philippon's (2019) and Gutierrez's and Philippon's (2023) Great Reversal using a framework where national governments and industrial interests continue to exert a significant influence over competition policy. Concerning the role of governments, this paper directly relates to the political economists and international relations scholars studying how domestic factors are reflected in the international bargain over supranational policies (e.g., Putnam 1988; Schneider and Cederman 1994; Eising 2002; Schneider and Slantchev 2018). For industrial interests instead, the model directly contributes to the literature studying the influence of firms on policy-making using the insights of industrial organization and "new" New Trade Models (e.g., Grossman and Helpman 1994; Acemoglu et al. 2008). The results of this literature strand have been applied to study how business preferences are reflected in policies like trade liberalization (Osgood et al. 2017) and environmental regulation Kennard (2020), but also how the domestic institutional setting affects the strategic interactions and performance of firms (Baccini et al. 2022)

The second contribution is to offer a liaison between the more "supranational" and government-focused accounts studying liberalization in Europe. Those arguing within the former group seem to agree with Philippon's (2019) and Gutierrez's and Philippon's (2023) account by recognizing the Commission as the pivotal organization pushing for liberalization reforms, often opposing MSs' interests (e.g., Sandholtz 1998; Pollak and Slominski 2011). At the same time, more comparative studies see in governments the critical decision-makers who design liberalization that fits the domestic economic and

institutional setting (e.g., Levi-Faur 2003, 2004; Bulfone 2020). In this respect, the novelty of the paper is providing a unitary framework that incorporates the two traditions in a way that can shed additional light on the politics behind the Great Reversal.

This analysis is structured as follows. Section 3.2 reviews the literature, while 3.3 presents the model and 3.4 derives its main results. Data and variables are discussed in section 3.5. Then, section 3.6 presents the empirical strategy and results. Finally, section 3.7 concludes. A separate web appendix includes all the proofs and supplementary robustness checks.

3.2 Related Literature

The Great Reversal and the European Competition Policy Literature. Philippon (2019) and Gutierrez's and Philippon's (2023) Great Reversal is deeply connected to the studies of several political scientists and political economists who show the increasing centralization of competition policy in the Commission's hands (Warlouzet 2016). These trends have led many of these scholars to consider the Commission as the "hegemonic leader" in a competition constellation where MSs have a peripheral role (Wilks 2005, 2007). The novelty of the Great Reversal, however, is to provide an account that simultaneously explains this institutional centralization and its economic effects. The politics of the Great Reversal in Gutierrez and Philippon (2023) draws upon a game-theoretic model of the institutional bargain between MSs, which can endogenously generate a highly independent European Competition Regulator (i.e., the Commission). During this bargain, a MS would, in principle, want the common regulator to serve its domestic interests. At the same time, each MS does not want the common regulator to be captured by another country. Gutierrez and Philippon (2023) show that for each MS, the risk of the regulator being captured by a rival country is higher than the chances of controlling it. For this reason, MSs prefer to give a highly independent mandate to the Commission. Therefore, centralization happens because the lack of trust among countries makes MSs delegate competition policy to a central institution, which is tougher and more independent than

national authorities. According to Gutierrez and Philippon (2023), while political and business interests can influence the design of the regulator, once this authority has been set, its high independence makes it immune to political and business interests. Consequently, competition increases in the Single Market because the Commission enforces pro-market policies that oppose MSs' domestically circumscribed interests. These policies, indeed, include liberalization, which opens up markets in sectors where MSs have for a long time protected their national champions from foreign competitors (Pollak and Slominski 2011).

Regarding liberalization especially, this account describes this policy as a bitter pill that the "doctor Commission" imposes – sometimes more firmly and other times more kindly - on its patients, the MSs. However, Philippon's (2019) and Gutierrez's and Philippon's (2023) framework falls short in describing the multiple ways in which political and business interests have often mediated the Commission's ambitions. In this respect, the emphasis on European authorities in the Great Reversal seems large even compared to the more "EU-centric" studies that recognize the Commission's centrality. According to Pollak and Slominski (2011), the Commission leveraged the strong powers granted by the Rome treaty to overcome the resistance of some MSs' over the energy sector liberalization. Yet, new regulation of this sector was not achieved only via the use of unilateral actions by the Commission but with consultations involving both private and public sector actors (Pollak and Slominski 2011: 14). These interactions between supranational and domestic actors are even more evident in the Sandholtz's (1998) analysis of telecommunications sector liberalization. In this case, the author argues that the Commission has managed to form alliances with transnational enterprises to gain the political strength necessary to foster its pro-competition ambitions vis-à-vis MSs. Eising and Jabko (2001) and Eising (2002) develop a more subtle middle-ground perspective in which they recognize the role of other EU bodies such as the Council and the Parliament. Nonetheless, the Commission is still the prominent actor, although it managed to obtain policy outcomes close to its preferences in a more nuanced way. They argue that MSs' preferences are endogenous to

the (formal and informal) institutions governing their interactions. The Commission thus strategically exploited these European institutional constraints to align MSs' preferences with its interests.

Overall, the hegemony attributed to the Commission in the Great Reversal falls short along two other dimensions of liberalization: timing and heterogeneity of domestic reforms. If the Commission imposed these reforms, why did some MSs (e.g., Ireland, the Netherlands, and the UK) liberalize their industries before European directives? At the same time, domestic responses to European impulses varied substantially: why do some MSs highly liberalize their industries while others simply stick to the minimum European requirements or do not even comply with them (Hèritier 1997, Schuster et al. 2013)?

These highly heterogeneous reform outcomes could be potentially consistent with comparative studies attributing the bulk of explanatory power to governments. In this account, governments are the key actors that use liberalization strategically and selectively: they open their industries ready to compete internationally while keeping barriers when enterprises are less successful (e.g., Bulfone 2020; Clifton et al. 2006; Thatcher 2014). Jordana (2006) and Levi-Faur (2003, 2004) argue that governments design policies to strategically adapt to globalization and technological change. These authors go further by claiming that the role of European authorities is minimal because liberalization would have occurred anyway due to these global macroeconomic trends. However, while potentially explaining domestic heterogeneity, this minimalistic view of European institutions sometimes fails to integrate MSs properly within the European competition system. More specifically, the government's systematic distortion of liberalization policies is likely to be detected and sanctioned by the Commission, given its role of ensuring a level playing field in the Single Market. Indeed, the Commission has often used (or threatened to use) its sanctioning powers to ensure compliance with the European liberalization targets (Eising 2002, Pollak and Slominski 2011). Furthermore, although it can be argued that macroeconomic forces triggered these reforms, it is unlikely that common European institutions have not shaped MSs' strategic responses, generating a minimum degree of uniformity.

Two-Level Games, Lobby Models, and Formal Models of EU Politics. The model design builds on three main literature strands: two-level games, lobby models, and formal models of European politics. Putnam (1988) first applied two-level games as analytical tools to study negotiations that take place both in international and domestic fora. Putnam's (1988) critical insight is that governments can leverage domestic constraints to obtain favorable policy outcomes. Building on Putnam's work, Mo (1994, 1995) develops a two-level game structure more useful for my purposes here, in which a unitary supranational actor proposes a policy to a country that is divided into a negotiating executive and domestic interest groups (which are interpreted as parties). This specification fits the liberalization case, where the Commission has the power of initiative over these policies, and the government's position depends on its ideology and the institutional and domestic landscape.

However, although the present model's structure resembles a two-level game, actors' preferences and the solutions techniques employed are derived from lobby models of the Grossman and Helpman (1994) type. Lobby models particularly well adapt to liberalization, given the importance industrial interests had in shaping these reforms (Buch-Hansen and Wigger 2011). As Acemoglu et al.'s (2008) model, the present framework shows that the firm's capacity to influence policies depends on domestic institutional constraints. Similarly, in Gutierrez and Philippon (2023), economic interests try to sway competition policy.

Acemoglu et al. (2008) and Gutierrez and Philippon (2023) share a depiction of firms as agents trying to influence policies in a way to obtain more protection. This conceptualization of industrial interests, however, seems to be limited when it comes to liberalization. In this regard, "new" New Trade Theory models predict that highly productive enterprises usually benefit from trade openness since it furthers their possibilities to expand abroad (Bernard et al. 2007, 2014; Mayer and Ottaviano 2008; Tybout 2003). For this reason, Osgood et al. (2017) argue that highly productive firms can represent a strong constituency favoring liberalization. This indeed seems to be the case for liberal-

ization, and competition policy in general, where the Commission was able to exploit the international ambitions of some enterprises to obtain policy outcomes in line with its preferences (Sandholtz 1998; Buch-Hansen and Wigger 2011). In this respect, my argument also aligns with Kennard (2020), who develops a model building on industrial organization and the lobbying literature to explain when firms support environmental regulation. According to the author, productive firms support climate change as a tool to gain market shares by increasing the cost of enterprise for which compliance is more expensive. When studying the impact of industrial interests on politics, however, the other direction of this relationship, consisting of how institutional constraints shape firms' equilibrium strategies, is also critical. The importance of this relationship is evident in Baccini et al. (2022), who show that domestic labor market institutions mediate the benefits that productive industries derive from trade liberalization.

Finally, the model's intergovernmental phase builds on formal bargaining models of European politics (e.g., Bueno de Mesquita and Stokman 1994; Schneider et al. 2010; Finke et al. 2013). These models rely on cooperative and non-cooperative game theory to analyze how governments with different preferences converge on EU-wide policies. The insights of this literature have often been used to shed light on EU-related policies such as collective crisis management (Schneider and Slantchev 2018; Finke et al. 2019) and economic integration (Schneider and Cederman 1994). The present model aligns with this literature in how governments' ideology is reflected in international bargains over European legislation.

3.3 The Model

3.3.1 Setting

The model's agents include the Commission and N firms and governments, where N is the number of EU countries.

Liberalization policy is conceived as setting the level of restrictions in a domestic

industry. Restrictions are entry barriers: the larger they are, the more difficult it is for foreign firms to enter the domestic market. Therefore, more liberalization means lower restrictions in an industry, making competition from abroad easier.

As typical in the EU institutional framework, the design and implementation of liberalization is divided into a supranational and a national phase. The Commission decides to liberalize an industry via a European directive and oversees the national transposition of EU legislation. While the decision to start the liberalization process rests upon the Commission, governments must bargain and decide on an EU level of restrictions $R_{EU} \in \mathbb{R}_+$ to insert in the European directive, which applies to all Member States. Governments, however, have some leniency over the transposition of the policy as they can decide to liberalize more or less than what they agreed during international negotiations. This leniency is captured by the possibility of national governments adding a country-specific level of restrictions R_{D_j} to R_{EU}. A positive R_{D_j} means that the national government has decided to liberalize less and to implement more barriers than what was decided at the European level. By contrast, a negative R_{D_j} implies that the government has decided to liberalize more with respect to European standards. Thus, the overall level of restrictions in country j is $R_J = R_{EU} + R_{D_j}$.[2]

In line with the industrial organization of European state-owned industries, I assume that these sectors are characterized by an oligopolistic structure with only a domestic player for each country, the so-called "national champion". The national profit-maximizers national firms compete *à la Cournot* in the domestic market against national champions from other European countries. Since liberalization affects domestic competition and profits, firms try to influence this policy by lobbying their governments. Given the multilevel nature of liberalization policy, national champions can influence liberalization by lobbying their government both in European fora during intergovernmental negotiations and domestically.

[2] I assume that the overall level of restriction in a country must be non-negative.

3.3.2 Timing

The supranational phase of the game starts with the Commission's autonomous decision to liberalize an industry via a European directive. After this initiative, governments must agree on a common level of restrictions R_{EU} to be included in EU legislation. As typical for this policy, government negotiations are assumed to happen in the Council. Before the start of the Council negotiation, firms can attempt to influence the supranational bargain by lobbying the government via the transfer $t_{EU_j}(R_{EU})$. The transfer can be interpreted in various ways: electoral contributions, votes from the firm's workers, etc. This transfer is a function that assigns to each possible level of restriction agreed in the Council a non-negative contribution. Formally, $t_{EU_j} : \mathbb{R}_+ \rightarrow \mathbb{R}_+$. For simplicity, I assume that firms can lobby only their governments and that transfers are binding once announced.

Intergovernmental bargaining in the Council is operationalized following Rubinstein's (1982) bargaining model, where an agreement requires unanimity. More formally, negotiation in the Council takes the following form. Each Council member is called to make a proposal R_{EU} with probability $p_j \in \mathbf{p} = (p_1, ..., p_n)$, with $p_j > 0 \ \forall i$ and n being the number of Council members. In line with the consensus rule, if every Council member accepts, the game ends with the proposal being implemented. Instead, if a player does not accept, either:

1. The process restarts with probability $r \in [0, 1]$.

2. Or, negotiation breaks down, and the default policy R_{EU_N} is implemented.

After the end of intergovernmental negotiations, it starts the domestic phase of the game. The Commission now tries to ensure that countries comply with European legislation. In doing so, it anticipates that the domestic firm in the generic country j could interfere in the policy process. Therefore, the Commission can make concessions t_{C_j} to the national champion to ensure the fulfillment of European directives. If the firm accepts, it abstains from interfering domestically with the policy process and does not propose any transfer to the national government. By contrast, the firm can refuse the

Commission's transfer and try to influence liberalization. As in the supranational phase, the domestic firm can influence the government during the national transposition of the liberalization directive via a transfer $t_{D_j}(R_{D_j})$. Again, this transfer is a function mapping the country-specific component of domestic restrictions to a non-negative contribution and $t_{D_j} : \mathbb{R} \to \mathbb{R}_+$. After the firm's eventual announcement of its transfer, the government chooses the domestic level of restrictions.

Finally, once the national regulatory framework ($R_J = R_{EU} + R_{D_j}$) has been determined, the national champion competes with other foreign European competitors à la Cournout by offering its services to consumers at a price endogenously determined by market forces. Firms simultaneously choose the quantity of services offered $q_j \in \mathbb{R}_+$. The price level $P(Q)$ is determined by the following inverse demand function and decreases in total output $Q = \sum_j^N q_j$:

$$P(Q) = \begin{cases} \alpha_j - Q & \text{if } \alpha > Q \quad (3.1) \\ 0 & \text{if } \alpha \leq Q \quad (3.2) \end{cases}$$

with α_j being positive and assumed to be large enough such that firms always find optimal to offer their service at every possible level of restrictions.

The timing of the model can be summarized as follows.

1. The Commission decides to liberalize an industry. This move is not strategic.

2. Firms lobby their national governments before negotiations in the Council via a transfer t_{EU_j}.

3. Governments make their proposals in the Council and agree on EU-level restrictions R_{EU}. The supranational phase ends.

4. The Commission can make concessions t_{C_j} to the national champions to prevent it from influencing liberalization domestically.

5. If the firm accepts the Commission's transfer, it abstains from interfering. Otherwise, they lobby the government via t_{D_j}.

6. The government chooses the country-specific level of restrictions R_{D_j}. Thus, total restrictions are $R_J = R_{EU} + R_{D_j}$.

7. The domestic national champion and foreign firms compete in domestic markets by choosing q_j.

8. Payoffs are realized, and the game ends.

3.3.3 Payoffs

The Commission. The Commission's goal consists of promoting economic integration by ensuring that Member States comply with EU-level legislation. The following utility function captures this objective:

$$C(R_{EU}, R_D, t_C) = \sum_j -\mathbb{I}_{\{R_J > R_{EU}\}} \alpha_C R_{D_j} - t_{C_j}. \tag{3.3}$$

The term $\mathbb{I}_{\{R_J > R_{EU}\}}$ is an indicator that takes the value of 1 when domestic restrictions are larger than the agreed European standards and zero otherwise. When $R_J > R_{EU}$, the Commission derives a disutility that is proportional to R_{D_j} (i.e., the extent of non-compliance) by a value of α_C. The reason is that the larger are domestic barriers, the less are industries integrated into the Single Market. The term $\alpha_C \in \mathbb{R}_+$ can thus be interpreted as the value the Commission attaches to its goal of a highly integrated European economy.[3] Since an integrated Single Market has always represented a mantra for the Commission, I assume that α_C is large. On the other hand, when country j complies with EU legislation, the Commission's disutility from domestic barriers is zero.

Governments. A national government derives utility from its ideal policy points over European ($\iota_{EU_j} \in \mathbb{R}_+$) and domestic legislation ($\iota_{D_j} \in \mathbb{R}$) and from the firm transfers $t_{EU_j}(R_{EU})$ and $t_{EU_j}(R_{D_j})$. These ideal policies can be interpreted in terms of the government's economic ideology. The lower they are, the more the government is economically liberal and opposed to restrictions. We can also interpret ι_{EU_j} and ι_{D_j} as

[3] This goal can also be coherent with a static conceptualization of consumer welfare maximization when restrictions increase price relative to marginal costs.

the policies governments believe best for their citizens in a way that changes according to the executive's ideology.[4] The government has a standard quadratic loss utility over its ideal points:

$$G_j(R_{EU}, R_{D_j}, t_{EU_j}, t_{D_j}) = \alpha_{G_j} - \lambda[(\iota_{EU_j} - R_{EU})^2 + (\iota_{D_j} - R_{D_j})^2] + (1-\lambda)(t_{EU_j}(R_{EU}) + t_{D_j}(R_{D_j})).$$

The parameter $\lambda \in (0, 1)$ is the weight the government places on its policy preference, while $(1 - \lambda)$ is the one placed on the domestic firm's transfers. The parameter λ can be interpreted as the degree of independence of domestic competition institutions. The more this independence, the lower the firms' influence on the liberalization policy process. In addition, the government's objective function includes the term α_{G_j}. As it will be clearer later, this term denotes how much each government will lose in moving from their ideal EU-level policy to the disagreement outcome during supranational negotiations.

National Champions. EU-level restrictions are assumed to have a positive effect on firms' profits, which is proportional to their output since they increase the monopolistic power in each domestic market. I assume this benefit is also positive for foreign national champions entering country j. Although EU barriers can make entering a foreign country more difficult by increasing costs, I assume that the extra profits firms can earn in their domestic markets from protection overcome these costs.[5] Another interpretation is that foreign firms can accumulate resources that facilitate their operations in other markets because of protections enjoyed at home due to R_{EU}. Nonetheless, I also assume this benefit is inversely proportional to productivity ω. The reason is that the more a firm is productive, the lower the need for protection from competitors. Domestic firm barriers can represent an additional source of protection for the national champion, and thus, they positively affect profit as well. For the same reasons concerning EU-level restrictions, the domestic firm benefits from national barriers in decreasing fashion with respect to its

[4] Liberal is intended in the European sense.

[5] Recall that this is the profit-specification before solving the model. Anticipating the results of section 3.4, once we allow firms to compete, the way in which firms benefit from EU-wide restrictions in equilibrium depends on how their productivity compares with respect to the EU average. Specifically, firms whose productivity is above the EU average will benefit from bringing down EU-wide restrictions.

productivity. While additional national barriers can benefit domestic firms, they clearly represent a cost for foreign firms trying to enter the market. For this reason, domestic barriers negatively enter the profits of foreign firms in a way that is inversely proportional to their productivity. To facilitate the exposition, I assume that the impact of domestic restrictions, differently from EU-level ones, is not proportional to the firm's output.[6] Finally, each firm has marginal costs $c(\omega_j) = \frac{1}{\omega_j}$ that decrease with their productivity $\omega_j \in \mathbb{R}_{++}$. This specification captures the fact that more productive firms produce at a lower cost. The following are the profits of the domestic firm in the country j and the generic foreign firm i:

$$\begin{cases} \pi_j(q_i, q_j, R_{EU}, R_{D_j}) & = q_j(\alpha_j - Q - \frac{1}{\omega_j} + \frac{R_{EU}}{\omega_j}) + \frac{R_{D_j}}{\omega_j} \quad (3.4) \\ \pi_i(q_i, q_j, R_{EU}, R_{D_j}) & = q_i(\alpha_j - Q - \frac{1}{\omega_i} + \frac{R_{EU}}{\omega_i}) - \frac{R_{D_i}}{\omega_i} \quad (3.5) \end{cases}$$

3.3.4 Equilibrium Assumptions & Definitions

The game is solved by backward induction by looking for truthful stationary subgame perfect equilibrium following Kennard (2020). Equilibria of this type require firms' transfer to be truthful.

Definition 1 (Truthful transfer)**.** *The firm's transfer schedule is truthful with respect to the equilibrium policy R^* when:*[7]

$$t_j(R) = \pi_j(R) - \pi_j(R^*) + t_j(R^*), \ \forall R. \quad (3.6)$$

This definition means that when the firm wants the policymaker to change the equilibrium policy with any other alternative, it has to transfer resources corresponding to the net gain that derives from the change. However, this value has to be non-negative; otherwise, the firm offers zero.

The solution of the phase of the game where governments bargain in the Council over

[6] Domestic restrictions that increase the profits of the national firms proportionally to the quantity produced do not change the thrust of the main results, as shown in the appendix. However, it makes the expressions of optimal policies considerably more complicated.

[7] This definition applies to both European and domestic transfers and restrictions.

the common level of restrictions requires proposals to be feasible, meaning that for every Member State, they must deliver a larger payoff than non-agreement outcome R_{EU_N}. I further restrict the space of possible agreements by assuming that proposals must be lower than the previous average level of restrictions $\bar{R}_{EU_0}$. This is a trivial assumption, as otherwise, there would not be any liberalization.

Definition 2. *A proposal R_{EU} is feasible if:*

1. $G_j(R_{EU}) > G_j(R_{EU_N})\ \forall j$,
2. $R_{EU} < \bar{R}_{EU_0}$

For simplicity, I assume that the utility over the disagreement outcome is zero.

3.3.5 Discussion on the Model's Setting & Assumptions

Institutional Features

The multidimensional nature of the policy process is inherent to the European framework. Article 86 of the Rome Treaty grants agenda-setting and monitoring powers to the Commission over the liberalization of state-owned industries via directives. For this reason, I assume that EU-wide liberalization is a unilateral act of the Commission. However, given the strong interest at stake in liberalized industries, the Commission has often attempted to build a consensus over a directive by involving governments rather than superimposing its will (Eising 2002: 104). Therefore, the content of these directives has always been hotly debated in the Council. In principle, the Council can decide using simple majority, qualified majority, or unanimity. However, the "consensus rule" was usually adopted during liberalization negotiations. Consensus-oriented decisions tend to produce an outcome MSs consider adequate and fair when they hold highly heterogeneous positions and strong national interests, as in the case of electricity liberalization (Eising 2002: 103). Once policies have been agreed upon at the European level, they later need to be transposed into national statutes. In the case of liberalization directives, governments possessed a considerable margin of adaptation during the national transposition,

given the high institutional and economic variability characterizing EU countries (Graack 1996).

Preferences & Actions

The decision to conceive the Commission as an agent with its own preferences and agenda has a long tradition within the Europen political economy literature, especially when it comes to competition policy. In fact, it has often sought to obtain more autonomy over this policy (Wilks 2005) and tried to advance an agenda that in some cases found stark opposition from governments (Pollak and Slominski 2011). The aversion to domestic restrictions of this supranational authority is in line with the history of liberalization policy in the EU. Domestic barriers in historically shielded industries were seen as the causes of the low productivity of European firms (Foreman-Peck 2006). Moreover, these barriers were responsible for the high segmentation of the European economy, thereby contrasting with the Commission's goal of promoting the Single Market (McGowan and Wilks 1996). For this reason, domestic restrictions larger than what is prescribed by EU legislation negatively impact the Commission's utility function. Given the Commission's role as "Guardian of the Treaty," its interest is that countries comply with EU legislation ($R_j \leq R_{EU_j}$). Moreover, given the autonomy of Member States during national transposition, the Commission is assumed to be happy as long as national legislation complies with European ones. For this reason, the Commission's utility function depends in a non-smooth way on R_j (i.e., it is zero when $R_j \leq R_{EU_j}$).

The Commission conceptualized in this model is not the "Robinson Crusoe benevolent dictator" of Gutierrez and Philippon (2023), which is completely insulated by industrial interests. In contrast to these authors, the Commission enjoys more limited power and needs to compromise to advance its market integration goals. Specifically, compromise takes the form of concessions the Commission $t_{C_j} \in \mathbb{R}_+$ can make to domestic firms. The use of policy concessions captures the fact that the Commission has often forged alliances with industrial interests to obtain its desired legislative outcomes (Sandholtz 1998; Buch-Hansen and Wigger 2010).

The conceptualization of governments' utility as a weighted average of own preferences and contributions is a standard way to characterize firms' influence in lobbying models (e.g., Grossman and Helpman 1994; Kennard 2020). The fact that the weight is given by the strength of domestic competition institutions captures the fact that it might be more difficult for firms to influence liberalization in countries with independent competition authorities and sectoral regulators.

How firms' profits depend on productivity aligns with the "new" New Trade Theory and the trade politics literature, where more productive firms benefit less from restrictions (Osgood et al. 2017). Concerning lobbying, instead, it is assumed firms can lobby only their national governments. This feature clearly represents a simplification assumption as interest groups lobby the Commission's officials very intensively. This assumption, however, can be partly defended by arguing that lobbying national governments might be easier than the Commission. Firstly, the interest group might have more influence nationally since, at the European level, it may compete with other interest groups with rival interests. Secondly, national policymakers can be influenced more easily, through electoral favors, than un-elected European officials. Thirdly, European competition institutions may be more transparent and independent than national ones, making lobbying more difficult (Hylton and Deng 2007; Gutierrez and Philippon 2023).

3.4 Analysis

The game is solved via backward induction, starting from the phase in which the domestic firm competes with foreign rivals in its country. The intersection of firms' best responses allows me to identify the optimal level of output and profits of the domestic firm, which are shown in the following lemma.

Lemma 1. *The domestic firm in country j produces:*

$$q_j^* = \frac{1}{N+1}[\alpha_j + (R_{EU} - 1)(\frac{N}{\omega_j} - \sum_{i \neq j} \frac{1}{\omega_i})] \tag{3.7}$$

and earns:

$$\pi_j^*(q_j^*) = \frac{1}{(N+1)^2}[\alpha_j + (R_{EU} - 1)(\frac{N}{\omega_j} - \sum_{i \neq j} \frac{1}{\omega_i})]^2 + \frac{R_{D_j}}{\omega_j} \tag{3.8}$$

Let us proceed with the government selection of the level of restrictions R_{D_j}. The executive does so by implementing the level of regulation that maximizes its utility:

$$R_{D_j}^* = \frac{1}{\omega_j}\frac{(1-\lambda_j)}{2\lambda_j} + \iota_{D_j}. \tag{3.9}$$

$R_{D_j}^*$ represents the optimal level of restrictions that the policymaker selects in the presence of lobbying. As we can see, $R_{D_j}^*$ decreases in the degree of government's economic liberalism and, also, in domestic productivity, since the more an industry is productive, the lower the need to engage in costly lobbying for protection. Of particular interest, however, is the role of competition institutions. Note that absent lobbying, the government would implement additional domestic restrictions equal to its ideal point. By looking at (3.9), it is easy to see that domestic restrictions when the firm lobbies are always larger than the government's ideal point. Thus, by making the government more independent, competition institutions increase the cost of lobbying and diminish the level of restrictions the industry can get in equilibrium. Furthermore, when $R_{D_j}^*$ is negative, the overall level of domestic restrictions is less than what EU legislation prescribes. A negative $R_{D_j}^*$ requires sufficiently independent competition institutions and the government to be liberal enough. To see this, note that $R_{D_j}^* \leq 0$ implies $\lambda_j \geq \frac{1}{1-2\iota_{D_j}\omega_j}$. However, λ_j by definition must be less than 1, so ι_{D_j} must necessarily be negative. The intuition is that strong competition institutions allow particularly economically liberal executives to reduce barriers by making them more independent from business interests.

Given that the government is implementing $R_{D_j}^*$, it means that it must be at least as well off compared to the case when the firm is not lobbying, and the executive implements $R_{D_j} = \iota_{D_j}$. Since lobbying is costly, the firm tries to influence policies with the lowest

possible transfer. That is, the transfer such that $G_j(R^*_{D_j}) = G_j(R_{D_j})$, with $R_{D_j} = \iota_{D_j}$:[8]

$$t^*_{D_j} = \frac{1-\lambda_j}{4\lambda_j}(\frac{1}{\omega_j})^2$$

In equilibrium, the domestic firm offers larger transfers for policies that increase its profits with respect to $R^*_{D_j}$. The positive marginal derivative of equilibrium profits with respect to R_{D_j} together with (3.6) imply that $t_{D_j}(R_{D_j}) > t_{D_j}(R^*_{D_j})$ for any $R_{D_j} > R^*_{D_j}$ sufficiently close to $R^*_{D_j}$. In other words, firms always lobby in favor of larger domestic restrictions. This result, however, does not mean that domestic equilibrium restrictions are always larger than what is agreed upon in the Council when a firm lobbies its government. Indeed, $R^*_{D_j}$ continues to be negative when $\lambda_j \geq \frac{1}{1-2\iota_{D_j}\omega_j}$ and $\iota_{D_j} \leq 0$. The reason is that although lobbying increases the level of restriction compared to the case where the government autonomously selects the policy, this is not enough to obtain a positive $R^*_{D_j}$.

Proceeding with backward induction, let us now consider the Commission's behavior. The first thing to note is that the Commission has no interest in intervening when $\lambda_j \geq \frac{1}{1-2\iota_{D_j}\omega_j}$ (recall this condition requires $\iota_{D_j} \leq 0$). Even though the firm will influence domestic policies, the overall level of restriction R_j is less than the one agreed upon in the Council. Therefore, the Commission does not need to make concessions to the firm. By contrast, when competition institutions are not strong enough $\lambda_j < \frac{1}{1-2\iota_{D_j}\omega_j}$, the firm will obtain a level of domestic restrictions larger than the one prescribed by the European legislation. Since the government's ideal policy is always lower than the firm's, the Commission has the incentive to prevent the lobby's intervention. To do so, the Commission anticipates that the firm will decide to interfere according to the following rule:

$$\begin{cases} \text{not interfere} & \text{if } \pi^*_j(q^*_j, R_{EU}, R^*_{I_j}) \leq \pi^*_j(q^*_j, R_{EU}, \iota_{D_j}) + t_{C_j}, \quad (3.10) \\ \text{interfere} & \text{if } \pi^*_j(q^*_j, R_{EU}, R^*_{I_j}) > \pi^*_j(q^*_j, R_{EU}, \iota_{D_j}) + t_{C_j}. \quad (3.11) \end{cases}$$

Therefore, the Commission will make concessions just enough to convince the lobby not

[8] Note that the equilibrium transfer $t^*_{D_j}$ is always positive.

to intervene, that is, $t^*_C = \frac{1-\lambda}{4\lambda}(\frac{1}{\omega})^2$. Moreover, if we assume that α_C is large enough, implying the Commission is highly averse to restrictions, intervening always represents a dominant strategy for the Commission when $\lambda_j < \frac{1}{1-2\iota_{D_j}\omega_j}$. These computations lead to the following lemma characterizing domestic legislation.:

Lemma 2. *If $\alpha_C \geq \frac{1}{2\omega_j}$ $\forall j$, the domestic policy phase of the game involves:*

- *When $\lambda_j \geq \frac{1}{1-2\iota_{D_j}\omega_j}$ and $\iota_{D_j} \leq 0$, the Commission does not prevent the firm from interfering. The firm announces the transfer schedule:*

$$t_{D_j}(R_{D_j}) = \pi_j(R_{D_j}) - \pi_j(R^*_{D_j}) + t_{D_j}(R^*_{D_j}), \tag{3.12}$$

  with equilibrium transfer $t^*_{D_j} = \frac{1-\lambda_j}{4\lambda_j}(\frac{1}{\omega_j})$. The government implements $R_{EU} + R^*_{D_j}$, with $R^*_{D_j} = \frac{1}{\omega_j}\frac{(1-\lambda_j)}{2\lambda_j} + \iota_{D_j}$.

- *When $\lambda_j < \frac{1}{1-2\iota_{D_j}\omega_j}$, the Commission proposes concessions $t^*_{C_j} = \frac{1-\lambda}{4\lambda}(\frac{1}{\omega})^2$ to the firm. The firm accepts and does not interfere with the policy process. Thus, the government implements $R_{EU} + \iota_{D_j}$.*

Note that $t^*_C = \frac{1-\lambda}{4\lambda}(\frac{1}{\omega})^2$ implies that the Commission's concessions are lower in countries in countries with strong institutions and productive industries.

Only the supranational part of the game is left to be solved. To do so, I will first find the level of restrictions agreed upon in the Council and then the equilibrium contributions firms make to governments. To find the equilibrium policy agreed in the Council, I assume that r (i.e., the probability that negotiation restarts after a proposal is refused) approaches 1. Laruelle and Valenciano (2008: 346) interpret r as the "readiness of the committee to look for consensus". Given that the Council has often adopted the consensus rule, it is reasonable to assume that r approaches 1. Moreover, I will also assume that α_{G_j} is large enough. Recall that α_{G_j} is defined as the dis-utility that the government gets by moving from its ideal point (ι_{EU_j}) to the disagreement outcome with zero utility. Thus, although a large α_{G_j} represents a technical assumption required to get a tractable solution, it can be rationalized following an institutional realist logic by assuming governments value their

ideal point substantially compared to the disagreement outcome (Achen 2009).[9] Before proceeding with the solution of the supranational bargain, it is useful to define two terms. First, $C_j = \frac{N}{\omega_j} - \sum_{i \neq j} \frac{1}{\omega_i}$. Second, R_{EU_j} is the agreed policy when every firm but the one in country j lobbies their governments prior to Council negotiations. The following lemma identifies the solution to the Council bargaining problem and supranational transfers.

Lemma 3. *When $r \to 1$ and α_{G_j} is sufficiently large $\forall j$, firms before Council negotiations announce the following transfer schedule:*

$$t_{EU_j}(R_{EU}) = \pi_j(R_{EU}) - \pi_j(R^*_{EU}) + t_{EU_j}(R^*_{EU}), \tag{3.13}$$

with equilibrium contributions:

$$t_{EU_j}(R^*_{EU}) = \max\{\frac{\lambda}{1-\lambda}[(\iota_{EU_j} - R^*_{EU})^2 - (\iota_{EU_j} - R_{EU_j})^2], 0\}.$$

Then, governments in the Council agree to

$$R^*_{EU} = \frac{\sum_j \frac{p_j}{\alpha_{G_j}}[\lambda_j \iota_{EU_j} + \frac{(1-\lambda_j)(\alpha - C_j)C_j}{(N+1)^2}]}{\sum_j \frac{p_j}{\alpha_{G_j}}[\lambda_j - \frac{(1-\lambda_j)C^2}{(N+1)^2}]} \tag{3.14}$$

This lemma states that firms always influence their governments before supranational negotiations. However, this result has not to be interpreted *stricto sensu* as if governments' ideological positions do not matter. Indeed, governments' ideal points are reflected in the final agreement R^*_{EU}. Therefore, a more realistic interpretation is that supranational bargain in the Council reflects domestic economic factors (C_j) and institutions (λ_j). In this respect, the model produces a result in line with two-level game models where international negotiations reflect national constraints. Furthermore, note that $\frac{\partial R^*_{EU}}{\partial \iota_{EU_j}} > 0$, meaning that the more pro-restriction a government is, the larger the agreed level of restriction in the Council. This result aligns with the consensus rule since each MSs' position is reflected in the final agreement.

The combination of lemmas 1, 2, and 3 generates the model's proposition charac-

[9] To get a better understanding of α_{G_j} see the proof of lemma 3 in the appendix.

terizing the stationary subgame perfect equilibrium.

Proposition 1. *The stationary subgame perfect equilibrium of the game is such that:*

1. *In the supranational legislative phase, firms make equilibrium transfers $t^*_{A_j}$ to their governments, which then agree on EU-level restrictions R^*_{EU}.*

2. *In the domestic legislative phase, the Commission does not prevent firms' interference in countries where $\lambda_j \geq \frac{1}{1-2\iota_{D_j}\omega_j}$ and $\iota_{D_j} \leq 0$. Firms' make domestic equilibrium transfers $t^*_{D_j}$ to their governments, which implement the policy $R^*_{EU} + R^*_{D_j}$. By contrast, the Commission prevents firms from interfering in countries where $\lambda_j < \frac{1}{1-2\iota_{D_j}\omega_j}$ by making concessions $t^*_{C_j}$ and governments implement the policy $R^*_{EU} + \iota_{D_j}$.*

3. *After the determination of the equilibrium policy framework, domestic firms produce q^*_j and earn $\pi^*_j(q^*_j)$*

As a last step, I will analyze how firms lobby concerning EU-level restrictions. While equilibrium profits always increase in domestic restrictions, this is not always true for European legislation. By taking the first derivative of $\pi_j(q^*_j)$ with respect to R_{EU}, it can be shown that equilibrium profits decrease in R_{EU} whenever $\omega_j > \frac{N}{N-1}\bar{\omega}_j$, where $\bar{\omega}_j$ is the harmonic average productivity of all firm's j rivals. Thus, whenever a domestic firm is more productive than the European average, it has an interest in lobbying to bring down EU-wide restrictions.

Proposition 2. *When $\omega_j > \frac{N}{N-1}\bar{\omega}_j$, the firm's profits decrease with EU-wide restrictions. Therefore, the firm lobbies its government to bargain for lower R_{EU}.*

For simplicity, the model has always evaluated firms' policy positioning by analyzing their domestic profits. However, the result of proposition (2) can be easily interpreted in terms of their international ambitions. Highly productive firms benefit little from the protection given by EU-level restrictions compared to the potential gain of liberalization. With low barriers, these firms can enter foreign economies more easily where domestic firms are not particularly productive and expand their market shares and profits.

3.4.1 Discussion

Proposition 1 shows that, on the one hand, the possibility of differentiating from the EU requirements generates national heterogeneity in equilibrium. In particular, the overall level of restriction is inversely proportional to the industry's productivity, the strength of institutions, and the liberal orientation of the government. Therefore, liberalization policy is not the imposition of a one-size-fits-all alleged welfare-maximizing policy by a benevolent dictator, but it reflects government ideology and domestic economic and institutional characteristics. This result contrasts with Gutierrez and Philippon's (2023) account, where, after delegation from MSs, the Commission enjoys a hegemonic role over competition policy.

On the other hand, proposition (1) shows another critical result. In line with Gutierrez and Philippon's (2023), the level of restrictions is lower with the Commission's oversight than without. This result is straightforward to see. When competition institutions are strong enough, proposition 1 shows that despite the firm's lobbying, national restrictions fulfill the standard agreed upon in the Council. Therefore, the Commission's presence does not change the final policy outcome in these countries. However, when competition institutions are not so established, domestic restrictions will be larger than what is included in EU legislation. Thus, the Commission's intervention ensures that additional domestic restrictions coincide with the government's ideal policy, which is always lower than what firms would desire. Thus, proposition (1) reconciles Philippon's (2019) and Gutierrez and Philippon's (2023) Great Reversal with a framework in which domestic political and industrial interests continue to influence policies. Note, however, that the Commission's concessions to prevent the interest's group intervention do not ensure that all countries comply with European standards when the $\iota_D \geq 0$. The reason is that the government will implement domestic restrictions larger than R^*_{EU}. In other words, infringements on EU legislation can happen in equilibrium. I could have avoided these infringements by setting an automatic sanction that makes it optimal for domestic governments to comply. Yet, the current model's setup is more realistic since infringements

represent an actual characteristic of EU-policy making.[10]

Proposition 2 gives rise to a more nuanced characterization of businesses than Philippon's (2019) and Gutierrez and Philippon's (2023) one of firms as actors opposing pro-competition policies. In this model, highly productive national champions can be a force pushing for more competition. This result aligns with trade politics literature showing that highly productive exporters tend to lobby to decrease restrictions (Kim and Osgood 2019).

The combination of proposition 1 and 2 reveals the central contribution of this paper. It is not the Commission's independence but rather its ability to exploit aligned industrial interests that can bring down the EU-wide restrictions. As shown in proposition 2, highly productive firms benefit from more liberalization and will lobby their governments in the Council to bring down EU-wide restrictions. Therefore, productive firms can be a powerful Commission's ally in promoting market integration. In this respect, the model aligns with Sandholtz (1998), who argues that something similar happened with the liberalization of the telecom industry. According to Sandholtz (1998: 21), the Commission managed to liberalize the telecom sector more than what was desired by many MSs because of its capacity to form a transnational coalition of industrials that supported its objectives. However, productive firms may cease to be a Commission's ally during the domestic transposition of liberalization policies. In countries where competition institutions are not strong enough (i.e., $\lambda < \frac{\bar{\omega}}{\bar{\omega}-2\iota_d\omega}$), firms will lobby for a larger level of restrictions than R^*_{EU} in contrast, in some cases, to their position concerning EU-level legislation. The reason is that productive firms would like to have the "best of possible worlds" consisting of freely entering foreign economies while enjoying domestic protection. In other words, without a "commitment device," the goals of productive firms are inconsistent between the supranational and domestic phases. The Commission's intervention will thus solve this inconsistency problem and prevent an excessive divergence between domestic policies and European legislation.

[10] There have been 324 infringements cases between 1998 and 2020 concerning competition policy, and the Common Market cases can be checked on the Commission website at https://ec.europa.eu/atwork/applying-eu-law/infringements-proceedings/infringement_decisions/screen/home?lang_code=en

Despite the potentially conflicting interests, the Commission's intervention benefits productive firms. We can interpret proposition 2 as showing that highly productive national champions benefit from lower restrictions since they constrain their capacity to expand abroad. As a result, these firms are more likely to gain market shares in European countries where domestic industries are not particularly competitive. However, in countries with not solid enough competition institutions, firms will lobby for high barriers that reduce the risk of foreign takeovers. Thus, as lemma 1 shows, the Commission decreases restrictions even in these countries, thereby serving the international ambitions of more productive national champions.[11]

Given the discussion so far, the reader might be tempted to conclude that an alignment of interests exists only between business interests and the Commission. However, economically liberally oriented governments can also benefit from the Commission's oversight over the policy process. Consider the case of $\iota \leq 0$ when $\lambda < \frac{\bar{\omega}}{\bar{\omega}-2\iota_d\omega}$. The government's desired overall level of domestic restrictions is less than R^*_{EU}. Without the Commission's supervision, the firm would have obtained a $R^*_{EU} + R^*_D$ larger than the government's preferred policy. However, because of the Commission's oversight, the final level of restrictions in this hypothetical country is $R^*_{EU} + \iota_D$, coinciding with the government's preferences.

This result can be interpreted as governments using European institutions in an "inverted two-level game." In other words, governments can use the Commission as an external constraint to impose their domestic agenda when domestic institutions are not strong enough or lack the political capital to do so. Again, this relationship is not one-sided. More economically liberal-oriented governments push down the average equilibrium level of restrictions R^*_{EU} obtained in the Council, thereby benefiting the Commission given its market integration ambitions. More simply, liberal governments represent a constituency supporting the Commission's goal. Indeed, countries with a pronounced willingness to open their industries, such as the Netherlands and the UK, were fierce supporters of European directives (Hèritier 1997; Eising 2002).

[11] Recall that domestic barriers diminish the profits of foreign firms.

These results show that lower barriers derive from mutually reinforcing interests between the Commission and domestic actors. National champions seeking to expand into European markets increase the Commission's pro-competition ambitions (i.e., by bringing down R_{EU}) and vice versa (i.e., the Commission prevents excessively high domestic barriers). The same holds for economically liberal-oriented governments and the Commission. These results align with Crescioli's (2023) empirical findings. The author shows that mutually reinforcing interests, operationalized via joint liberalization efforts of national and domestic authorities, effectively decreased firm-level market power in liberalized industries. By contrast, when these reforms were pursued autonomously, their effect was significantly more limited.

3.4.2 Testable Predictions

Testing the importance of aligned interest for liberalization reforms requires two steps. Firstly, I need to show that the EU directives decrease domestic barriers on average. Therefore, the Commission's reforms are serving the interests of productive national champions and economically liberal governments.

Prediction 1 (Commission → Domestic Actors)**.** *Commissions' directives serve the goal of economically liberal governments and productive firms by bringing down domestic barriers.*

The second step consists of showing that aligned domestic interests serve or at least, do not oppose the Commission's pro-market integration ambition. Therefore, the effect of EU directives should be stronger in countries with economically liberal governments and productive national champions.

Prediction 2 (Domestic Actors → Commission)**.** *Entry barriers should be lower in countries where governments and national champions' interests align with the Commission's ambitions. Thus, EU directives reduce barriers more in countries with more economically liberal governments and productive national champions.*

Prediction 1 follows from the combination of propositions 1 and 2. More specifically,

the fact that the Commission decreases domestic barriers and that economically liberally governments benefit from that follows from proposition 1, while the part concerning the benefits of productive firms is derived from 2. Instead, prediction 2 comes entirely from proposition 1.

It would be interesting to test also if highly productive firms lobby their governments before Council negotiations to bring down barriers in line with proposition 2, thereby serving as an ally of the Commission. However, a full empirical test of this claim is hard to implement. The reason is that this test would require data on governments' and firms' positioning over European liberalization directives. To the knowledge of the author, the only dataset with a similar scope is the "EMU positions dataset," which contains information on governments' (but not firms') positioning over EU policies (Degner et al. 2020). However, the dataset covers the negotiations that took place between 2010 and 2015 over Euro-Zone crisis policies and not liberalization directives. Given this lack of data, the analysis comes with a limitation consisting of lacking a thorough empirical test for proposition 2.

Nonetheless, it is possible to conduct a partial empirical test using available data to support proposition 2. Proposition 2 indicates that highly productive companies lobby for decreasing EU-wide restrictions since these barriers lower their profits. Thus, showing empirically that the profits of particularly productive firms are inversely proportional to European entry barriers will bring evidence in favor of proposition 2. It will still need to be shown that these firms actively lobby their governments to reduce restrictions. Yet, it would be a smaller leap of faith to believe so once the economic gains of highly productive firms are shown to decrease in EU-wide restrictions.

Although not fully tested, proposition 2 is consistent with more detailed, qualitative, and sector-specific accounts of liberalization and competition policy. In this respect, I have previously mentioned Sandholtz's (1998) study on the telecommunication sector liberalization, which shows that productive firms in these industries allied with the Commission in opening up markets. Heritier (1997) argues similarly for the transportation

sector, where the Dutch Government wanted the liberalization of this industry to advantage highly competitive national firms. By contrast, less productive Italian enterprises were firmly opposed to these changes. Finally, Thatcher (2014) also aligns with proposition 2 by showing that powerful energy firms such as EDF (France) and ENI (Italy) have benefited from liberalization as a tool to expand in other economies.

Prediction 3 (EU-Wide Restrictions and Firms' Profits)**.** *EU-wide barriers decrease the profits of highly productive firms. Therefore, these firms should see favorable the Commission's liberalization initiatives.*

Finally, it is important to note that prediction 3, if verified, can support both sides of the aligned interest argument. On the one hand, it can provide evidence of the role of productive firms as an ally supporting the Commission's goals. On the other hand, the confirmation of this prediction will show that productive firms effectively benefit from the Commission's liberalization initiatives.

3.5 Data and Variables

The data used in the empirical analysis covers 14 European countries from 1995 to 2010.[12] Additionally, 12 OECD economies for which there is sufficient data availability are considered for comparison.[13] To test predictions 1 and 2, the main units of analysis are domestic state-owned (or previously state-owned) industries that have been liberalized via European directives, namely electricity, gas, post, railways, and telecommunications. Prediction 3, instead, is tested using firm-level data.

Main Dependent Variables. For predictions 1 and 2, the level of restrictions R is proxied using the "entry" sub-component of the OECD product market regulation (PMR) index. This indicator ranges from zero to six, with higher values denoting larger barriers to entry (more details in Nicoletti and Scarpetta 2003). The OECD produces this indicator for seven state-owned industries plus retail trade and professional services. OECD

[12] This set of European countries does not include Eastern nations. However, these countries will be considered for a placebo test.

[13] These are Australia, Chile, Iceland, Israel, Japan, Korea, Mexico, New Zealand, Norway, Switzerland, Turkey, and the US.

PMR indexes have been widely used in the literature as a de jure proxy of domestic industry barriers to competition (e.g., Alesina et al. 2005; Belloc et al. 2014; Gutierez and Philippon 2023). However, many of these studies focus on the overall PMR indicator, which also captures the degree of industry privatization. As noted in the introduction, privatization and liberalization, although often correlated, are two distinct policies: the former reduces the government's presence in the economy, while the latter removes restrictions to competition. This distinction is critical because European directives intended to diminish entry barriers did not incorporate privatization measures. In fact, European reforms must maintain neutrality regarding ownership, with the Commission's authority being restricted to ensuring the realization of effective competition (Clifton et al. 2006, Article 220 of the EC Treaty). Therefore, given the liberalization focus of this paper, I consider only the entry component of the overall PMR index.

For prediction 3, the main dependent variable is firm-level profits. Firm-level profits are operationalized using the ratio between value-added and revenues from Orbis historical archives, representing the richest dataset on European firms.

Main Independent Variables. The key parameters of the models are firms' productivity (ω), government's economic ideology (ι), and the strength of competition institutions (λ). Productivity has been estimated using firm-level data from Orbis historical archives. These data have been used to implement a productivity estimation technique based on the control function approach (Olley and Pakes 1996; Levinsohn and Petrin 2003; Ackerberg et al. 2015). This technique requires estimating a 2-digit industry production function and modeling the evolution of unobserved firms' productivity.[14] Depending on the country's data availability, the production function has been estimated using labor and material costs, as in De Loecker and Warzinsky (2012) and De Loecker et al. (2016), or using the cost of goods sold as De Loecker et al. (2020). The final firm-level dataset used to estimate productivity consists of nearly 38 million firm-level observations for EU countries and 7.5 million for non-EU countries.

[14] A Cobb-Douglas gross output production function has been used.

In the theoretical model, the relevant productivity is the national champion's one. However, there might be more than one dominant firm per industry, and the status of national champions can change over time. Therefore, rather than more arbitrarily considering only one firm, I employ the average productivity of the first decile of firms by revenues in the country-industry-year distribution. This methodological choice is consistent with the fact that national champions tend to be large in terms of revenues and domestic market shares.[15]

Following Lowe et al.'s (2011) approach, the government's economic ideology is proxied using the $\log(\frac{R+0.5}{L+0.5})$, where R and L are the number of economic right and economic left-leaning claims in a party manifesto. Using Comparative Manifesto Project data, economic right and left statements are identified following Berry and Sen's (2019) methodology. While the precise class of statements considered is provided in the appendix, in general, economic right involves promoting a laissez-faire approach to the economy; whereas economic left emphasizes more dirigiste public policies. This index has been aggregated at the cabinet level using a weighted average of the party composing the government, where the weight is the number of parliamentary seats. Overall, larger values of this index indicate a more liberal approach to the economy.[16]

To account for the strength of national competition institutions, I have used Bradford's and Chilton's (2018) competition law index (CLI). This index measures the de jure stringency of competition law at the country level. While many competition statistics cover only one or few years (e.g., Hylton and Deng 2007), the CLI has the advantage of covering a wide period (from 1889 to 2010 in principle). Another substantial advantage of the CLI is that it "treats the EU member states as independent nation-states whose competition law score reflects exclusively their national law" (Bradford and Chilton 2018: 418). Thus, it allows capturing inherently national features of domestic regimes.

[15] In the appendix, I also consider the top 5% for robustness.

[16] In the theoretical analysis, a larger ι denotes an economic left inclination instead, but the rationale is unchanged.

European Directives. European directives liberalized six state-owned sectors: aviation, electricity, gas, postal services, railways, and telecommunications. To test the second prediction concerning the Commission's role over domestic restrictions, I use the timing of liberalization directives to code a treatment variable (eu) that varies across liberalized industries. This variable takes the value of 1, the year of the deadline for the transposition of the first liberalization package.[17] However, aviation is not included because the first directive was issued in 1987, a year when Orbis Historical has insufficient data coverage. Table 3.1 assigns an industry NACE code to each liberalized industry following the correspondence provided by Gutierrez and Philippon (2023: 26). In contrast to these authors, electricity, gas, and railways are defined using three-digit instead of two-digit codes to better distinguish the distinct dynamics characterizing these industries.

Table 3.1: EU Directives Timeline

Liberalized Industry	Directive	Year	Transposition/Effectiveness	NACE Code
Telecom	96/19/EC	1996	1998	61
Electricity	96/92/EC	1996	1999	351
Gas	98/30/EC	1998	2000	352
Postal	97/67/EC	1997	1999	53
Railways	2001/12/EC	2001	2003	491

Controls. The empirical analysis includes a battery of controls: political and institutional variables (I) plus sectoral economic indicators (S). Political and institutional controls include government duration and the government HHI (an index of government concentration). I include these variables because more stable and less fragmented governments may have greater law-making power (Schmitt and Zohlnofer 2019; Belloc et al. 2014). As for productivity, I define sectoral controls using firms in the first decile of the country-industry-year revenue distribution. The first of these variables is the average real unit variable costs of the top 10% largest firm by revenues.[18] Firms with lower costs tend to be more competitive, and thus, firms may see liberalization as a tool to expand abroad. Secondly, I consider the total weight of the firms in the first industry decile in the total economy, defined as their aggregate revenues divided by total national revenues (i.e.,

[17] In the case of telecom, I have considered the "full liberalization directive," which sets the deadline for full liberalization on the 1st of January 1998.

[18] The real unit variable cost is defined as the ratio between variable costs and revenues.

including all industries). The sectoral weight is used to capture the size of the domestic economy affected by industry liberalization.

3.6 Empirical Strategy & Results

The empirical strategy relies on event study difference-in-differences. Given the highly aggregate nature of the data and several confounding factors involved, the results presented are meant to show correlations supporting the model's main predictions rather than rigorous causal evidence.

Table 3.2 reports the summary statistics of variables employed in the empirical investigation. I also separate between EU-14 and non-EU countries because this distinction is relevant to test the model's first and second predictions, where I implement a difference-in-differences approach.

Table 3.2: Summary Statistics - Industry & Country Level

	EU						Non EU					
	N	Mean	SD	Min	Median	Max	N	Mean	SD	Min	Median	Max
PMR Entry	1328	1.79	2.13	0.00	1.00	6.00	1026	2.55	2.10	0.00	2.00	6.00
Average Productivity	1031	13.85	12.35	2.41	11.04	92.87	568	70.98	646.08	0.03	8.80	8211.01
Log Economic Ideology	1305	−0.70	0.84	−2.90	−0.84	2.17	760	−0.47	0.82	−2.13	−0.32	3.07
CLI	1120	0.61	0.18	0.00	0.63	0.87	895	0.69	0.17	0.15	0.69	1.00
Cabinet Duration (Days)	1305	1319.53	380.30	194.00	1442.00	1885.00	775	1120.30	392.20	218.00	1133.00	1747.00
Government HHI	1305	0.68	0.27	0.18	0.71	1.00	775	0.65	0.27	0.24	0.59	1.00
Average Real UVC	1026	0.63	0.27	0.01	0.67	2.94	568	0.67	0.38	0.00	0.68	4.68
Industry Weight	1031	0.01	0.03	0.00	0.00	0.64	568	0.02	0.06	0.00	0.00	0.81

Note: Average productivity, real UVC, and industry weight have been computed considering the top 10% of firms by revenues in the country-industry-year distribution

Table 3.3: Summary Statistics - Firm Level

	N	Mean	SD	Min	Median	Max
Value Added / Revenues	5782	0.26	0.88	−40.94	0.24	7.35
Productivity	8558	15.43	10.22	2.63	11.37	92.87
Revenues	8558	764 390 100.54	2 482 399 866.59	88 000.00	99 957 124.00	47 967 000 000
Real UVC	8533	0.64	0.29	0.00	0.71	3.07

Note: The sample includes the top 10% of EU firms by revenues in the country-year-industry distribution.

3.6.1 The Effect of European Authorities on Domestic Entry Barriers

In this section, I test the first leg of the alignment interest argument. In line with prediction 1, European directives should reduce domestic barriers. Lower domestic barriers should, in turn, favor the interests of productive firms expanding in foreign markets and

more economically liberal governments.

To test this prediction, I employ an event study difference-in-difference (DID) methodology where the outcome variable is the entry PMR index, while the treatment variable is *eu*, capturing the effect of European directives. In an event study DID, treatment and control units are compared pre and post-treatment, but in contrast to a canonical DID, the treatment is received at different periods in this specific case. If this methodology is correctly identified, then differences in outcomes between groups can be attributed to the policy. The treatment group is EU-14 countries, while the control includes OECD non-EU countries. The sample used in this specification does not include post-communist countries because they were not EU members at the moment of these directives.

The critical identification assumption of the DID design requires the presence of parallel trends: without the treatment, the outcomes in both groups should change at the same rate. Therefore, consistently with prediction 1, a negative effect of *eu* on PMR entry implies that domestic restrictions are, on average, lower because of European directives.

I employ a two-way fixed effects specification with country-sector and time effects:

$$R_{ict} = \beta_{EU} eu_{it} + \beta_M M_{ict} + \beta_P P_{ct} + \beta_S S_{ict} + \alpha_{ic} + \tau_t + \epsilon_{cit}. \tag{3.15}$$

The main independent variables are used as controls and grouped into M (i.e., productivity, competition institutions, and economic ideology grouped in the vector M), in addition to those specified in the previous section.

Goodman-Bacon (2021), however, shows that event study DID estimates can be biased when the treatment effect is heterogeneous over time and cohorts. Therefore, I also employ two techniques to account for this potential bias. Firstly, Callaway and Sant'Anna (2021) (CS) methodology with inverse probability weighting (Abadie 2005). Inverse probability weighting is a technique in which units are weighted according to their probability of receiving the treatment. Therefore, this technique can help remedy imbalances between the treatment and the control group. Secondly, I employ Gardner's (2022) two-stage DID. This technique firstly regresses the outcome variables on controls

plus group and year fixed effects in the sample of untreated units. Then, the second stage employs a regression of the adjusted outcome on the treatment variable. In every specification, I use robust standard errors clustered at the country-industry level.

Table 3.4 shows the results of these two estimation techniques where controls are progressively added. The coefficient of the *eu* variable is negative and significant in every specification. In the specification with full controls, European reforms decreased restrictions in the years following liberalization in a range between -13% and -20% compared to the pre-EU-directive average (i.e., 5.07). Thus, this result seems to confirm the model's predictions, stating that the Commission can serve the interests of economically liberal governments and productive enterprises.[19]

Table 3.4: Effect of European directives on domestic restrictions

	Main Controls	Main + Pol-Inst Controls	Main + Pol-Inst + Sectoral Controls
eu	-0.655**	-0.643**	-0.649**
	(0.313)	(0.312)	(0.314)
Observations	1,113	1,113	1,108
eu	-0.875***	-1.183***	-1.046**
	(0.315)	(0.404)	(0.518)
Observations	849	844	845
eu	-0.797**	-0.800**	-0.809**
	(0.402)	(0.397)	(0.403)
Observations	948	948	945

Note: *** p<0.01, ** p<0.05, * p<0.1. The table reports the results of running model (3.15). The first panel reports the two-fixed effects specification, the second the Callaway & Sant' Anna's estimator (2021 with inverse probability weighting, and the third the Gardner's (2022) methodology. All specifications excluding Callaway and Sant' Anna (2021) include country-industry and year effects. Main controls include the log average productivity of the largest 10% firms by revenues, the log CLI, and the log of economic ideology. Political institutional controls include the log of the government's cabinet duration and the log of the government's HHI. Sectoral controls include the log of industry weight and the log average real unit variable costs of the top 10% largest firm by revenues. Standard errors are clustered at the country-industry level.

[19]The CS estimate seems to be significantly larger than the two-way one. However, in the appendix, I re-estimate model (3.15) without year effects. The results of this new estimation are very similar to those obtained using the CS methodology.

I also implement Chernozhukov et al.'s (2018) double debiased machine learning technique to limit some of the endogeneity concerns affecting the design. The first stage of this technique debiases the treatment variable using the covariates, while the second one estimates the effect of the debiased treatment on the restrictions. The advantage of this technique is two-fold. Firstly, it removes the regularization bias in estimating the effect of *eu*, which is typical of a standard machine learning approach. Secondly, restrictions depend on covariates in non-linear ways. For this reason, the model is partially linear since it combines a linear specification of the treatment variable with a non-linear one for controls. I implement this technique using 10-fold cross-fitting with three learners: LASSO, random forests, and support vector machine.

Table 3.5: Effect of European directives on domestic restrictions using double debiased machine learning

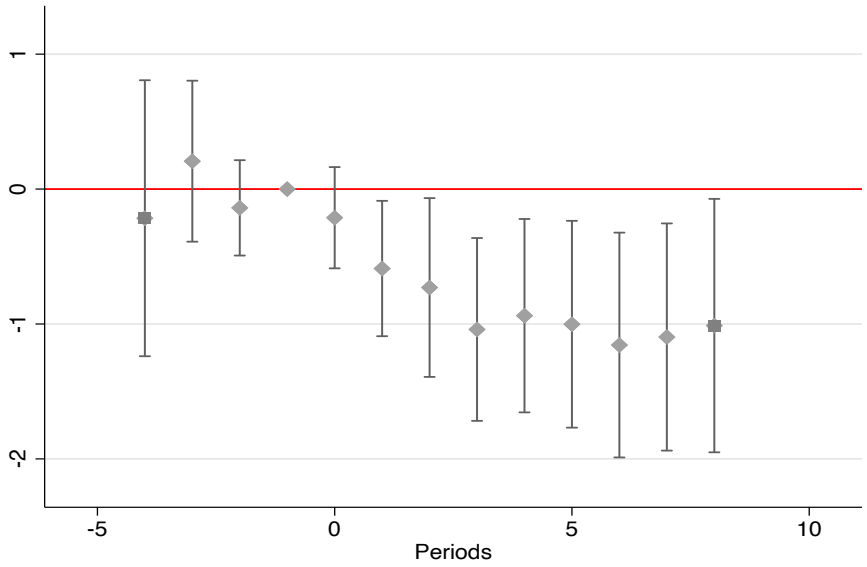
	Lasso	Random Forests	Support Vector Machine
eu	-0.634**	-0.563*	-0.531*
	(0.311)	(0.301)	(0.284)
Observations	1,113	1,113	1,113

Note: *** p<0.01, ** p<0.05, * p<0.1. The table reports the results of running model (3.15) using the double debiased machine learning approach. The first, second, and third columns correspond to the LASSO, random forests, and support vector machine specification, respectively. All specifications include country-industry and year effects. Controls include the log average productivity of the largest 10% firms by revenues, the log CLI, the log of economic ideology, the log of the government's cabinet duration, the log of the government's HHI, the log of industry weight, the log average real unit variable costs of the top 10% largest firm by revenues. Standard errors are clustered at the country-industry level.

Table 3.5 reports the coefficient of the double debiased machine learning exercises. The coefficients do not differ significantly from those of table 3.4. Thus, this technique brings additional evidence supporting aligned interests as European directives decrease barriers potentially benefiting economically liberal executives and productive firms.

Following standard practices (see Angrist and Pischke 2008), I check for parallel trends by plotting the leads and lags of the *eu* coefficient obtained. Parallel trends require the pre-treatment coefficient to be statistically zero (Cunningham 2021).

Figure 3.1: Estimates of leads and lags of the European directive variable



Note: The figure reports the results of running model (3.15) adding leads and lags of *eu* and using the TWFE specification. Controls include the log average productivity of the largest 10% firms by revenues, the log CLI, the log of economic ideology, the log of the government's cabinet duration, the log of the government's HHI, the log of industry weight, the log average real unit variable costs of the top 10% largest firm by revenues. 95% confidence intervals are shown.

Figure 3.1 seems to confirm the parallel trend assumption. As we can see, any pre-treatment coefficient is not significant.[20] Moreover, the post-treatment effect gains strength over time. This increasing effect seems plausible since the implementation of European directives may be done in consequent packages. Finally, in the appendix, I conduct an additional placebo test in a sample where the treatment group is now post-communist countries before 2004. Since these countries did not belong to the EU before 2004, the treatment effect should not be significant. The empirical exercises confirm this expectation.

3.6.2 Aligned Domestic Interests and Market Integration

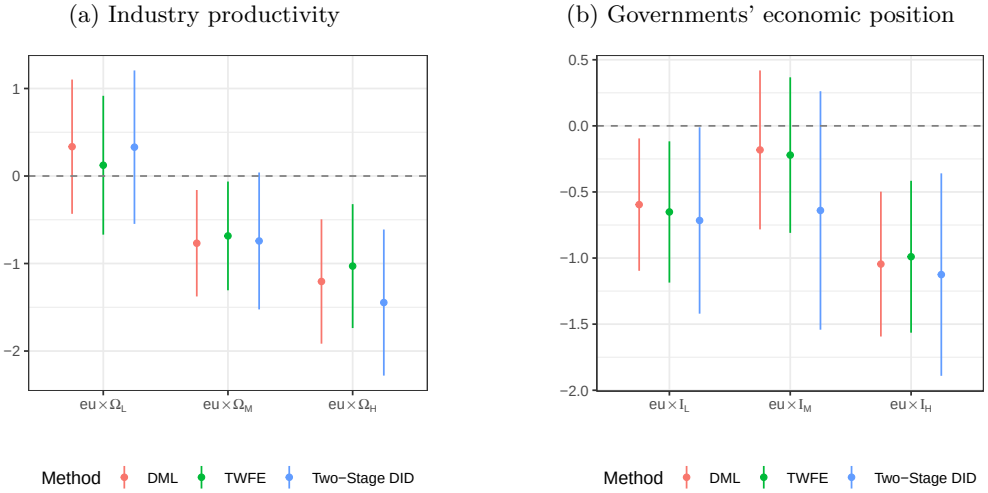
In this section, I test the second prediction, which claims that aligned domestic should favor the Commission's ambitions. Thus, more economically liberal governments can serve the Commission's pro-market integration ambition, while highly productive firms

[20] I also test the null hypothesis that all pre-trends coefficients are equal to zero using Callaway and Sant'Anna (2021) methodology. The null is not rejected since I obtain a p-value of 0.1801.

should be less interested in lobbying for high domestic barriers.

To test the abovementioned relations, I define an interaction of the treatment variable in (3.15) with two different sets of indicators. The first set denotes the tertiles of the regression sample (log) productivity distribution $\Omega_{v_{ict}}$ where $v \in \{L, M, H\}$, with L, M, and H stands for low, medium, high, respectively. Similarly, $I_{v_{ict}}$ where $v \in \{L, M, H\}$, denotes the tertiles of the executive's degree of economic liberalism. Thus, this specification allows me to investigate how the effect of European directives varies with the (average) productivity of national champions and the economic positioning of governments.

Figure 3.2: Interaction effects of European directives on domestic restrictions



Note: The figure reports the results of running model (3.15) adding the full interactions $eu \times \Omega_v$ (panel a) and $eu \times I_v$ (panel b). Coefficients are estimated using the TWFE, Gardner's (2022), and double debiased machine learning (LASSO) specifications. Controls include the log average productivity of the largest 10% firms by revenues, the log CLI, the log of economic ideology, the log of the government's cabinet duration, the log of the government's HHI, the log of industry weight, the log average real unit variable costs of the top 10% largest firm by revenues. 95% confidence intervals are shown.

Figure 3.2 reports the results using the two-way fixed effects, two-stage DID, and the double machine learning specification using LASSO. However, I do not use Callaway and Sant' Anna (2021) since this technique is less suitable for estimating multiple treatment coefficients simultaneously. In the first panel, it is possible to appreciate how the effect of European directives increases with the productivity of the national champions. Therefore, in line with the aligned interest hypothesis, productive enterprises serve the

Commission's market integration goals as they do not oppose these reforms. Concerning the role of the government's economic ideology, the effect of European directives is not monotonically decreasing with the degree of economic liberalism of the executive. However, the European directives decrease restrictions the most in countries with more economically liberal governments. Thus, we can also interpret this result in line with the aligned interest hypothesis.

3.6.3 EU-Wide Restrictions & Firms' Profits

Proposition 2 states productive firms will lobby their governments to decrease EU-wide restrictions since these diminish their profits. For this reason, highly productive firms can be functional to the realization of the Commission's pro-competition ambitions. As stated previously, because of data availability, the analysis will test this proposition only partly by checking whether the profits of particularly efficient firms diminish as EU-wide barriers increase, without checking whether these firms lobby their governments to decrease the latter. To this end, I run the following regression at the firm-level:[21]

$$\pi_{jict} = \sum_{v} \beta_v \bar{R}_{it} \times \Omega_{v_{jict}} + \sum_{v} \theta_v \Omega_{v_{jict}} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{jcit}. \tag{3.16}$$

The subscript j denotes firms, α_j indicates firm fixed effects and X represents a vector of controls.[22] Economic profits (π) are operationalized using the ratio between value-added[23] and revenues and EU-wide restrictions $\bar{R}$ (i.e., R_{EU} in the model) is simply the industry average of the entry component of PMR taken across EU-14 countries. I consider the interaction between $\bar{R}$ and the tertiles of the regression sample (log) productivity distribution $\Omega_{v_{ict}}$ in line with the strategy adopted in the previous section. Therefore, the coefficients β_v captures the effects of the average EU-wide restrictions at various productivity levels.

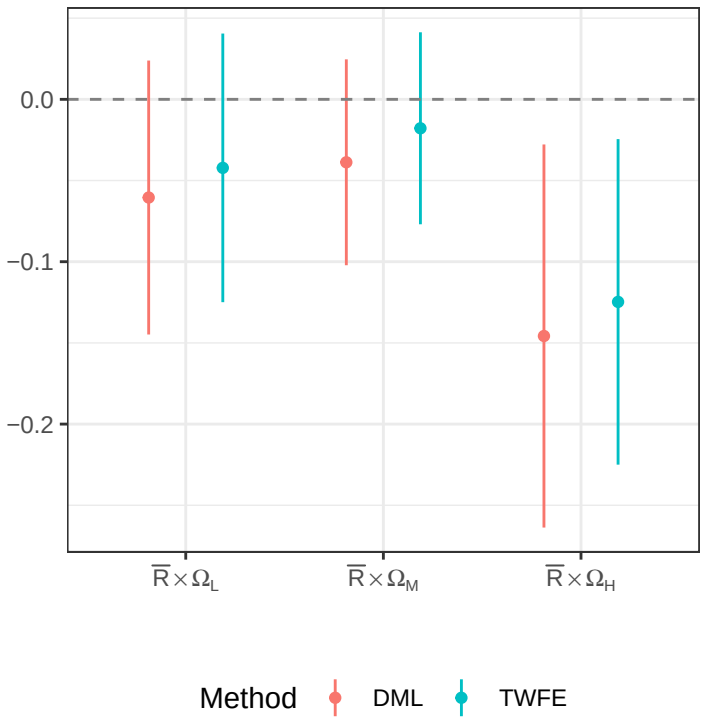
[21] As in the previous sections, I consider firms in the top 10% of the country-industry-year distribution and the 5% for robustness.

[22] The controls include the previously used log CLI and the log of government's economic position. Plus, firm-level controls such as the log of revenues, total factor productivity, revenues, and real unit variable costs. Finally, the specification also includes the dummy for pre-post European liberalization and the domestic level of restrictions.

[23] Since this variable can be negative, it is not expressed in logs.

Figure 3.3 shows the estimated value of these coefficients. The coefficient for low and medium-productivity firms is not significant, indicating that EU-wide restrictions have no particular effect on their profits. The reason for this result could be that since these firms are not particularly productive, they try to enter less foreign markets. On the contrary, high-productivity firms benefit from low EU-wide restrictions, as these barriers negatively affect their profits. This result seems in line with prediction 3, yet the relevance of this result must not be taken per se but in relation to the theoretical model. We can imagine productive firms as being a force supporting the Commission's pro-liberalization initiatives in line with the aligned interest hypothesis. However, as emphasized previously, a full test of proposition 2 would require showing that these firms effectively lobby their national governments during Council negotiations. Unfortunately, such a test would be hard to implement given the lack of relevant data.

Figure 3.3: Effect of average EU-wide restrictions on firms' profits at different levels of productivity



Note: The figure reports the results of running model (3.16) using the TWFE and double-debiased machine learning specification. The controls used include the log CLI, the log of economic ideology, log productivity, log revenues, log real unit variable costs, the domestic PMR entry component, and the EU liberalization dummy. Standard errors are clustered at the firm level. 95% confidence intervals are shown

3.7 Conclusions

The motivating question of the paper asked how it was possible to have such a radical transformation of European competition policy when there were apparently so many divergent political and industrial interests. The question has been answered by developing a model and applying it to the liberalization of state-owned industries. The main contribution of the analysis is showing that ambitious liberalization reforms rest upon the alignment of interests between the Commission, economically liberal governments, and national champions. More market-oriented governments serve the Commission's market integration goals by diminishing domestic barriers, while highly productive firms do not represent an obstacle as they need less protection from abroad. At the same time, the Commission, by decreasing restrictions through European directives, can serve the ambitions of domestic actors. Governments can use the Commission as a powerful external ally to obtain policy outcomes that they would not have obtained otherwise. At the same time, lower barriers favor the international ambitions of productive firms.

The importance of aligned interests departs from the Robinson Crusoe Commission of Gutierrez and Philippon (2023). The Commission is not acting in isolation from governments and industrial interests when implementing reforms but with them, as the support of these actors is crucial. In this respect, rather than an immaculate and independent benevolent dictator, the Commission is more Machiavellian. In fact, it is willing to make concessions to firms as long as these means serve its goal of more market integration.

Aligned interests, however, imply heterogeneous reform trajectories as domestic political, economic, and institutional factors continue to shape liberalization policy. This result is consistent with the different liberalization histories observed in Europe. Therefore, substantial cross-country heterogeneity remains underneath a legislative revolution at the EU level.

The empirical analysis has provided some evidence consistent with the importance of aligned interests for reforms, although the findings should be intended more as pointing

towards correlation rather than undisputable causal evidence. These results show that Commissions' directives produce a sizeable and significant decrease in domestic barriers to entry. Lower barriers, therefore, should align with the interests of more economically liberal governments and highly productive national champions. At the same time, the effect of these directives is stronger in countries with particularly productive firms and pro-market executives.

4. Beyond the Great Reversal: Superstars, Unions, and the Euro[1]

With Angelo Martelli

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, The Euro, Superstar Firms, Market power, Labor Market Institutions.

[1]This paper is under review at World Politics.

4.1 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*a*). Europe, on the contrary, is apparently immune from this phenomenon, according to Philippon (2019), who, in the Great Reversal, depicts this different European story. Philippon (2019) and Gutierrez and Philippon (2023) 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 is now higher in Europe than in the US, which for a long time has been considered the land of free and competitive markets.

However, the analysis of Philippon (2019) and Gutierrez and Philippon (2023) 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 2018). 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 often 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 (2023) thoroughly investigated the first dimension of market power, less attention has been devoted to the second.

Figure 4.1 highlights the joint importance of the Euro and labor markets for competition. 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 4.1a). Stable aggregate markups are consistent with the results of Christopolou and Vermeulen (2012), Bassanetti et al. (2010), Cavalleri et

al. (2019), Bighelli et al. (2023), and Gutierrez and Philippon (2023). 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 4.1b).

(a) Market power vs. markups in Europe

(b) Market power Eurozone vs. non-Eurozone

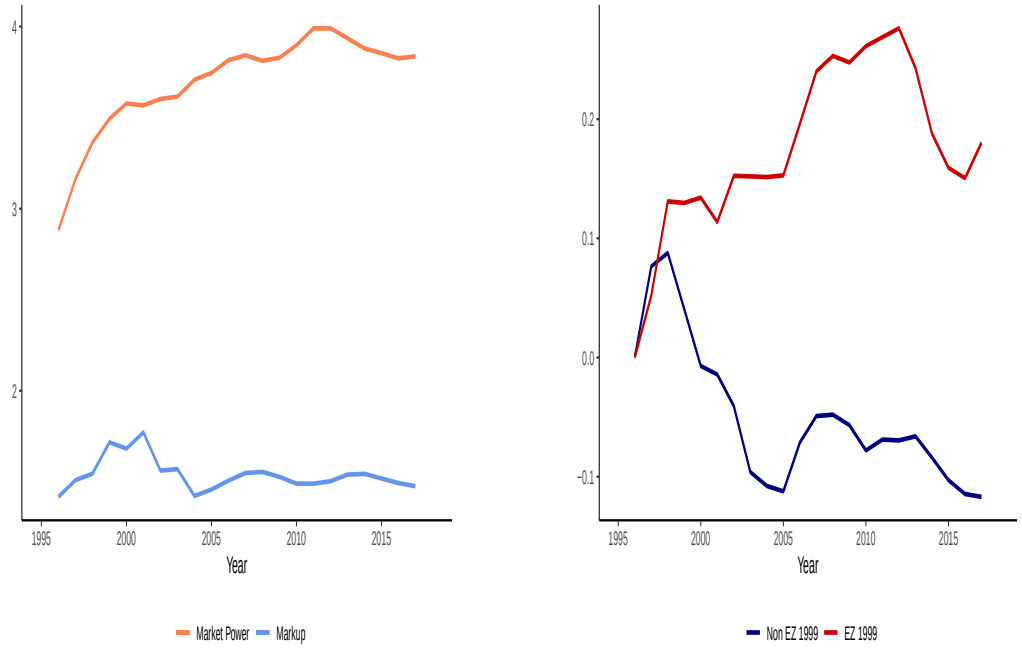


Figure 4.1: Market power and markups trends, three-year moving averages

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.

Figure 4.1 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*a*, Jager et al. 2022, 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. Nonetheless, this mechanism assumes an adversarial relationship between unions and firms. As

several authors have shown (Thelen 1993, Hall and Soskice 2001, Hancké and Johnston 2009, Hancké 2013*a*), 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 (2023), 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

find 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 4.2 discusses the works studying the effect of the Euro on market power. Section 4.3 introduces our conceptual framework and the predictions. Section 4.4 discusses data and variables, while section 4.5 the empirical strategy and results. Finally, section 4.6 concludes. Additionally, a separate appendix includes supplementary robustness checks.

4.2 The Euro and the Evolution of Competition in Europe

4.2.1 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 evolution of market power in Europe.

4.2.2 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 (2012) 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 (2018*a*) 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. (2023) 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.[2] 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. 2012, Melitz 2003). The Euro, by reducing transaction costs, decreases firms' total costs. However, if there is no proportional reduction in prices accompanying this cost variation, markups increase due to 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 from these studies.

[2]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).

4.3 Beyond the Great Reversal: A Story of European Superstar Firms

4.3.1 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.[3] 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.

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

[3] 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.

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.

4.3.2 The Euro and Superstar Firms

The literature discussed in section 4.2 often overlooks 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 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. 2019). 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. (2020) 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.*

4.3.3 Superstar Firms and Wage-Bargaining Institutions

So far, we have claimed that firms' market power may have increased, despite a rise in product market competition. But how can this happen? Section 4.3.1 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 expenditure share of labor costs. The term α_l can be interpreted as the firm's labor share of (gross) output.[4] 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 side of this story is often 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

[4] 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)

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 2022). 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 2010, 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. 2022). 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*a*). 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.

Industrial relations systems are not only important safeguards of wage solidarity in the knowledge economy (Hope and Martelli 2019) but are also central in determining the distributional consequences of trade, as documented by 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 weaker 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*b*), labor movements have attempted to influence the construction of a "social dimension" to economic integration. Coordinated wage bargaining systems might lead to, among other things, wage restraint as well as a more equitable distribution of the gains from trade (Hall and Soskice 2001, Iversen and Soskice 2015, Wren 2013, Wallerstein et al. 1997). 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 could 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 as an institution changes 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.*

4.4 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).[5] 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 material expenditures. Thus, we have obtained material expenditure by subtracting labor costs from the cost of goods sold to increase the dataset size.

However, this measure is not free of limitation. Firstly, Orbis data do not report firms' prices, and their omission can bias the results.[6] Nonetheless, 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

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

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

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 4.3.1 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 denoting more support for further European integration.[7] The ESS is perhaps the richest European cross-country survey containing individual-level variables on citizens' attitudes and political preferences. However, this richness in terms of questions asked and geographical and time coverage comes with the limitation that individuals are not observed over time.

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

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

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 4.1 reports the date of adoption and circulation of the Euro by nation.

Table 4.1: 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.[8] 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 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

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

include a peace clause.[9] 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 employed 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 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 proportion 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.

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

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.[10] 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.[11]

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. 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).

4.5 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 exit during the period of analysis, 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

[10] 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.

[11] Firm's output has been obtained by deflating sales using the GDP deflator.

makes it difficult to clearly identify a pre and post-period for non-Eurozone firms.

Table 4.2 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 4.2. 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 4.2: Summary statistics

Firm-level statistics								
	Eurozone				**Non-Eurozone**			
	N	**Mean**	**SD**	**Median**	**N**	**Mean**	**SD**	**Median**
Market Power	5,121,812	2.20	1.85	1.66	4,574,001	3.56	3.28	2.36
Markup	5,121,812	1.29	1.62	0.89	4,574,001	2.22	3.06	1.12
Markdown	5,121,812	1.07	1.77	0.56	4,574,001	1.23	2.17	0.54
Total Factor Productivity	5,121,812	6.92	1.47	6.71	4,574,001	6.29	1.72	6.41
Revenues (€ Millions)	5,121,812	10.51	150.48	1.82	4,574,001	8.63	142.09	0.47
Unit Variable Cost (€)	5,121,812	0.72	74.06	0.63	4,574,001	0.74	91.06	0.62
Value-Added per Worker (€)	5,121,812	52,897.15	3,842,012.48	38,923.08	4,574,001	35,419.08	3,502,499.58	15,561.22
Labor Share	5,121,812	0.97	48.71	0.76	4,574,001	3,047.02	118 571.72	0.70
Capital-Labor Ratio (€)	5,121,812	76,556.16	2,110,415.34	20,914.55	4,574,001	57,889.33	1,592,086.36	8,666.67
Institutional and individual-level statistics								
	Eurozone				**Non-Eurozone**			
	N	**Mean**	**SD**	**Median**	**N**	**Mean**	**SD**	**Median**
Cooperation	178,380	0.628	0.187	0.6	88,668	0.497	0.22	0.6
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	0.5	59,048	0.513	0.27	0.5
Education Years	176,751	12.478	4.259	12	87,970	12.568	3.666	12
Age	177,868	49.501	17.397	49	88,394	49.846	17.524	50
Household Income	134,590	5.581	2.614	6	69,627	5.552	2.85	5
Left-Right Scale	156,469	4.97	2.122	5	78,386	5.263	2.294	5
Employer Size	173,318	2.453	1.371	2	84,769	2.687	1.375	3

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.

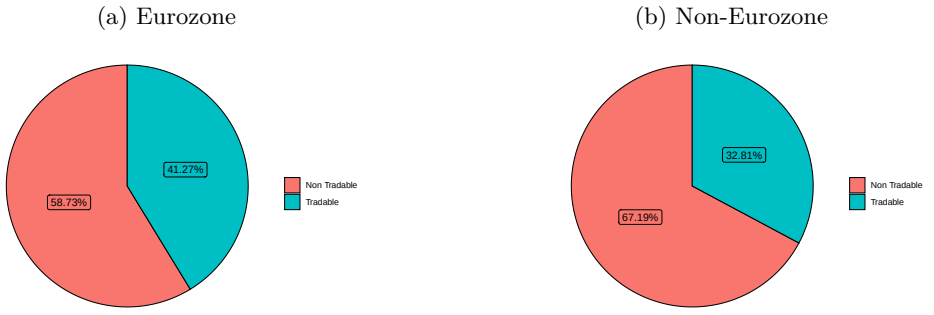


Figure 4.2: Firm revenue distribution in tradable vs. non-tradable industries

4.5.1 The Euro and Market Power: Baseline Results

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

$$\log mp_{jict} = \beta euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it} \tag{4.1}$$

where the subscripts j, i, c, and t, denote firms, NACE 2-digit 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.[12] Clustering standard errors at the country-industry level is justified because the treatment is assigned at the country level and can have a different impact across industries. In addition to the above standard two-way fixed effect (TWFE) specification, we run (4.1) 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 reduce potential imbalances.[13] 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

[12] 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.

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

enough are discarded. In addition to the entire sample, we run 1) in two sub-samples: Western and Central and 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.

Table 4.3: The Euro effect on market power

	TWFE	IPW	Matched Sample
	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 4.3 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 4.3, 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 (2008), we check for parallel trends by running the following IPW regression:

$$\log mp_{jict} = \sum_{v=-5, v\neq 0}^{19} \beta_v D_v \times euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it} \tag{4.2}$$

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 4.3.

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.

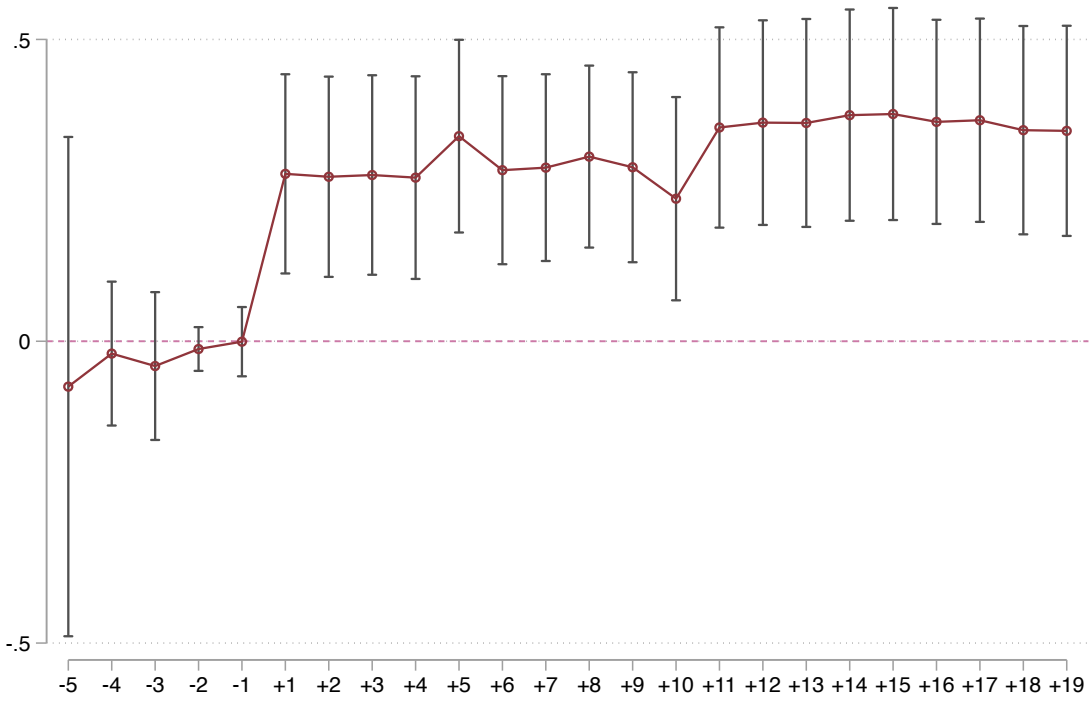


Figure 4.3: Parallel trends

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

4.5.2 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 (4.1) 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 4.4: The Euro effect on market power in tradable industries

	TWFE	IPW	Matching
	Full Sample		
$euro \times T$	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		
$euro \times T$	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		
$euro \times T$	-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 4.4 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 industries seems to support the superstar firm hypothesis, as increasing international pressure is one of the mechanisms that favor the emergence of these firms.

Although the interaction coefficient is non-significant in the Central and Eastern European countries sample, the results 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.

4.5.3 The Euro and Superstar Firms

The superior productivity of superstar firms would allow them to thrive in the more open 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:

$$\log mp_{jict} = \beta P^1 \times euro_{ct} + euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it}, \tag{4.3}$$

$$\log mp_{jict} = \beta M \times euro_{ct} + euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it} \tag{4.4}$$

The indicators P^1, and M are defined on the average pre-Euro productivity distribution of the Eurozone. The dummy P^1 of 1 if the firm belongs to the top 1% of the distribution, while M denotes the bottom half. Table 4.5 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 4.5: 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:

$$\log mp_{jict} = \sum_{v=1}^{10} \beta_v Q^v \times euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it} \tag{4.5}$$

where we interact euro with the decile of the pre-Euro productivity distribution and plot the estimated coefficient in figure 4.4. 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.

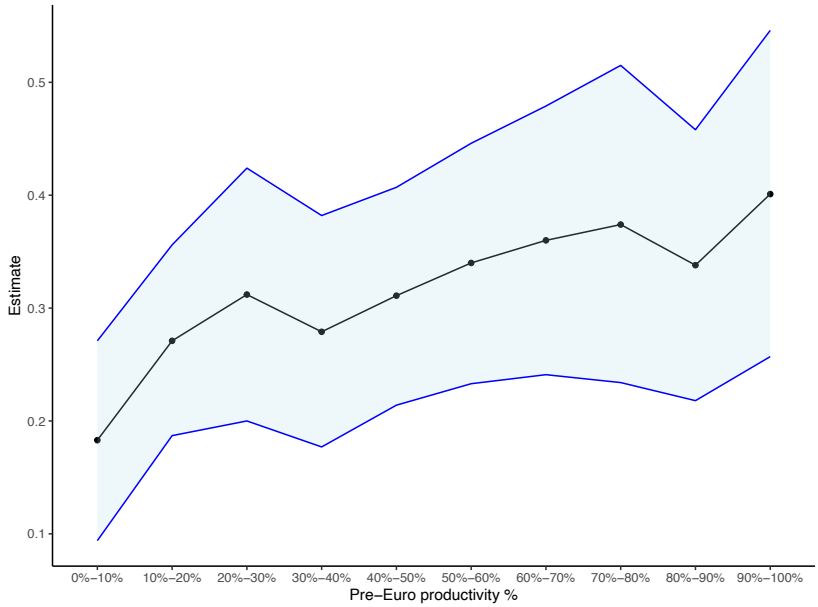


Figure 4.4: The Euro and superstar firms

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

4.5.4 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 (4.1) replacing the market power

index with the log of markup.

Table 4.6: The Euro and markups

	TWFE	IPW	Matched Sample
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 4.6, the Euro has a positive impact on product market competition via decreasing markups. This result aligns with the previously discussed literature investigating markups and with Gutierrez and Philippon (2023), and Philippon (2019), who show that product market competition has increased in Europe. However, how can we square these last findings with the increase in market power? Given the formula of section 4.3.1, the overall increase in market power can be explained by diminishing labor market competition that more than compensates for the decline in markups.

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.

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

In section 4.3. 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:

$$\log md_{jict} = \delta cooperation_{ct} + \lambda power_{ct} + \beta power_{ct} \times cooperation_{ct} + \gamma X_{jict} + \alpha + \tau_t + \epsilon_{it} \tag{4.6}$$

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 4.7: Unions and markdowns

	(1)	(2)	(3)	(4)	(5)	(6)
cooperation	3.418***	4.979***	4.485***	3.401***	4.904***	4.107***
	(0.323)	(0.533)	(0.587)	(0.307)	(0.542)	(0.621)
power	2.961***	4.542***	4.163***	2.925***	4.431***	3.809***
	(0.314)	(0.546)	(0.586)	(0.301)	(0.555)	(0.619)
cooperation × *power*	-4.634***	-6.726***	-6.129***	-4.561***	-6.560***	-5.639***
	(0.475)	(0.731)	(0.798)	(0.442)	(0.736)	(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	5,494,385	5,494,394
R-squared	0.862	0.336	0.297	0.864	0.339	0.311

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. We cannot use country or country-industry time effects as they will absorb the institutional variables.

Table 4.7 displays the results of running (4.6) 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 coefficients 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 4.5, we plot the marginal effect of unions' power at the different levels of the cooperation variable we find in our sample.

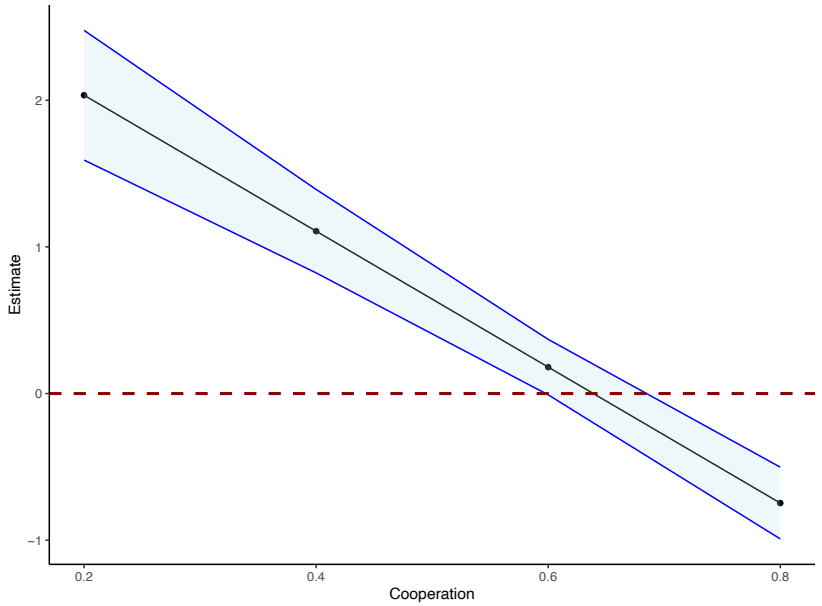


Figure 4.5: Marginal effect of union's power on log markdown

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

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.

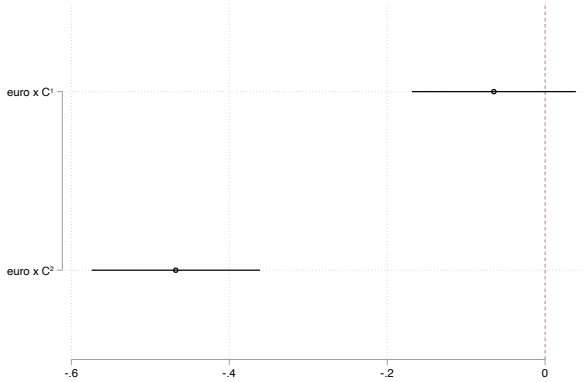
We investigate whether cooperation-enhancing institutions may have enhanced the

market power by decreasing markdowns following the Euro adoption. To do so, we run the following DID regression:

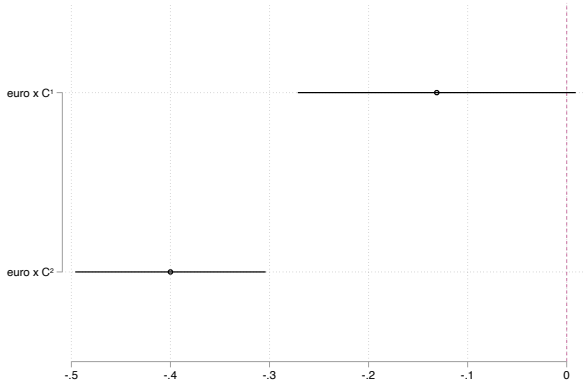
$$\log md_{jict} = \sum_{v=1}^{2} \beta_v C_c^v \times euro_{ct} + \gamma X_{jict} + \alpha_j + \tau_t + \epsilon_{it}, \tag{4.7}$$

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 4.6 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

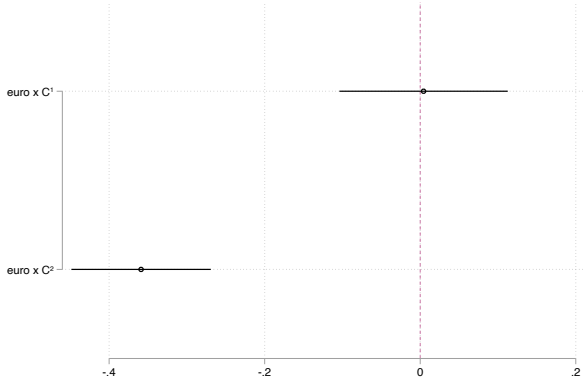


Figure 4.6: Cooperative institutions, the Euro, and markdowns

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

We conclude this section by investigating whether unions and cooperative institutions can impact the support for further European integration. We hypothesize that cooperative institutions can favor the expansion of firms through labor-capital pacts, increasing their competitiveness via wage restraint. In turn, the workers of these firms 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 more in favor 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 4.5. 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:

$$euftf_{jict} = \delta \text{cooperation}_{ct} + \lambda \text{power}_{ct} + \beta \text{power}_{ct} \times \text{cooperation}_{ct} + \gamma X_{jict} + \alpha + \tau_{iw} + \epsilon_{it}, \tag{4.8}$$

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, in line with 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 4.8: 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 × *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. All the specifications include controls. 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 4.8 reports these results running (4.8), differentiating between the full sam-

ple, 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 4.7, 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.

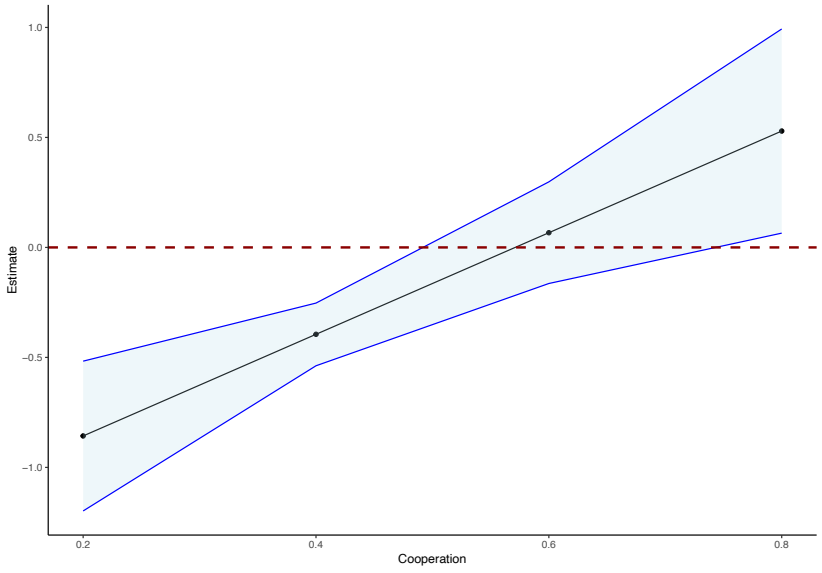


Figure 4.7: Marginal effect of union's power on support for further EU integration

Note: Bands denote 95% confidence intervals. Estimates have been obtained via the specification with country-industry and industry-wave effects.

These results provide an interesting complement to what was documented in Osgood (2017) for the US where a model of trade politics that emphasizes firm heterogeneity in export performance, product differentiation, and reciprocal liberalization explained the breakdown of industrial opposition to trade.

4.6 Conclusions

Our analysis has shown that the interaction between supranational (the Euro) and domestic (labor market) institutions is critical to understanding 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 shown 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 find 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 firms reach 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 (2023) 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 section 4.2, 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.

5. Conclusions

This thesis has tried to explain how the radical changes in the European economy since the late 1980s have been possible. Considerable domestic barriers, lax antitrust policies, and the discrimination of foreign firms, once the norm, have ceded the way for a series of policies resulting in a highly integrated Single Market. Although the benefit of competition seems widely acknowledged within the economic discipline, this thesis does not have any claims on whether this change has been good or bad in terms of welfare. The focus of attention instead has been the political-economic dynamics leading to this startling paradigm shift and its economic effects.

As I argued extensively in the introduction, this change is even more puzzling when we do not focus on the power of the Commission for an explanation. It would not be particularly startling if a competition-driven central agent with powers to overcome domestic resistance obtained such a policy change. It is, therefore, when we allow actors characterized by diverse and often rival interests to influence competition policy that this shift becomes surprising. The first paper presents empirical evidence supporting this claim as it highlights the crucial role of domestic reforms that anticipate European directives in enhancing the effectiveness of the latter. This empirical evidence, together with the sectoral studies discussed in the introduction (e.g., Héritier and Knill 2000, Bartle 2002, Humphreys and Padgett 2006) contrast with EU-centric scholarship and the almost exclusive primacy attributed to the Commission.

To make sense of this puzzle, I propose an alternative theoretical framework that builds on aligned interests and the interplay between supranational and domestic institutions. Aligned interests between the Commission, governments, and firms wishing to

expand in other European economies support mutually beneficial coalitions that promote policy change. In countries and industries where the interests of domestic actors were aligned with those of the Commission, we observe more ambitious domestic policies and a greater effectiveness of European directives in promoting competition. Aligned interests, while they can explain EU-wide policy change, also shed light on national heterogeneity. This heterogeneity is amplified by how domestic institutions interact with supranational ones, as this interaction shapes the reflection of different national interests into policies and, therefore, their content. As for aligned interests, the effect of domestic institutions is not merely limited to policies but has pronounced economic effects. Independent domestic competition authorities can prevent European directives from being altered ex-post by opposing interest groups. Similarly, institutions that favor cooperation between capital and labor have critical implications for the evolution of firms' market power and the resulting inter and intra-country distributional consequences.

I will start this concluding chapter by discussing the thesis's overarching themes (section 5.1) and how they contribute to the literature (section 5.2). In section 5.3, I present some insights that my thesis may generate for competition policy and policymakers, while section 5.4 discusses the limitations and future extensions of the present work. Finally, section 5.5 summarizes the main conclusions of this dissertation.

5.1 Competition through the Lens of Political Economy

The distinct insights provided by each paper within this dissertation have been thoroughly explored in the dedicated chapters. This section, instead, discusses the overarching themes that cut across the three studies with the goal of shedding light on the broader implications and contributions of the dissertation.

5.1.1 Domestic Institutional Variability & and Competition

A common trait of the three papers is the importance of domestic institutions in shaping different aspects of competition and contributing to diverse policy and economic outcomes. The importance of domestic institutional variability can be appreciated in three critical dimensions of competition that go from the draft of policies to the evolution of firms' strategies.

Firstly, domestic institutions influence competition policies by shaping actors' goals and bargaining strategies. This role of domestic institutions emerges in a multi-level fashion from the theoretical framework proposed by the second paper. In line with Putnam (1988), domestic competition institutions influence the content of European legislation by imposing constraints on the governments' negotiation strategies in international fora. At the domestic level, stronger competition institutions prevent opposing actors, such as liberalization-averse governments and low-productivity firms, from making national policy differ excessively from what was agreed upon during European negotiations. Overall, this national institutional variability, in turn, is directly reflected in the diversity of the domestic policy landscape.

Secondly, national institutions contribute to the variation in the long-term impact of competition policies. The first paper unveils the importance of the congruence between the novel institutional EU-wide architecture embodied in European directives and domestic institutions. The independence of domestic competition authorities and sectoral regulators is critical in preventing distortions of EU legislation during transposition and ex-post. These domestic institutions align with the Commission's objective of promoting a competitive Single Market. In support of this mechanism, the first paper shows that the varying strengths of domestic competition institutions contribute to explaining the diverse success in promoting competition of European directives at the country-industry level.

Thirdly, domestic institutions create distinct economic trajectories by changing firms' strategies. This aspect is evident in the third paper, where labor market insti-

tutions can contribute to the increasing power of superstar firms and explain the increase in monopsony power underneath improving product market competition. While this increasing power can be obtained at the expense of workers, using, for instance, the threat to relocate, the counterintuitive insight of this paper is that firms' dominance can derive from labor-capital pacts between firms and workers, where the latter accept wage restraint in exchange for future benefits. Again, diverse economic trends stem from the presence of cooperative institutions that favor the emergence of these pacts by facilitating long-term and stable interactions between firms and unions.

5.1.2 Openness & Competition

Another overarching theme emerging from the three papers concerns the relationship between economic openness and competition. The central question characterizing this relationship is whether opening up markets is enough to ensure that competition lasts in the long run. Or, more, in policy terms, whether trade and competition policies are substitutes.[1]

The second paper reveals that one of the key mechanisms leading to more ambitious competition policies is the willingness of productive firms to expand abroad. These firms see domestic economic barriers as a constraint limiting their profit opportunities, and thus, they concentrate their lobbying efforts on reducing EU-wide barriers.

Looking at the second paper, therefore, the productive firms' "voluntas" for openness can increase competition by promoting reforms that reduce economic barriers. However, a critical question is whether this more open economic environment per se is sufficient for competition to endure. The comparison between papers one and three suggests that it is not. Paper three shows that market power has increased over time in the tradable sectors - those that are naturally more exposed to international economic forces - due to a shift in the strategies of highly productive firms. These firms have begun to focus on the labor market margin to increase their power, as their price-setting capacity is limited by the

[1] These questions have generated a long-standing, still unsettled debate cutting across trade and public economics, which will be discussed in more detail in the next section.

increasing openness characterizing the European economy. What is more, this increase has followed the launch of the single currency, another institutional development that has fostered increasing openness and economic interdependence.

By contrast, the first paper has shown that, on average, (overall) market power has decreased in state-owned industries over time following the increasing openness created by liberalization reforms.[2] This decrease in market power has been more pronounced in countries where a domestic coalition of actors supported liberalization reforms and competition institutions were more established.

The different trends between the two groups of sectors can be explained by the fact that the liberalization directives of the nineties were followed by a series of regulatory reforms and the establishment of sectoral regulators that contributed to the preservation of competition over time. By contrast, these legislative developments have been less pronounced in the tradable industries. This comparison reveals that while increasing openness might encourage product market competition, it is still possible for firms to gain overall market power through labor market strategies. Thus, from this dissertation, it emerges that openness alone is inadequate for competition to endure in the long run.

5.1.3 Interests Representation in a Union of States

This dissertation has shed light on how diverse national interests compound in a common competition policy for a union of nation-states. Competition reforms result from a diverse coalition of actors comprising the Commission, national governments, and firms. This coalition is critical to promote policy change and the effective implementation of competition policy.

The second paper reveals how aligned interests favor the emergence of this coalition and its importance for liberalization directives. Productive firms that want to expand abroad are a powerful ally for the Commission as they pressure their governments during intergovernmental negotiations, allowing more ambitious reforms. Similarly, more liberal

[2]It is important to remark that tradable and the state-owned liberalized industries to which the third and first papers are referring to represent two non-overlapping sets. Tradable industries include agriculture, manufacturing, and mining (Besley et al. 2021), while state-owned liberalized industries include electricity, gas, postal services, railways, and telecommunications.

governments form a powerful constituency supporting the Commission's ambitions in the Council. In turn, the Commission's oversight prevents national policies from differing significantly from the agreed European standards. This oversight thus benefits productive enterprises as they do not see their opportunity to expand abroad excessively reduced by interest groups opposing liberalization. At the same time, the Commission can help more liberal governments promote their agenda when economic interest groups oppose liberalization.

The first paper builds on the theoretical apparatus proposed by the second to demonstrate the economic importance of aligned interests. Aligned interests are reflected in the willingness of Member States to espouse the Commission's ambitions by drafting reforms that paved the way for EU directives and amplified their pro-competition effects. The aligned interest mechanism is further corroborated by showing that EU directives were more effective in decreasing market power in the telecom than in the electricity industry, in line with the several sector-specific studies indicating a greater convergence of interests towards liberalization between the Commission, government, and interest groups in the former sector (e.g., Levi-Faur 1999, Bartle 2002, Humphreys and Padgett 2006).

5.2 Contributions to the Literature

The previous section has presented the three main general insights for competition emerging from the dissertation as a whole: institutional variability, the role of economic openness, and interest representation. Here, I will discuss how these findings contribute to current debates in the literature.

5.2.1 The Rise of Market Power

Academics and policymakers are currently highly debating on one of the most defining economic phenomena of our time: the increasing market power of large corporations. This debate started with the seminal contributions of Autor et al. (2020), De Loecker et al. (2020), and Gutierrez and Philippon (2023) and it has also attracted the attention of

policymakers all over the world. President Biden, in fact, has accused powerful companies of being one of the causes of the current inflation.[3] According to these studies, the US economy is particularly affected by the rise in market power. However, the deterioration of competition in the US came as a surprise to the eyes of many since, until the thousands, this country was considered the archetype of a competitive economy (Alesina and Giavazzi 2008).

This literature identifies several explanatory factors behind the increasing market power of US firms. American firms are continuously exposed to a world economy that is increasingly fiercely competitive, and, consequently, only a handful of highly productive firms can survive the global competition game (Arkolaikis 2019, Autor et al. 2020). These firms need to innovate constantly to keep up with competitors, and thus, being on the technological frontier is prerogative (Tambe 2020). In this view, therefore, the market power of these "superstar firms" is something earned: it is the reward for those able to innovate and win the global competition game. For this reason, the decline in competition in the US is not a malady to be cured, but it is, instead, the natural consequence of a highly innovative and open economy. Philippon (2019) departs from this account and argues that the increasingly lax antitrust enforcement in the US is responsible for the growing dominance of American firms. In other words, American firms have not become more productive but simply more able to capture competition authorities. However, for these authors, things have evolved radically differently on the other side of the Atlantic. According to Philippon (2019), the Commission has increasingly gained fame as an authority putting competition at the forefront, which, in contrast to American agencies, was able to resist the influence of businesses and also of Member States.

This dissertation contributes to this literature by investigating the evolution of market power through the lens of political economy. While this approach to look at the phenomenon is similar to Philippon (2019) and Gutierrez and Philippon (2019), the present contribution is different in several respects. In contrast to Philippon (2019) and Gutierrez

[3] https://www.cnbc.com/2024/03/12/voters-blame-businesses-more-than-biden-for-sticky-inflation.html

and Philippon (2023), it is not the independence of the Commission that helps design more ambitious competition policies. Instead, the ability of this authority to forge a coalition between pro-market governments and businesses that seek expansion in the Single Market is the force pushing for more ambitious competition policies.

Another difference in this dissertation is the emphasis on the role of national institutions in the EU-wide competition system, a factor largely overlooked by Philippon (2019) and Gutierrez and Philippon (2023). Perhaps not surprisingly, strong national competition institutions allow for more ambitious and effective pro-competition policies that mitigate market power. However, more counterintuitively, this dissertation has shown that institutions can also amplify market power. This is the case of cooperative labor-market institutions that can allow competitive enhancing agreements between labor and capital.

Labor-market institutions, in particular, contribute to this literature by providing a European version of the usually US-centered studies on superstar firms (Autor et al. 2020, De Loecker et al. 2020, Tambe et al. 2020). The interaction between supranational and domestic labor-market institutions radically alters the superstars' strategies to build market power in the highly open European economic environment. In this respect, the thesis offers a novel institutional perspective to look at the phenomenon of superstar firms and adds up to the contributions of Arkolaikis (2019) and Autor et al. (2020) on the relationship between economic openness and market power.

Finally, the comparison of the first and second papers raises a sobering question about the evolution of competition and market power in Europe. When including the labor market, has there really been a Great Reversal? If we consider the policy side of the Great Reversal, the answer to this question is a definite yes. Since the late 1980s, Europe has undergone a series of reforms that drastically transformed competition policy. The answer is also positive when we focus on product market competition only, as the results of paper three reveal. Instead, the answer is more uncertain when considering a definition of competition that includes the labor market. The increase in overall competition is more

industry-dependent, with some sectors recording a decrease in overall market power (i.e., state-owned liberalized industries) and others an increase (i.e., tradable industries). Thus, this thesis contributes to the literature on market power in Europe with a reconsideration of the economic effects of Philippon's (2019) Great Reversal by inviting a more granular approach and a more extensive definition of competition.

5.2.2 Economic Openness and Competition Policy: Substitutes or Complements?

The relationship between economic openness and competition is still a hotly debated topic within the discipline. This debate is divided into two primary factions. The first posits that in the context of a significantly open economy, the implementation of competition policy is redundant. Conversely, the second faction advocates that competition policy acts as a necessary complement to trade openness, enhancing its benefits.

Blackhurst (1991) stands in favor of the former view and argues that economic openness creates the same disciplining effects on powerful incumbents of competition policy. Therefore, the author argues that the heavy bureaucratic apparatus required by competition policy is unnecessary once international economic forces have been unleashed by removing trade barriers. Melitz and Ottaviano (2008), in their groundbreaking contribution, provide rigorous theoretical substance to Blackhurst's (1991) claim. These authors show that reciprocal trade liberalization increases competition and welfare by expanding the variety of products available to consumers. Besley et al. (2021), in their empirical study, find that strengthening competition authorities decrease profit margins more in non-tradable than in tradable sectors. These authors justify their results by arguing that in tradable industries firms are already disciplined by international competition.

On the other hand, we find scholars positing that competition policy continues to be necessary in a highly open economy. According to Bartók and Miroudot (2008), trade liberalization and competition policy have important synergies. They argue that removing trade barriers may not necessarily impact competition when sunk costs and

network effects exist, which can prevent a level-playing field between foreign and domestic firms. Building on Dixit (1984), Büthe (2015) claims that trade happens predominantly between highly concentrated industries with an oligopolistic structure. This argument is indeed consistent with the result of the new New Trade theory (e.g., Melitz 2003, Tybout 2003, Melitz and Ottaviano 2008) showing that exports are usually concentrated in a handful of highly productive firms. According to Bond (2013), it is more difficult to identify cartels when firms have operations in multiple countries. Finally, Bradford and Chilton (2019) find a positive correlation between trade openness and the strictness of antitrust laws during the time period from 1950 to 2010.

This dissertation contributes to this debate by providing additional evidence supporting the claim that openness alone is not conducive to more competition. The third paper shows that market power has risen the most in the tradable sectors following the increasing trade integration resulting from the launch of the Euro. While it is true that the increasing openness has improved product market competition, the increase in labor market power has more than compensated for it. As discussed in the previous section, this result is consistent with those studies explaining the rise of superstar firms as the consequence of the increasingly competitive economic environment created by globalization.

Therefore, the third paper of the dissertation adds additional evidence to the view positing that economic openness is not a substitute for a strict competition policy. What is strange, however, is that the increase in market power affecting tradable industries happened in what antitrust experts consider the most strict competition regime (Hylton and Deng 2007, Alemani et al. 2013, Bradford and Chilton 2018). In other words, competition policy in Europe has definitely not been substituted by the increasing openness created via the Single Market and the Euro, but rather, it complemented it. How, then, is it possible to explain the rise of market power characterizing more open sectors? Anticipating the policy recommendation of section 5.3, the reason for this apparent paradox is that competition authorities mainly focus on product market competition, often overlooking

the market power dynamics that can originate in the labor market. It is not surprising in this light that the rise in market power, as evidenced in paper three, was largely undetected by European competition authorities. Therefore, the take of this dissertation is that competition policy surely represents a complement to economic openness, but the dimensions of competition considered relevant by authorities may need an important reconsideration.

5.2.3 The Politics of Competition in Europe

This dissertation also speaks to the literature on the politics of competition policy by showing how national interests are then reflected in reforms. The discussion here revolves around one of the most iconic debates characterizing several studies on the political economy of Europe: who are the key actors driving policy change: European or domestic authorities? On the one hand, we have what I call "EU-centric" studies in the introduction, which individuates the Commission as the primary actor. On the other hand, a different group of scholars looks at governments as the critical decision-makers in an atomistic way.

As I argued previously, the EU-centric literature is characterized by highly different approaches and individuates various mechanisms behind the Commission's centrality. For Gutierrez and Philippon (2023), delegation to the Commission is the risk-minimizing response in a competition system that can be captured by a single country. Wilks (2005), with a related rational-choice apparatus grounded on a principal-agent model, argues that the Commission escaped its agent status and acquired the "political property" rights over competition policy. Eising (2002) claims that national governments are not the rational-choice decision makers of Gutierrez and Philippon (2023) but agents with non-stable preferences which the Commission shaped to its advantage. Warlouzet (2016) argues that the Commission's centrality was not the result of deliberate actions but rather of unintended consequences and legislative path dependencies.

On the other hand, more comparative studies consider governments as the key ac-

tors. In this literature, governments use competition policy strategically and liberalize industries depending on the chances of firms to succeed abroad (e.g., Bulfone 2020, Clifton et al. 2006, Thatcher 2014). Some authors within this tradition still attribute significance to the role of governments, albeit in a more subdued capacity, viewing them as entities strategically responding to the evolution of the global and technological landscape (Jordana 2006, Levi-Faur 2003, 2004). However, their portrayal of European institutions remains somewhat minimalistic, positing that the trends towards liberalization would have occurred independently of the European Commission's efforts, because of the inevitable pressures of globalization and technological progress (Jordana 2006, Levi-Faur 2004).

The present dissertation enters into this debate by taking on a middle-ground position. On the one hand, similarly to EU-centric studies, it recognizes the importance of the Commission as an actor pushing for reforms. However, the Commission is not the independent benevolent dictator of Gutierrez and Philippon (2023) or the "coupist" of Wilks (2005) rather is more a coalition builder who is able to gather a sufficiently critical mass of interests around a policy. On the other hand, in accordance with the more comparative studies, the present account recognizes a great deal of importance to domestic politics, interests, and institutional variability. Nonetheless, this national variability is not considered atomistically but within the common ecosystem created by shared rules and institutions.

The other aspect of the dissertation distinguishing it from the studies cited in this section (except for Philippon 2019 and Gutierrez and Philippon 2023) is its capacity to address both the political and economic aspects of competition. Some of these authors have already mentioned the importance of compatible preferences (Hèritier 1997) or the Commission's role as a broker of interests (Thatcher 2001). Nonetheless, previous studies have often concentrated on individual sectors and solely considered the political aspects of competition policy without investigating its economic impact. I argue that including both dimensions is crucial as it is difficult to draw a line between political and economic

aspects when it comes to competition policy, especially in the EU context.

5.3 Policy Implications

Given the dissertation's focus on competition law, the analysis also has policy relevance. However, the insights of this thesis should be considered as simple "suggestions" that can inform policymaking rather than "lessons."

The first policy implication is that legislation promoting market openness should be accompanied by additional measures that ensure competition is safeguarded in the long term. This policy recommendation comes from comparing the liberalization of state-owned industries (paper one) and the evolution of market power in tradable sectors (paper two). In the first group of industries, the combination of domestic liberalization and European directives has contributed to decreasing market power. By contrast, in the second group, we observe that, on average, market power has increased in the Euro-Area because of superstar firms. The difference is that opening up markets was only the first step in state-owned industries. These reforms were complemented by regulations and independent regulators to ensure a level playing field between firms (Coen and Thatcher 2005). A level playing field was a necessary guarantee in industries that have been, for a long time, dominated by a powerful state-owned incumbent, which often continued to operate after liberalization. On the contrary, for tradable industries, it seems that policymakers thought that the international pressures were enough to preserve competition. Someone could look skeptically at the first policy implications by arguing that the Commission has been particularly active in recent years in merger enforcement. Enforcement decisions have grown by almost 64% over the period 1964-2004 (Carree et al. 2010: 106), and average fines have increased from €13 million in the mid-1980s to €310 million in the mid-2000s (Russo et al. 2010: 21). What else can we expect the Commission to do?

The answer to the above question leads to the second policy implication: competition policy should also start to consider the labor market. Currently, competition authorities are mainly focusing on static measures of product market competition based

on market shares and prices. My third paper shows that the rise of market power following the Euro came in the form of labor market power. By contrast, product market competition has improved after introducing the Euro. Apparently paradoxical, the results revealed in this paper are consistent with the implications of Tortarolo and Zarate (2018), for which we can observe a rise in market power also in highly opened markets. In this light, it is not surprising that this rise in market power was undetected by European competition authorities, given that their intense monitoring activity mainly focuses on the product market.

5.4 Limitations & Future Research

5.4.1 Limitations

While the thesis has made some contributions to our understanding of the political economy of competition, it also has limitations that need to be acknowledged.

The first limitation of the dissertation concerns the empirical dimension of the aligned interest mechanism. In this respect, the empirical analysis is grounded on a "revealed preferences" approach by showing policies, governments' ideological leaning, and business characteristics that are consistent with the aligned interests mechanism. The aligned interests of governments and firms, however, are never directly observed nor measured, for instance, through interviews or detailed case studies. In response to this legitimate critique, I claim that I have extensively relied on secondary literature investigating the interests of governments and businesses, and, in the case of governments, I have used statements from their parties' manifestos to infer their ideological leaning. Furthermore, since most of the policy studied refer to the late eighties and early nineties, it would be hard to compute direct measures of governments and businesses' positions on policies.

Another limitation concerns the definition of competition. While the measures adopted go beyond the product market, the focus is predominantly on static competition.

In its seminal contribution, Schumpeter (1942)[2013] strongly criticizes this definition of competition because it deals with a market in which goods and services are fixed. In other words, no innovation is allowed. The Austrian economist argues that competition is an inherently dynamical "disequilibrium" process operating via the discovery of new products and services. In this dynamic setting, consumers' welfare increases as firms innovate to expand their product range and improve quality. Firms invest significant time and resources to innovate with the ultimate goal of achieving a monopolistic position and increasing their profits. However, this pursuit of monopolistic power creates a fundamental tension between dynamic and static competition. On the one hand, innovation is a powerful driver of dynamic competition; on the other hand, it also creates the potential for monopolies to emerge, thus stifling static competition. While I acknowledge the importance of innovation and the tradeoff it creates concerning competition, the focus on static competition can be partially justified by the starting point of this investigation: the revolution in European competition policy. Although innovation is acknowledged as important, authorities tend to focus on static competition, which involves evaluating cases based on market shares and prices rather than the potential for innovation (Teece 2011, Rooney et al. 2023).

Another limitation of the framework is that competition policy and its effects have been analyzed only from an intra-EU perspective while not considering the impact on the economic relationship with extra-EU countries. Among Europe's main economic rivals, there is undoubtedly China. The alert of European policymakers started increasingly sharply with the massive increase of Chinese foreign direct investments during the 2008 financial crisis (Meunier 2019). China, however, plays with highly different competition rules. State aid to promote the emergence of gargantuan Chinese firms is, in fact, a distinctive trait of China's industrial policy (Meunier and Mickus 2020). State aid, on the contrary, is severely limited by European competition law to preserve a level playing field between countries and firms. Extra-EU rivals are, therefore, a factor that can definitely affect the strategic considerations of European policymakers when drafting competition

policy. Some authors have already started talking about a paradigm change in the wake of the COVID-19 Crisis where the Commission has become more tolerant, if not a proponent, of state aid and pan-European industrial policy (Meunier and Mickus 2020, Di Carlo and Schmitz 2023). However, it might be too early to tell whether this represents a paradigm change or just a short-term policy response to the COVID-19 Crisis. A partial answer to this thesis's limitation is that the pro-competition policies started in the late eighties were motivated by the relative performance against extra-EU competitors. At that time, the common wisdom was that European firms were losing ground in the international market exactly because state protection made them too weak and unready to participate in the global competition game (Giersch 1985, Foreman-Peck 2006, Buch-Hansen and Wigger 2011).

Another possible limitation concerns the role of labor interest groups in the draft of competition policy. Labor unions, for instance, can be critical in shaping diverse transposition trajectories. In this respect, Benassi et al. (2016) show that unions were able to maintain their influence and extend collective bargaining agreements in Austria and Sweden following the liberalization of the telecommunication industries. By contrast, they argue that the interests of unions in these sectors were far less represented in Denmark's and Germany's national legislation. While not explicitly modeling the role of labor unions in the draft of competition policy, paper three reserves a critical role for these actors. Unions can mediate the rise of the market power of superstar firms. Whether the relationship between unions and superstar firms is adversarial depends also on the presence of cooperative institutions.

5.4.2 Future Research

The limitations highlighted in the previous subsection also offer interesting avenues to expand the present work.

The first area of expansion consists of investigating whether these competition policies have also contributed to making firms more innovative. According to Schumpeter

(1942)[2013], excessive product market competition may hinder new discoveries as the prospect of becoming monopolists drives entrepreneurs' innovation efforts. These Schumpeterian insights are formalized in the seminal contribution of Aghion and Howitt (1992) and several studies in the endogenous growth theory literature where excessive competition reduced the incentive to innovate. Arrow (1962), however, thinks differently from Schumpeter and argues that monopolies stifle innovation. In a nutshell, Arrow (1962) argues that monopolists are interested in the status quo and do not invest time and resources to promote disruptive innovations. In line with Arrow (1962), Blundell et al. (1995) and Nickell (1996) find evidence of a positive relationship between industry competition and innovation. Given this indeterminacy concerning the role of static competition, future research can investigate whether aligned interests and domestic institutions have also promoted distinct innovation trajectories by generating different competition paths.

The first extension examines whether the reforms that contributed to what Philippon (2019) calls the Great Reversal have had effects beyond promoting static competition. This extension, therefore, is also related to another limitation previously emphasized concerning the competitiveness of European firms vis-à-vis extra-EU rivals. Has the promotion of competition made European firms more competitive, in line with the initial beliefs of policymakers? Or does this radical change in competition policies make them more vulnerable to state-funded Chinese giants? This line of research also has considerable relevance for international political economy. Indeed, countries discuss competition principles in several international forums, such as the OECD and the WTO. Future research can explore, for instance, how the interests of Member States shape the way the Commission negotiates and how European competition laws affect other countries' legislation. On more than one occasion, EU competition law has been taken as a source of inspiration by other countries (Bradford et al. 2019) and in some cases by China as well (Wu 2012). Thus, exporting the European competition principle to extra-EU countries could represent a strategic move to ensure that firms play the same rules and that European ones are not disadvantaged.

Philippon (2021) argues that declining competition is partly responsible for the negative views of citizens towards capitalism. For Philippon (2021), as markets become more and more concentrated in the hands of few firms, their ability to charge larger prices increases. These larger prices redistribute incomes away from households to these firms. Moreover, there are also indirect effects through economic growth, as investments tend to be lower when monopoly power increases. Philippon (2021), however, does not show directly how this exposure to increasing market power affects citizens' political behavior. The third paper does something along those lines by showing that in countries where cooperative institutions induce a fairer distribution of gains between superstars and workers, the support for further European integration is more significant. However, market power can have far more extended consequences on citizens' political attitudes that go beyond their support for more or less economic openness. Thus, future research is needed.

5.5 Concluding Remarks

The revolution of competition policy that started in the late eighties has shaken the EU's economic architecture by making national economies increasingly more integrated into the European Single Market. This dissertation has tried to make sense of this monumental change by investigating its politics and the resulting economic effects. In that, the thesis has reframed Philippon's (2019) Great Reversal as the result of aligned interests rather than the sole initiatives of a pro-competition Commission. The thesis also differs from the more EU-centric account by emphasizing the importance of the interplay between supranational and domestic institutions in creating inherently national competition trajectories. Therefore, the dissertation strikes a balance between the more EU-centric account and the insights of comparative political economists by proving a framework in which the importance of the Commission is balanced by the diverse national interests. As a result, the theory proposed can simultaneously account for the policies leading to the Great Reversal and heterogenous implementation and effects in equilibrium.

The thesis has also led to a reconsideration of the economic implications of the Great Reversal. The increase in competition claimed by Philippon (2019) has taken mostly the form of product market competition. When we include monopsony in the definition of market power, the results become more mixed. Overall, market power has decreased in liberalized state-owned sectors, but it has increased in tradable industries. This contrast reveals the crux of competition. Policies that open up markets and are originally meant to promote competition can endogenously generate opposite effects in the long run. This result, however, does not point towards the lack of activism of the Commission as an enforcer of competition. In fact, the Commission has been particularly active in sanctioning cartels and merger cases. Yet, it invites policymakers to design policies and enforce them, taking into account labor market dynamics.

A. Appendix Paper One

A.1 Market Power Estimation

Both the theory and estimation part of this section follow entirely De Loecker and Warzinsky's (2012) and Tortarolo and Zarate's (2018) without adding any novel theoretical nor empirical contribution.

A.1.1 Theory

In each period t, firms minimize their cost function subject to an output constraint:

$$C_{it} = P_{it}^{V} V^{it} + r_{it} K_{it} + F_{it} \tag{A.1.1}$$

$$\bar{Q}it = Q(\Omega_{it}, V_{it}, K_{it}) \tag{A.1.2}$$

Here, $V = (V^1, ..., V^N)$ represents the set of variable inputs for production (e.g., labor, intermediate inputs, materials, etc.), K_{it} is the capital stock, and Ω_{it} is the firm-specific Hicks-neutral productivity. $P_{it}^{V} = (P^1, ..., P^N)$ is the price vector for variable inputs, where $P_{it}^{j} \in P_{it}^{V}$ denotes the price of variable input j. The term r_{it} represents the user cost of capital, and F_{it} is the fixed cost. This approach assumes that variable inputs can adjust without friction over a single period (i.e., a year), while capital is subject to adjustment costs and other frictions.

The associated Lagrangian for this problem is:

$$L(V_{it}, K_{it}, \Lambda_{it}) = F_{it} + P_{it}^{V} V_{it} + r_{it} K_{it} - \lambda_{it}(\bar{Q} - Q_{it}(\cdot)) \tag{A.1.3}$$

Here, λ is the Lagrange multiplier, and $\bar{Q}$ is a scalar indicating the target production level. The first-order condition for a generic variable input $V_{it}^j \in V_{it}$ is:

$$\frac{\partial L(.)}{\partial V_{it}^j} = 0 \Rightarrow P_{it}^j = \lambda_{it} \frac{\partial Q(.)}{\partial V_{it}^j} \tag{A.1.4}$$

By multiplying and dividing by $\frac{V_{it}^j}{Q_{it}}$, we obtain the elasticity of output with respect to the generic variable input V_{it}^j:

$$\theta_{it}^j \equiv \frac{\partial Q(.)}{\partial V_{it}^j} \frac{V_{it}^j}{Q_{it}} = \frac{P_{it}^j}{\lambda_{it}} \frac{V_{it}^j}{Q_{it}} \tag{A.1.5}$$

The Lagrange multiplier represents how the minimum cost changes if we marginally vary output. In other words, it is simply the marginal cost. Thus, $mp_{it} = \frac{P_{it}}{\lambda_{it}}$, where P_{it} is the price charged by the firm. By substituting this expression into (A.1.5), we get:

$$mp_{it} = \theta_{it}^j \frac{P_{it} Q_{it}}{P_{it}^j V_{it}^j} \tag{A.1.6}$$

It is important to note that the term $\frac{P_{it} Q_{it}}{P_{it}^j V_{it}^j}$ is simply the inverse of the share of input j's cost in total revenues, which we denote as α_{it}^j. Therefore, (A.1.6) becomes:

$$mp_{it} = \frac{\theta_{it}^j}{\alpha_{it}^j} \tag{A.1.7}$$

Expression (A.1.7) implies that it is sufficient to focus on a single variable input to estimate market power. Following Tortarolo and Zarate (2018), using labor as the variable input allows for obtaining a comprehensive indicator of market power that accounts for both product and labor market power. Finally, the cost-share α_{it}^j can be easily derived from balance sheet data, while estimating θ_{it}^V requires the estimation of an industry production function.

A.1.2 Estimation Procedure

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

$$y_{it} = \beta_0 + \beta_l l_{it} + \beta_m m_{it} + \beta_k k_{it} + \omega_{it} + \epsilon_{it}, \tag{A.1.8}$$

In this equation, l represents labor, m stands for materials, and k denotes capital. The term ω_{it} represents the firm's productivity, which remains unobserved to the researcher but is known by the firm. To derive the variables y, l, m, and k, I have adjusted operating revenues, employee costs, material costs, and tangible fixed assets using the OECD GDP deflator and subsequently applied a logarithmic transformation.

The production function is defined at the NACE 2-digit industry level using five-year windows, allowing for variations in elasticities over time. All industries are considered apart from public sector administration (84) and extraterritorial activities (99).

A critical assumption in this framework is that the demand for the generic variable input is a function of the state variable (capital), productivity, and other market factors denoted as $\mathbf{z_{it}}$. As De Loecker and Warzynski (2012), this includes year indicators. I have used m_{it} (v_{it} for the specified countries) following this equation:

$$m_{it} = m(\omega_{it}, k_{it}, \mathbf{z_{it}}). \tag{A.1.9}$$

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

$$\omega_{it} = h(m_{it}, k_{it}, \mathbf{z_{it}}). \tag{A.1.10}$$

This approach is known as the "control function" technique, which enables me to obtain a proxy for ω_{it}. Ignoring productivity could lead to biased estimates due to the correlation it introduces between the regressors and the error term. The procedure involves two stages.

First Stage

Define the function ϕ as follows:

$$\phi_{it}(l_{it}, m_{it}, k_{it}, \mathbf{z_{it}}) = \beta_0 + \beta_l l_{it} + \beta_m m_{it} + \beta_k k_{it} + h(m_{it}, k_{it}, \mathbf{z_{it}}). \tag{A.1.11}$$

Substitute (A.1.11) into (A.1.8) to obtain:

$$y_{it} = \phi_{it}(v_{it}, k_{it}, \mathbf{z_{it}}) + \epsilon_{it}. \tag{A.1.12}$$

Then, regress y_{it} on a third-order polynomial expansion of $\phi_{it}(v_{it}, k_{it}, z_{it})$, similar to De Loecker and Warzynski (2012), and store $\hat{\epsilon}_{it}$ and $\hat{\phi}_{it}$.

Second Stage

Assume that productivity follows a Gauss-Markov process of order 1:

$$\omega_{it} = g(\omega_{it-1}) + \xi_{it}, \tag{A.1.13}$$

where the error term ξ_{it} is used to define the moment conditions:

$$E\left[(\xi_{it} + \epsilon_{it}) \begin{pmatrix} l_{it-1} \\ m_{it-1} \\ k_{it} \end{pmatrix}\right] = 0. \tag{A.1.14}$$

Now, it is possible to estimate the parameters of interest using a generalized method of moments estimation. Given the use of a log Cobb-Douglas function, the coefficient β_m represents the output elasticity to materials. In line with De Loecker and Warzisky (2012) and De Loecker et al. (2020), this methodology implicitly accounts for measurement errors in output and unobserved shocks to the production function, both combined in ϵ_{it}. Specifically:

$$y_{it} = \log(Q_{it}) + \epsilon_{it} \Rightarrow Y_{it} = Q_{it} e^{\epsilon_{it}}, \tag{A.1.15}$$

where Q_{it} and Y_{it} represent the real and observed output levels, respectively. This

enables the correction of observed revenues R_{it} using $\hat{\epsilon}$, i.e., $R_{it}^{corr} = \frac{R_{it}}{\hat{\epsilon}_i t}$.

With this correction, it becomes possible to retrieve market power:

$$mp_{it} = \theta^l \frac{R_{it}^{corr}}{labor\ costs_{it}}. \tag{A.1.16}$$

Finally, an estimate of firm-level productivity can be derived as follows:

$$\hat{\phi}_{it} - \hat{\beta}_0 - \hat{\beta}_l l_{it} - \hat{\beta}_m m_{it} - \hat{\beta}_k k_{it}. \tag{A.1.17}$$

A.2 Trends in Market Power

Figure A.2.1 presents the country average of the market power indicator computed for firms in liberalized industries. These trends reveal a significant degree of heterogeneity across countries. In nations such as the Netherlands, Portugal, Spain, Sweden, and the UK, we observe a decline in market power within liberalized industries over time. Conversely, in the remaining countries, the average market power in liberalized industries has increased.[1]

These trends are consistent with the heterogeneous reform paths highlighted in the literature. Countries where market power has decreased, such as the Netherlands and the UK, have been active promoters of liberalization reforms, both domestically and at the European level (Héritier 1997 and Clifton et al. 2006). In contrast, market power is on the rise in countries like France and Germany, where these reforms have often faced resistance (Pollak and Slominski 2011).

[1] It is worth noting that Italy follows a distinct pattern, where average market power initially decreases until 2003, after which it begins to rise again, eventually reaching values similar to those at the start of the period.

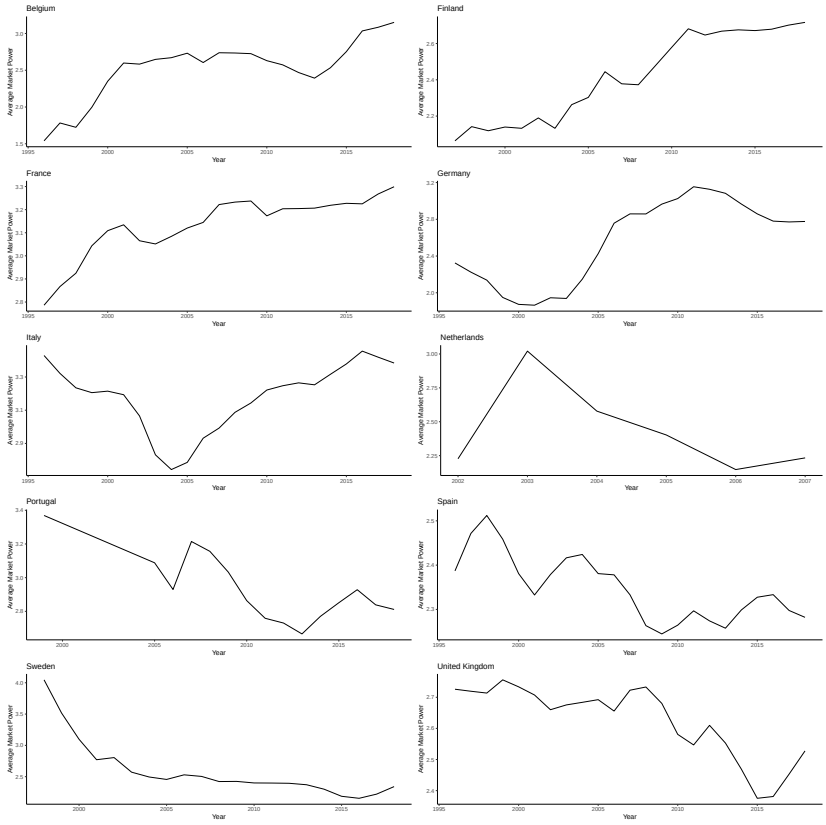


Figure A.2.1: Market power trends in liberalized industries by country, three-year moving average

A.3 Robustness Checks

In this section, I conduct a series of robustness checks to fortify the validity of the paper's central findings.

A.3.1 Different Production Function Estimations

The estimation of gross output production function could potentially be biased due to unobserved firm price and scalar unobservable. To mitigate these concerns, I re-estimate (1) using the market power indicator obtained via a gross output with industry-specific deflators and a value-added production function (table A.3.1). The sole distinction from the main analysis is that the *eu* coefficient is positive and significant in the IPW and industry-time trends models for the industry-specific deflators gross output production function, as well as in the industry-time trends specification for the value-added produc-

tion function. This difference, however, does not alter the thrust of the main results. Firstly, the positive and significant coefficient of eu is not a stable result across the six different specifications. Secondly, and most importantly, these results continue to show that the reduction in market power comes from the interaction between European directives and domestic reforms, while European legislation alone has no pro-competitive effect in countries where MSs did not reform national industries ex-ante. A possible interpretation of this result, which is in line with the analysis obtained in the main text, is that market power increased in the industries with no early domestic liberalization efforts because firms continue to enjoy state protection while they also can expand abroad. Such an explanation would be in line with Thatcher (2014), who claims that despite EU-wide liberalization, some governments have continued to provide extensive support to their national champions, contributing to increasing their dominant position internationally.

Table A.3.1: Effect of European and domestic reforms on (log) market power with industry-specific deflators and value-added production function

	Industry-specific deflators			Value-added production function		
	Baseline	IPW	Baseline plus industry-time trends	Baseline	IPW	Baseline plus industry-time trends
eu	0.084	0.092**	0.193***	0.005	0.017	0.012***
	(0.053)	(0.037)	(0.025)	(0.019)	(0.016)	(0.003)
$eu \times \Delta PMR$	-0.131***	-0.145***	-0.143***	-0.028***	-0.055***	-0.038***
	(0.007)	(0.007)	(0.021)	(0.002)	(0.009)	(0.004)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	279467	279467	279467	1506192	1506192	1506192

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (1) using a two-stage DID (Gardner 2022). The first and fourth columns report the baseline specification. The second and fifth columns use inverse probability weighting, and the third and sixth columns add industry-time trends to the baseline. The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

A.3.2 Alternative Trimming

In the main text, I initially trimmed the top and bottom 5% of data to mitigate the impact of outliers. Now, I re-run the analysis with trim levels of 4%, 3%, 2%, 1%, and without trimming.

Table A.3.2: Different Levels of Trimming

	0%	1%	2%	3%	4%
eu	−0.015	−0.026	−0.036	−0.041	−0.043
	(0.046)	(0.042)	(0.040)	(0.040)	(0.040)
$eu \times \Delta PMR$	−0.074***	−0.075***	−0.076***	−0.077***	−0.077***
	(0.007)	(0.008)	(0.008)	(0.008)	(0.008)
Controls	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes
Observations	2 175 722	2 097 186	1 999 428	1 934 914	1 876 208

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (1) using a two-stage DID (Gardner 2022). The columns in the tables show the results from no trimming to 4% trimming. The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

As evident from (A.3.2), the variable $eu \times \Delta PMR$ consistently exhibits a significant negative effect across all specifications.

A.3.3 Further Selection Bias and Parallel Trends Robustness Checks

In the main text, I tackled selection bias concerns by employing inverse probability weighting and using a control group consisting of firms in the same NACE digit category as liberalized firms. I also restricted the sample to liberalized firms only. In the following analysis, I use matching, a method that, like the previous approaches, aims to create a control group closely resembling the treatment group. Control units are matched with treated firms based on the similarity of their propensity scores, with a caliper of 0.25 applied. It is important to note that matching differs from inverse propensity score weighting in that units that are not sufficiently similar are discarded, leading to a significant reduction in the regression sample. This loss of observations is why inverse probability weighting is preferred and presented in the main text.

As shown in Table A.3.3, the matching estimation technique yields results very similar to the baseline estimation.

Table A.3.3: Effect of European and domestic reforms on (log) market power using matching

	(1)
eu	−0.056
	(0.038)
$eu \times \Delta PMR$	−0.073***
	(0.009)
Controls	Yes
Firm effects	Yes
Year effects	Yes
Observations	666 816

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (1) using a two-stage DID (Gardner 2022). The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

A potential source of bias is firms' "self-selection" into treatment and control groups. For instance, a firm might change industry to avoid liberalization. While it is less likely that large firms like EDF or EON would make such drastic changes to evade these reforms, I re-run (1) by excluding firms that changed their liberalization status over the years. Again, as shown by table $A.3.4$, the core results remain unchanged.

Table A.3.4: Effect of European and domestic reforms on (log) market power excluding moving firms

	(1)
eu	−0.045
	(0.040)
$eu \times \Delta PMR$	−0.077***
	(0.008)
Controls	Yes
Firm effects	Yes
Year effects	Yes
Observations	1 817 999

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (1) using a two-stage DID (Gardner 2022). The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

Table A.3.5 presents the results of the logit model used to estimate the probability of industry liberalization in the IPW specification. As mentioned in the main text, this model includes previous lags of market power. In addition to aiding in estimating more precise propensity scores, the inclusion of previous lags can represent an additional test for parallel trends. Violation of parallel trends occurs when prior trends in the outcome variable influence treatment assignment. The results in Table A.3.5 indicate that these lags are not statistically significant. These results suggest that pre-treatment trends in market power may not have played a significant role in the Commission's decision to liberalize an industry when other factors are considered. While this exercise does not definitely represent a "bulletproof" check, the results provide additional evidence supporting the existence of parallel trends.

Table A.3.5: Effect of (lagged) market power on the probability of liberalizing an industry

	(1)
$mp_{t_{-1}}$	-0.042
	(0.046)
$mp_{t_{-2}}$	-0.018
	(0.024)
$mp_{t_{-3}}$	0.024
	(0.016)
relative UVC	-4.798***
	(1.216)
relative productivity	-2.341*
	(1.420)
relative $\frac{EBITDA}{revenues}$	-0.341
	(0.394)
Controls	Yes
Firm effects	No
Year effects	Yes
Observations	1274

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. The results are obtained by running a logit model of the effect of lags of market power on the probability of liberalizing an industry. In addition to baseline controls (log of revenues, productivity, and capital intensity), the estimation also includes relative unit variable costs, relative productivity, and the relative ratio of EBITDA over revenues. Standard errors are clustered at the industry level.

A.3.4 Placebo Test

To enhance the robustness of the research design, I conduct a placebo test, which helps verify the credibility of the identification strategy by examining whether "fake" treatments have any effect. In this test, I reran the baseline specification using a sample consisting solely of Eastern European firms. This approach is grounded in the fact that Eastern European countries were not EU members at the time of these reforms. Consequently, the *eu* variable, defined based on the timing used in the main text, should not influence firm-level market power. Table A.3.6 presents the results of this placebo test. The first column omits the interaction terms $eu \times \Delta PMR$, while the second column includes the full baseline model. As shown in table A.3.6, the empirical strategy passes this placebo test since the coefficients of interest are non-significant in both specifications.

Table A.3.6: Effect of European and domestic reforms on (log) market power in Eastern Europe

	(1)	(2)
eu	0.141	0.210
	(0.327)	(0.263)
$eu \times \Delta PMR$		−0.117
		(0.127)
Controls	Yes	Yes
Firm effects	Yes	Yes
Year effects	Yes	Yes
Observations	40 070	40 070

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (1) using a two-stage DID (Gardner 2022). The controls used are the log of revenues, productivity, capital intensity, and three lags of log market power. Standard errors are clustered at the industry level.

A.3.5 Alternative Specifications

The main specification assumes a linear interaction effect between domestic and European reforms. However, this effect may not be linear. To investigate this, I adopt the following specification:

$$\log mp_{jict} = \sum_{v=1}^{3} \delta^v eu_{it} \times \Delta Q_t^v + \phi X_{jict} + \alpha_j + \tau_t + \epsilon_{it}, \tag{A.3.1}$$

In this specification, I interact the treatment variable with an indicator $\Delta PMRQ^v$, representing the tertile of the ΔPMR distribution, following the DID specification proposed by Prager and Schmitt (2021). As we can see in figure A.3.1, even in this specification, the effect of European legislation is amplified by domestic reforms. Notably, the effect in the first tertile is not significant, indicating that European directives had limited impact in reducing market power in countries that did not engage in previous reforms. However, although the effect for the third tertile is larger in absolute terms than for the second, the difference between the two groups is small. This result suggests that early domestic reforms exhibit a "decreasing marginal amplifying effect" for European directives. Finally, the results do not differ particularly from those obtained in the main text when applying

Callaway and Sant' Anna (2021) with a similar model specification.

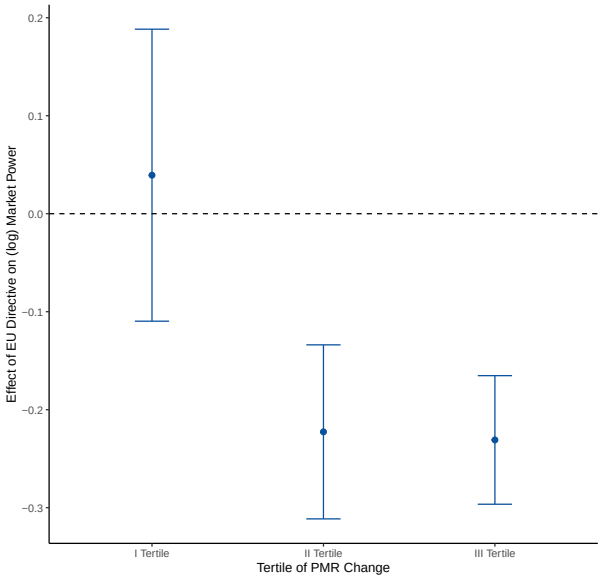


Figure A.3.1: Effect of EU directives on market power by tertile of the early domestic reforms index

Note: The figure reports the results of running model (C.1). 95% confidence intervals are shown.

A potential concern is that the evolution of market power depends on ex-ante competition conditions. In fact, particularly high initial market power in liberalized industries may have magnified the impact of these reforms. To address this issue, I control for this possibility by including three lags of mp as additional controls. However, firm fixed effects are not included since they can bias the analysis when lags of the outcome variable are included (Angrist and Pischke 2008). The inclusion of different lags does not alter the significance of $eu \times \Delta PMR$, although the magnitude of this coefficient has decreased (A.3.7). Moreover, as in section A.3.1, market power seems to have increased following EU directives in domestic industries that have not been reformed ex-ante by national governments. Again, for the same reasons provided in A.3.1 this result should not be of much concern.

Table A.3.7: Effect of European reforms and domestic competition institutions on (log) market power controlling for lags of *mp*

	(1)
eu	0.012**
	(0.005)
$eu \times \Delta PMR$	−0.016***
	(0.002)
Controls	Yes
Firm effects	No
Year effects	Yes
Observations	1 488 317

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (1) using a two-stage DID (Gardner 2022). The controls used are the log of revenues, productivity, capital intensity, and three lags of log market power. Standard errors are clustered at the industry level.

The main text examines the aligned interests mechanism by running model (2) with two interactions between the European directive variable and two dummies, one for telecommunications and one for the electricity industry. The reader may wonder why interactions with ΔPMR are not included in (2), such as $eu \times telecom \times \Delta PMR$ and $eu \times electricity \times \Delta PMR$. According to the literature, there has been a greater convergence of interests between governments, business groups, and the Commission on the liberalization of telecommunications compared to the electricity sector. As explained in section 3.2, the convergence of interests was a result of a combination of technological, political, and sociological factors (Sandholtz 1998; Levi-Faur 1999; Bartle 2002; Humphreys and Padgett 2006). However, the early reform index (ΔPMR) is likely to measure only a portion of these factors that contribute to the alignment of interests. In other words, many countries that did not make significant reforms before the European 1996 telecom directive were willing to embrace the Commission's liberalization of this industry (Sandholtz 1998). For this reason, the analysis in the main text does not let the effect of European directives depend on early reforms. Moreover, the specification used in the main text can serve as

a further robustness test for the analysis. Instead of using an index to determine aligned interests, the analysis relies on existing literature to form expectations about the impact of European directives in the two industries. These expectations are then confirmed by the greater pro-competition effect found in the telecom industry.

However, the specification with the aforementioned interactions can also provide interesting insights for analysis. This specification takes the following form:

$$\begin{aligned}\log mp_{jict} = {} & \gamma^t telecom_i \times eu_{it} + \beta^t telecom_i \times eu_{it} \times \Delta PMR \\ & + \gamma^e electricity_i \times eu_{it} + \beta^e electricity_i \times eu_{it} \times \Delta PMR \\ & + \phi X_{jict} + \alpha_j + \tau_t + \epsilon_{it}.\end{aligned} \tag{A.3.2}$$

The (marginal) effect of European directives in the telecom and electricity industries are $\gamma^t + \beta^t \Delta PMR$ and $\gamma^e + \beta^e \Delta PMR$, respectively, where the superscript t stands for telecom and e for electricity.

Table A.3.2 reports the results of this novel specification. As we can see, the effect of European directives in industries that have not been liberalized ex-ante is larger in telecommunications than in the electricity industry. While the reverse is true for industries with some degree of ex-ante liberalization.

Table A.3.8: Comparison of the effect of European and domestic reforms on (log) market in the electricity and telecommunication industries

	(1)
$eu \times telecom$	−0.072**
	(0.029)
$eu \times electricity$	−0.036
	(0.033)
$eu \times telecom \times \Delta PMR$	−0.073***
	(0.001)
$eu \times electricity \times \Delta PMR$	−0.096***
	(0.002)
Controls	Yes
Firm effects	Yes
Year effects	Yes
Observations	1 818 093

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (C.2) using a two-stage DID (Gardner 2022). The controls used are the log of revenues, productivity, capital intensity, and three lags of log market power. Standard errors are clustered at the industry level.

However, the overall effect of the eu in a given industry depends on both industries' γ and β coefficients, plus the sector-specific level of ΔPMR. To better see this, figure A.3.2 reports marginal effects of eu at the minimum, median, and maximum value of ΔPMR found in the electricity and telecommunications industries. As we can see, the marginal effect of eu is always larger in telecommunications (-0.172%-0.389%) than in the electricity industry (-0.036%-0.378%). Nonetheless, this difference is declining as ΔPMR grows. This result is not surprising, as extensive early reforms in both industries may have similarly favored the effectiveness of European directives. What is more interesting, however, is the effect in countries at low levels of ex-ante reforms. This result can be interpreted in favor of aligned interests and willingness to espouse the Commission's liberalization of the telecom industry even in countries that intervened little in this sector. For electricity, instead, as the literature indicates, there was far more resistance against the Commission's reforms. (Levi-Faur 1999). Therefore, countries that were reluctant to open up the electricity sector before European directives likely continued to be so even after. This reluctance resulted in some countries in an attempt to limit and reduce to the

minimal standards the transposition of European directives (Pollak and Slominski 2011).

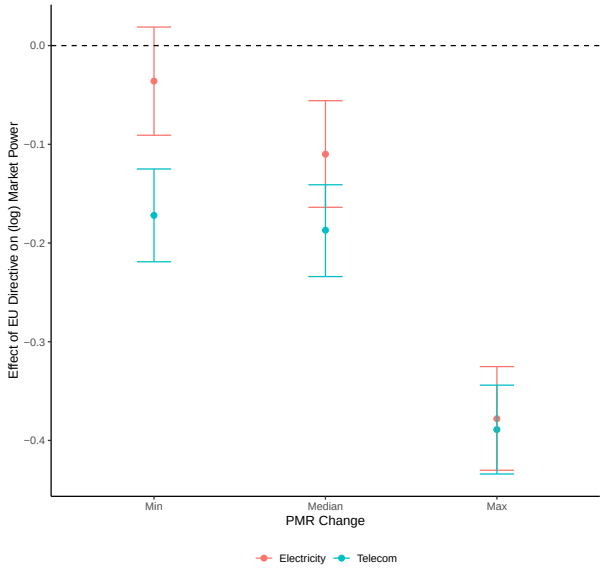


Figure A.3.2: Effect of EU directives on market power by value (minimum, median, max) of change of the early domestic reforms index

Note: The figure reports the results of running model (C.2). The minimum, median, and maximum values of ΔPMR are 1.38, 1.59, and 4.36 for telecommunications, and 0.00, 0.77, and 3.56 for electricity. 95% confidence intervals are shown.

The main analysis uses 1980 as the CLI index reference year to assess the significance of institutional complementarities. To demonstrate that the choice of the reference year does not impact the results, I also consider 1960 and 1970 as reference years. Table A.3.9 illustrates that the use of different reference years does not alter the core findings.

Table A.3.9: Effect of European reforms and domestic competition institutions on (log) market power with alternative reference years

	(1)	(2)
eu	−0.051	−0.060
	(0.048)	(0.046)
$eu \times \Delta CLI$	−0.567***	−0.312***
	(0.138)	(0.056)
Controls	Yes	Yes
Firm effects	Yes	Yes
Year effects	Yes	Yes
Observations	1 818 093	1 818 093

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (1) with the CLI index and using a two-stage DID (Gardner 2022). The first column uses the 1960 CLI, while the second uses the 1970 one. The controls used are the log of revenues, productivity, capital intensity, and three lags of log market power. Standard errors are clustered at the industry level. Standard errors are clustered at the industry level.

A.3.6 Alternative ways to control for heterogenous treatment effects

Gardner's methodology (2022) has been used in the main text to account for potential heterogeneous treatment effects. Another popular technique to address heterogeneity is the one developed by Callaway and Sant'Anna (2021). In essence, Callaway and Sant'Anna's (2021) estimator calculates the overall average treatment effect by taking a weighted average of treatment effects in various treated cohorts, which are identified by the treatment year. However, applying this methodology to the present case is challenging since it is not explicitly designed for situations where the treatment variable is interacted with a continuous variable. In the main text, I modified the main specification in order to apply Callaway and Sant' Anna (2021). Here, I implement a methodology in the spirit of Callaway and Sant'Anna (2021) as defined by Prager and Schmitt (2021). This technique involves running equation (1) separately for each treatment cohort. Then, I calculate the overall average treatment effect as a weighted average of these estimates, where the weight is determined by the ratio of the number of units in the treatment cohort to the

total treated units. As shown in Table A.3.10, coefficients obtained using this approach differ only slightly from the main specification.

Table A.3.10: Comparison of baseline results with cohort-by-cohort weighted estimates

	Main Specification	Cohort-by-Cohort Weighted Average	Difference
eu	-0.045	-0.037	-0.008
$eu \times \Delta PMR$	-0.077	-0.065	-0.012

A.3.7 Accounting for Policy Diffusion

After having shown the importance of privatization for competition, it is important to note that a crucial factor determining the adoption of such reforms is policy learning and diffusion (Obinger et al. 2016). The importance of policy diffusion is empirically investigated by studies like Fink (2011) and Schmitt (2011, 2014).

To control for policy diffusion, I implement an approach in the spirit of Obinger et al. (2016) and compute for each country the weighed PMR index of trading partners in the sample ($PMRP$). The weight is given by dividing the trade volume with a specific partner by the total country's trade volume. The value of the PMR index considered to construct the variable corresponds to the year of a European liberalization directive (not the transposition) following the timeline of table 1. As ΔPMR, $PMRP$ varies at the country-industry but not time level. Then, I run model (1) by adding the interaction between eu and $PMRP$.

As table A.3.11 shows, the interaction between domestic European and domestic reforms continues to be negative and strongly significant. It is important to specify, however, that a non-significant coefficient on $eu \times \Delta PMRP$ should not be interpreted against the importance of policy diffusion. In fact, several studies have shown the importance of diffusion for this type of reform. What the results tell, instead, is that the PMR of trading partners has no significant effect on the market power of domestic firms when European directives and the interaction with early domestic reforms are considered.

Table A.3.11: Effect of European and domestic reforms on (log) market power excluding moving firms

	(1)
eu	−0.062
	(0.048)
$eu \times \Delta PMR$	−0.081***
	(0.005)
$eu \times PMRP$	0.017
	(0.016)
Controls	Yes
Firm effects	Yes
Year effects	Yes
Observations	1 818 093

Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All columns show the results obtained by running model (1) using a two-stage DID (Gardner 2022). The controls used are the log of revenues, productivity, and capital intensity. Standard errors are clustered at the industry level.

B. Appendix Paper Two

B.1 Proofs

Proof lemma 1. By taking the first order condition of the domestic (j) and foreign firms' (i) profits with respect to q, I obtain the respective best responses:

$$\begin{cases} \tilde{q_j} & = P(Q) - \frac{1}{\omega_j} + \frac{R_{EU}}{\omega_j} \quad \text{(B.1.1)} \\ \tilde{q_i} & = P(Q) - \frac{1}{\omega_i} + \frac{R_{EU}}{\omega_i} \ \forall i \neq j \quad \text{(B.1.2)} \end{cases}$$

Then, it is possible to get an equilibrium expression for the price in terms of the parameters by summing the best responses across all firms:

$$P(Q) = \frac{\alpha + \sum_{i \neq j} \frac{1}{\omega_i} - \frac{1}{\omega_j} - \pi_A(\sum_{i \neq j} \frac{1}{\omega_i} - \frac{1}{\omega_j})}{N+1}.$$

By substituting $P(Q)$ into $\tilde{q_j}$, I obtain the equilibrium level of output and quantity for the domestic firm:

$$q_j^* = \frac{1}{N+1}[\alpha_j + (R_{EU} - 1)(\frac{N}{\omega_j} - \sum_{i \neq j} \frac{1}{\omega_i})]$$

and

$$\pi_j^*(q_j^*) = \frac{1}{(N+1)^2}[\alpha_j + (R_{EU} - 1)(\frac{N}{\omega_j} - \sum_{i \neq j} \frac{1}{\omega_i})]^2 + \frac{R_{D_j}}{\omega_j}$$

Finally, recall that α is large enough such that firms always find it optimal to produce in equilibrium. Formally, this condition requires that in all countries:

$$\alpha_j > -[(R_{EU} - 1)(\frac{N}{\omega_j} - \sum_{i \neq j} \frac{1}{\omega_i})] \quad \text{(B.1.3)}$$

□

Proof lemma 2. The government selects the optimal level of additional domestic restrictions by maximizing its utility. Thus, the associated first-order condition of the problem takes the form of:

$$2\lambda(\iota_{D_j} - R^*_{D_j}) + (1-\lambda)\frac{\partial t_{D_j}(R_{D_j})}{\partial R_{D_j}}\Big|_{R^*_{D_j}}$$

The definition of truthful transfers implies that associated variations in firms' transfers exactly offset changes in profits due to policy changes. Thus, I can rearrange (3.6) as:

$$\frac{\pi_j(R_{D_j}) - \pi_j(R^*_{D_j})}{R_{D_j} - R^*_{D_j}} = \frac{t_j(R_{D_j}) - t_j(R^*_{D_j})}{R_{D_j} - R^*_{D_j}}.$$

Then, by taking the limit on both sides for $R_{D_j} \to R^*_{D_j}$, we get $\frac{\partial t_{D_j}(R_{D_j})}{\partial R_{D_j}}\Big|_{R^*_{D_j}} = \frac{\partial \pi_{D_j}(R_{D_j})}{\partial R_{D_j}}\Big|_{R^*_{D_j}}$. Therefore, I can substitute $\frac{\partial t_{D_j}(R_{D_j})}{\partial R_{D_j}}\Big|_{R^*_{D_j}}$ for the derivative of equilibrium profits $\pi_j(q^*_j)$ evaluated at $R^*_{D_j}$ obtaining:[1]

$$R^*_{D_j} = \frac{1}{\omega_j}\frac{(1-\lambda_j)}{2\lambda_j} + \iota_{D_j}.$$

The equilibrium transfer $t^*_{D_j}(R_{D_j})$ is found by making the government indifferent between implementing $R^*_{D_j}$ and a level of domestic restrictions equal to its ideal point ι_{D_j} without receiving any contribution:

$$\begin{aligned}&\alpha_{G_j} - \lambda[(\iota_{D_j} - R^*_{D_j}) + (\iota_{EU_j} - R_{EU})]^2 + (1-\lambda)(t^*_{D_j}(R_{D_j}) + t_{EU_j}(R_{EU}))\\ &= \alpha_{G_j} - \lambda(\iota_{EU_j} - R_{EU})^2 + (1-\lambda)t_{EU_j}(R_{EU}).\end{aligned}$$

After substituting for $R^*_{D_j}$ we get:

$$t^*_{D_j} = \frac{1-\lambda_j}{4\lambda_j}(\frac{1}{\omega_j})^2.$$

[1] Note that the second derivative of the government's utility with respect to domestic restrictions is -2λ. Thus, given the assumption on *lambda*, the function is always strictly concave, ensuring $R^*_{D_j}$ is a global maximum.

When $\lambda_j \geq \frac{1}{1-2\iota_{D_j}\omega_j}$ and $\iota_{D_j} \leq 0$ the Commission does not intervene because overall domestic restrictions R_j will be less than what agreed upon on in the Council. However, when $\lambda_j \geq \frac{1}{1-2\iota_{D_j}\omega_j}$, the firm will intervene and obtain larger restrictions than what is prescribed by European legislation. Thus, the Commission makes concessions to the firm to the point that the profit of intervention $\pi_j(R^*_{D_j})$ equates to the profits when government implements its ideal policy $\pi_j(\iota_{D_j})$. So $t^*_{C_j}$ is such that:

$$t^*_{C_j} = \pi_j(R^*_{D_j}) - \pi_j(\iota_{D_j}).$$

Given the assumption on truthful contribution schedules, the above equation implies that these Concessions are equal to the difference in transfers $t_j(R^*_{D_j}) - t(\iota_{D_j})$. Since absent lobbying, the government would implement its ideal point; the only transfer compatible with such a level of domestic restrictions is 0. Thus, the Commission's transfer is:

$$t^*_{C_j} = t^*_{D_j} = \frac{1-\lambda_j}{4\lambda_j}(\frac{1}{\omega_j})^2.$$

In other words, the Commission simply compensates the firm for the loss of moving from $R^*_{D_j}$ to ι_{D_j}.

Now it is left to show the value of α_C for which the Commission always finds optimal to prevent the interest group's intervention when $\lambda_j \geq \frac{1}{1-2\iota_{D_j}\omega_j}$. To do so, we need to compare the Commission's utility when making concessions to the industry ($C(\iota_{D_j}, t^*_{C_j})$) with the case when the Commission stays out of the policy process ($C(\pi_A, R^*_{D_j})$. Then, I obtain α_C as the value that makes non-negative the difference between the former and the latter term:

$$\frac{(\alpha_C\,\omega - 1)\,(1-\lambda)}{2\,\lambda\,\omega^2} \geq 0$$

□

Proof of lemma 3. Note that whether or not the firm has interfered with the domestic policy process, the government's utility after substituting optimal policies and contributions

is:

$$\alpha_{G_j} - \lambda_j(\iota_{EU_j} - R_{EU})^2 + (1 - \lambda_j)t_{EU_j}(R_{EU})$$

This result can be easily checked by substituting into the government utility the solution of the domestic phase when the firm interferes ($R^*_{D_j}$ and $t^*_{D_j}(R_{D_j})$) and when the Commission prevents it (ι_{D_j} and $t_{D_j}(\iota_{D_j}) = 0$). In both cases, the same government's utility is obtained. This equality follows from the fact that the domestic equilibrium transfer equates the government's utility with and without the firm's interference. The meaning of α_{G_j} can be better understood by looking at the above equation. Note that when the Council agrees on restrictions R^*_{EU} coinciding with the ideal policy of government j, the executive's utility is $\alpha_{G_j} + (1-\lambda_j)t_{EU_j}(\iota_{EU_j})$. However, the only equilibrium transfer compatible with this policy is $t_{EU_j}(\iota_{EU_j})$ is zero. Although this result will be clearer later on, the intuition is quite simple: the firm does not need to lobby for a policy the government will seek to obtain without contributions.

Given the setting of the bargaining process, it is possible to apply a theorem proved by Laruelle and Valenciano (2008: 345). Such a theorem states that:

1. There exists a stationary subgame perfect equilibrium.

2. When r approaches 1, any equilibrium payoff vector converges to the one associated with the solution of the asymmetric Nash bargain with weights equal to $\mathbf{p}$.

Therefore, the theorem implies that the equilibrium level of R^*_{EU} can be found by solving an asymmetric Nash bargaining problem (Nash 1950). In problems of this type, the equilibrium policy is the one that maximizes the product of all governments' utilities compared to the disagreement outcome R_{EU_N}.

This problem takes the form of:

$$\max_{R^A \ s.t. \ G_j(R_{EU}) > G_j(R_{EU_N}) \forall j} \prod_j [G_j(R_{EU}) - G_j(R_{EU_N})]^{p_j}, \tag{B.1.4}$$

with $G_j(R_{EU_N}) = 0 \ \forall j$ by assumption. By taking the log and rearranging the terms,

problem (B.1.4) becomes:

$$\max_{R_{EU}\ s.t.\ G_j(R_{EU})>G_j(R_{EU_N})\forall j} \sum_j p_j \log(\alpha_{G_j}) - p_j \log(1 - \frac{-\lambda_j(\iota_{EU_j} - R_{EU})^2 + (1-\lambda_j)t_{EU_j}(R_{EU})}{\alpha_{G_j}})$$

The term α_{G_j} is assumed to be large, and in particular, it needs to be large relative to $\lambda_j(\iota_{EU_j} - R_{EU})^2 + (1-\lambda_j)t_{EU_j}(R_{EU})$. This assumption allows me to use the approximation $\log(1+x) \approx x$ for small x, and the problem becomes:

$$\max_{R_{EU}\ s.t.\ G_j(R_{EU})>G_j(R_{EU_N})\forall j} \sum_j p_j \log(\alpha_{G_j}) + p_j \frac{-\lambda_j(\iota_{EU_j} - R_{EU})^2 + (1-\lambda_j)t_{EU_j}(R_{EU})}{\alpha_{G_j}}).$$

Next, I can take the first-order condition of the problem obtaining:

$$\sum_j p_j \frac{2\lambda_j(\iota_{EU_j} - R^*_{EU}) + (1-\lambda_j)\frac{\partial t_{EU_j}(R_{EU})}{\partial R_{EU}}\Big|_{R^*_A}}{\alpha_{G_j}} = 0$$

Using the definition of truthful contributions, I can substitute $\frac{\partial t_{EU_j}(R_{EU})}{\partial R_{EU}}\Big|_{R^*_A}$ for $\frac{\partial \pi_j(R_{EU})}{\partial R_{EU}}\Big|_{R^*_A}$ in the above expression and obtain the Council equilibrium policy by rearranging the terms:

$$R^*_A = \frac{\sum_j \frac{p_j}{\alpha_{G_j}}[\lambda_j \iota_{EU_j} + \frac{(1-\lambda_j)(\alpha - C_j)C_j}{(N+1)^2}]}{\sum_j \frac{p_j}{\alpha_{G_j}}[\lambda_j - \frac{(1-\lambda_j)C^2}{(N+1)^2}]},$$

with $C_j = \frac{N}{\omega_j} - \sum_{i\neq j}\frac{1}{\omega_i}$. To find the equilibrium supranational contribution, let R_{EU_j} be the policy obtained when all firms apart j lobby their respective governments. Thus, using the same logic adopted to solve lemma 2, the equilibrium transfer makes indifferent the government between R^*_{EU} and R_{EU_j}:

$$t_{EU_j}(R^*_{EU}) = \max\ \frac{\lambda}{1-\lambda}[(\iota_{EU_j} - R^*_A)^2 - (\iota_{EU_j} - R_{EU_j})^2], 0\}.$$

Now it is easy to see why the supranational equilibrium transfer in the country j is zero when the agreed EU restrictions coincide with the government's j ideal point ι_{EU_j}. When

$R^*_{EU} = \iota_{EU_j}$ the transfer is:

$$t_{EU_j}(R^*_{EU}) = -\frac{\lambda}{1-\lambda}(\iota_{EU_j} - R_{EU_j})^2$$

which is always negative, so the optimal contribution is exactly 0.

□

Proof of proposition 2. Note that the derivative of equilibrium profits with respect to R_{EU} is:

$$\frac{2}{(N+1)^2}[\alpha_j + (R_{EU} - 1)(\frac{N}{\omega_j} - \sum_{i \neq j} \frac{1}{\omega_i})](\frac{N}{\omega_j} - \sum_{i \neq j} \frac{1}{\omega_i})$$

Given the condition (B.1.3) on α_j, the sign of the above derivative depends only on the sign of $\frac{N}{\omega_j} - \sum_{i \neq j} \frac{1}{\omega_i}$. This expression is negative whenever

$$\omega_j > \frac{N}{N-1}\bar{\omega}_j,$$

where the harmonic average of every competitor of firm j is defined as $\bar{\omega}_j = \frac{N-1}{\sum_{i \neq j} \frac{1}{\omega_i}}$. For any firm with higher productivity than the above threshold, profits decrease in R_{EU}. Therefore, given (3.6), for any $R_{EU} < R^*_A$ sufficiently close to R^*_A, $t_{EU_j}(R_{EU}) > t_{EU_j}(R^*_A)$. In other words, highly productive firms will lobby to bring down EU-level restrictions. □

B.2 Extensions

B.2.1 Domestic Restrictions that Affect Profits Proportionally to the Quantity Produced

In the main text, domestic restrictions enter the profit function disconnected from the quantity produced. In this section, I show the robustness of the main results to a profit specification that accounts for an effect of domestic restrictions proportional to the quantity produced. In particular, I will derive the shape of domestic restrictions and how these

depend on productivity and the government's economic ideology. Moreover, the section will show how domestic and EU-wide restrictions affect firms' profits.

Competition Phase

The profit of the domestic and foreign firms become:[2]

$$\begin{cases} \pi_j(q_i, q_j, R_{EU}, R_{D_j}) & = q_j(\alpha_j - Q + \frac{(R_{EU}+R_{D_j})}{\omega_j}) \quad \text{(B.2.1)} \\ \pi_i(q_i, q_j, R_{EU}, R_{D_j}) & = q_i(\alpha_j - Q + \frac{(R_{EU}-R_{D_j})}{\omega_i}) \quad \text{(B.2.2)} \end{cases}$$

Taking the first-order conditions for both firms, I obtain the domestic firm equilibrium profits:

$$\pi_j^*(q_j^*) = \frac{\left(\alpha_j + R_{D_j}\left(C_T + \frac{N-1}{\omega}\right) + C_j\, R_{\mathrm{EU}}\right)^2}{(N+1)^2}$$

Recall that $C_j = \frac{N}{\omega_j} - \sum_{i \neq j} \frac{1}{\omega_i}$ and $C_T = \sum_j \frac{1}{\omega_j}$, that is the sum of all firms marginal costs. Moreover, as done previously, I assume that α_j is such that the domestic firms always find it optimal to produce in equilibrium. That is,

$$\alpha_j > -[R_{D_j}\left(C_T + \frac{N-1}{\omega}\right) + C_j\, R_{\mathrm{EU}}]$$

Domestic Restrictions

Using the same producer adopted for the main specification, I derive the optimal level of domestic restrictions:

$$R_{D_j}^* = \frac{\iota_{D_j}(N+1)^2\beta_j + (C_T + \frac{N-1}{\omega_j})(\alpha_j + R_{EU}C_j)}{\beta_j(N+1)^2 - (C_T + \frac{N-1}{\omega_j})^2},$$

where $\beta_j = \frac{\lambda}{1-\lambda}$. The second derivative of the government's utility with respect to R_{D_j} is:

$$2[-\lambda + (1-\lambda)\frac{(C_T + \frac{N-1}{\omega_j})^2}{(N+1)^2}].$$

[2] In order to slightly simplify the calculations, I have omitted the term $\frac{1}{\omega}$ for both firms.

Thus, the government's utility function is strictly concave when $\beta_j(N+1)^2 > (C_T+\frac{N-1}{\omega_j})^2$. Note that this condition implies that the denominator of $R^*_{D_j}$ is strictly positive.

It is easy to see that as ω_j increases, the numerator decreases and the denominator increases. Thus, domestic restrictions decrease in productivity. By contrast, domestic barriers increase with ι_{D_j}. Finally, note that as before when $\iota_{D_j} < 0$ there exists a threshold $\bar{\beta} \equiv -\frac{(C_T+\frac{N-1}{\omega_j})(\alpha_j+R_{EU}C_j)}{\iota_{D_j}(N+1)^2}$, such that for $\beta >= \bar{\beta}$, $R^*_{D_j} \leq 0$. Note that this is the equivalent of the threshold on λ obtained in the main analysis as β increases in the strength of domestic institutions. Therefore, the way in which $R^*_{D_j}$ varies with respect to productivity, economic ideology, and competition institutions does not change by assuming that domestic restrictions affect profits proportionally to quantities.

Behavior of Equilibrium Profits

Finally, I show the behavior of equilibrium profits with respect to R_{D_j} and R_{EU} by computing the relevant derivatives:

$$\frac{\partial \pi^*_j}{\partial R_{D_j}} = 2\frac{\left(\alpha_j + R_{D_j}\left(C_T + \frac{N-1}{\omega}\right) + C_j\, R_{\mathrm{EU}}\right)}{(N+1)^2}\left(C_T + \frac{N-1}{\omega}\right),$$

$$\frac{\partial \pi^*_j}{\partial R_{EU}} = 2\frac{\left(\alpha_j + R_{D_j}\left(C_T + \frac{N-1}{\omega}\right) + C_j\, R_{\mathrm{EU}}\right)}{(N+1)^2}C_j.$$

Given the assumption on α_j, $\frac{\partial \pi^*_j}{\partial R_{D_j}}$ is always positive. Therefore, as in the baseline model, firms always lobby for larger domestic restrictions. The second derivative is negative when $C_j < 0$. Again, this condition implies that when $\omega_j > \frac{N}{N-1}\bar{\omega}_j$, firms lobby to decrease EU-wide restrictions.

B.3 Left & Right Economic Statements

The economic ideology classifications follow Berry and Sen (2019 appendix: 1), while the definitions of the categories are taken from the Comparative Manifesto Project data

codebook.[3] The following categories measure the percentage of statements referring to a given topic in a party manifesto.

Right Economic Statements:

- **per401 Free Market Economy**: this indicator includes favorable mentions to free market capitalism as an economic model. It can include:
  - Laissez-faire economy;
  - Superiority of individual enterprise over state and control systems;
  - Private property rights;
  - Personal enterprise and initiative;
  - Need for unhampered individual enterprises.
- **per402 Incentives: Positive**: this indicator includes favorable mentions of supply-side oriented economic policies, such as:
  - Financial and other incentives such as subsidies, tax breaks, etc.;
  - Wage and tax policies to induce enterprise;
  - Encouragement to start enterprises.
- **per407 Protectionism: Negative**: this indicator includes statements supporting free trade and open markets and advocates for abolishing all means of market protection.
- **per414 Economic Orthodoxy**: this indicator can include: May include
  - Reduction of budget deficits;
  - Retrenchment in crisis;
  - Thrift and savings in the face of economic hardship;
  - Support for traditional economic institutions such as the stock market and banking system;

[3] See https://manifesto-project.wzb.eu/down/data/2020b/codebooks/codebook_MPDataset_MPDS2020b.pdf.

  - Support for a strong currency.

- **per505 Welfare State Limitation**: this indicator includes a statement advocating to limit state expenditures on social services or social security and favorable mentions of the social subsidiary principle.

- **per702 Labor Groups: Negative**: Negative mentions to labor groups and trade unions.

Left Economic Statements:

- **per403 Market Regulation**: This indicator includes favorable mentions of policies designed to create a fair and open economic market. It can include:

  - Calls for increased consumer protection;
  - Increasing economic competition by preventing monopolies and other actions disrupting the functioning of the market;
  - Defense of small businesses against disruptive powers of big businesses;
  - Social market economy.

- **per404 Economic Planning**: This indicator includes favorable mentions of long-standing economic planning by the government, such as:

  - Policy plans, strategies, policy patterns, etc;
  - Of a consultative or indicative nature.

- **per406 Protectionism: Positive**: Favorable mentions of measures extending or maintaining the protection of internal markets. Measures may include tariffs, quota restrictions, and export subsidies.

- **per412 Controlled Economy**: Support for direct government control of economy. This indicator can include policies such as control over prices and the introduction of minimum wages.

- **per413 Nationalization**: This indicator includes mentions of government ownership of industries, either partial or complete; calls for keeping nationalized industries in state hands or nationalizing currently private industries. It may also include favorable mentions of government ownership of land.

- **per415 Marxist Analysis**: Positive mentions of Marxist-Leninist ideology and specific use of Marxist-Leninist terminology by the manifesto party (typically but not necessarily by communist parties).

- **per504 Welfare State Expansion** Favorable mentions of the need to introduce, maintain or expand any public social service or social security scheme.

- **per701 Labor Groups: Positive**: Favorable references to all labor groups, the working class, and unemployed workers in general. Support for trade unions and calls for the good treatment of all employees

B.4 Robustness Checks

B.4.1 Robustness Checks Prediction 1

Effect of European directives on Domestic Restrictions with Top 5% Largest Firms by Revenues

Table B.4.1 shows the results of running (3.15) with full controls and sectoral variables defined on the top 5% of firms by revenues in a given country-industry-year.

Table B.4.1: Effect of European directives on domestic restrictions with top 5% largest firms by revenues

	TWFE	CS	Two-Stage DID	DML
eu	-0.648**	-1.205***	-0.803**	-0.619**
	(0.318)	-0.423	(0.407)	(0.315)
Observations	1,108	845	945	1,113

Note: *** p<0.01, ** p<0.05, * p<0.1. The table reports the results of running model (3.15). The first, second, third, and fourth columns correspond to the TWFE, Callaway and Sant'Anna (2021), Gardner (2022), and double debiased machine learning specification (LASSO). All specifications include country-industry and year effects. Controls include the log average productivity of the largest 5% firms by revenues, the log CLI, the log of economic ideology, the log of the government's cabinet duration, the log of the government's HHI, the log of industry weight, the log average real unit variable costs of the top 5% largest firm by revenues. Standard errors are clustered at the country-industry level.

TWFE without Year Effects

Table B.4.2 reports the result of running (3.15) without year effects. As we can see, the estimates are more similar in magnitude to the ones obtained by CS DID.

Table B.4.2: Effect of European Directives on Domestic Restrictions using the TWFE Specification without year effects

	Main Controls	Main + Pol-Inst Controls	Main + Pol-Inst + Sectoral Controls
eu	-0.949***	-0.897***	-0.851***
	(0.320)	(0.308)	(0.323)
Observations	1,118	1,118	1,113

Note: *** p<0.01, ** p<0.05, * p<0.1. The table reports the results of running model (3.15) without year effects using the TWFE specification. Main controls include the log average productivity of the largest 10% firms by revenues, the log CLI, and the log of economic ideology. Political institutional controls include the log of the government's cabinet duration and the log of the government's HHI. Sectoral controls include the log of industry weight and the log average real unit variable costs of the top 10% largest firm by revenues. Standard errors are clustered at the country-industry level.

Placebo Test

The top half of table B.4.3 reports the results of running two-way fixed effects, two-stage DID, and double debiased machine learning, where treated units are liberalized industries in post-communist countries over 1995-2003 when the treatment is specified according to table 2.1. Non-EU OECD countries continue to represent the control group, and I consider

the specification with all the controls. Since these countries were not EU members during this period, we should not find a significant treatment effect, as shown by table B.4.3.

Table B.4.3: Placebo test using post-communist countries as treatment Group

	TWFE	Two-Stage DID	DML
		1995-2003	
eu	-0.166	-0.713	0.028
	(0.443)	(0.667)	(0.416)
Observations	237	211	241
		1995-2010	
eu_2	-1.015***	-1.250**	-0.795
	(0.335)	(0.523)	(0.485)
Observations	605	496	609

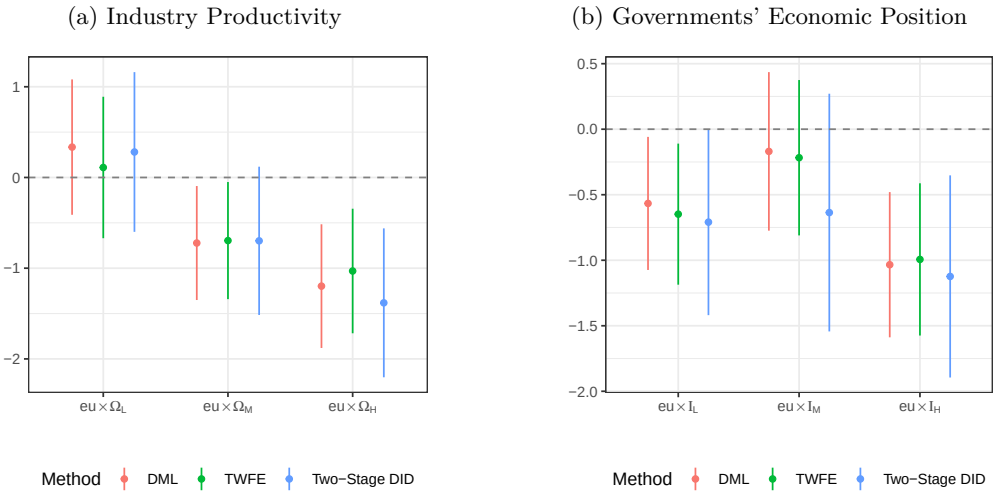
Note: *** p<0.01, ** p<0.05, * p<0.1. The table reports the results of running model (3.15). The first, second, and third columns correspond to the TWFE, Gardner 2022, and double debiased machine learning specification (LASSO). All specifications include country-industry and year effects. Controls include the log average productivity of the largest 10% firms by revenues, the log CLI, the log of economic ideology, the log of the government's cabinet duration, the log of the government's HHI, the log of industry weight, the log average real unit variable costs of the top 10% largest firm by revenues. Standard errors are clustered at the country-industry level.

In the bottom half of this table, I continue to consider post-communist countries in the treatment group but with two differences. Firstly, the period is the same as the main analysis of section 3.6.1, that is, 1995-2010. Secondly, now the treatment is not specified following table 2.1, but according to the year a country joined the EU. Since, at the moment of accession, countries need to comply with the European legislative framework, I expected this new treatment (eu_2) to have a negative impact on domestic de jure entry barriers. The estimates obtained using the first two methodologies confirm this expectation. However, although negative, the coefficient is not significant in the double machine learning specification.

B.4.2 Robustness Checks Predictions 2 & 3

Figure B.4.1 report tests the importance of aligned domestic interests for the Commission's ambition using sectoral variables defined on the top 5% of firms by revenues in a given country-industry-year. As we can see, the results are basically unchanged.

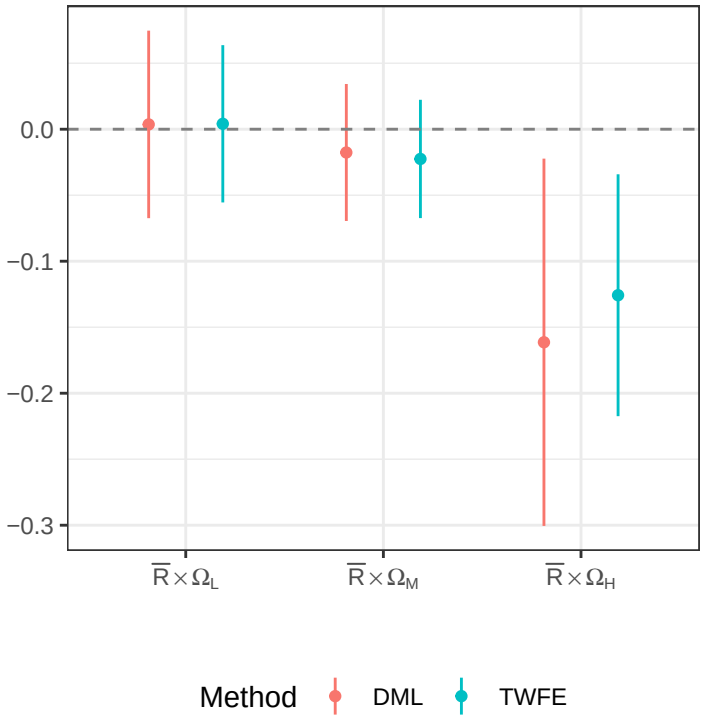
Figure B.4.1: Interaction effects of European directives on domestic restrictions with top 5% largest firms by revenues



Note: The figure reports the results of running model (3.15) adding the full interactions $eu \times \Omega_v$ (panel a) and $eu \times I_v$ (panel b). Coefficients are estimated using the TWFE, Gardner's (2022), and double debiased machine learning specifications. Controls include the log average productivity of the largest 5% firms by revenues, the log CLI, the log of economic ideology, the log of the government's cabinet duration, the log of the government's HHI, the log of industry weight, the log average real unit variable costs of the top 5% largest firm by revenues. 95% confidence intervals are shown.

Similarly, I also re-run model (3.16) considering only the 5% largest firms by revenues as a robustness check for prediction 2. Again, the thrust of the main results is unchanged.

Figure B.4.2: Effect of average EU-wide restrictions on firms' profits at different levels of productivity with top 5% largest firms by revenues



Note: The figure reports the results of running model (3.16) using the TWFE and double-debiased machine learning specification. The controls used include the log CLI, the log of economic ideology, log productivity, log revenues, log real unit variable costs, the domestic PMR entry component, and the EU liberalization dummy. Standard errors are clustered at the firm level. 95% confidence intervals are shown

C. Appendix Paper Three

C.1 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.

C.1.1 Theory

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

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

Factors X_{it}^v with $v = 1, \ldots, V$ 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 Lagrangian of the minimization problem is:

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

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:

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

where ϵ_{it}^{Lw}) is the labor supply elasticity of the firm.[1] 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 $\frac{\epsilon_{it}^{L}w+1}{\epsilon_{it}^{L}w}$ 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:

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

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

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

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. Yeh et al. (2022: 2105) show that markups can be expressed as:

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

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

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

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:

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

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.

C.1.2 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).[2]

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

[2] We implement the production function estimation in Stata MP using the Mollisi and Rovigatti's (2018) prodest package.

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.[3] Therefore, the various coefficients denote the different time-varying industry elasticities associated with the related inputs. A crucial assumption is that the generic variable input demand is a function of the state variable (capital), productivity, and other market factors z_{it}.[4] As in Yeh et al. (2022), we have used materials as a variable input:

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

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

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

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:

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

Which substituted in the production function gives:

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

[3] We have considered all the NACE 2-digit apart from public sector administration (84) and extraterritorial activities (99).

[4] As in Yeh et al. (2022), z_{it} includes year fixed effects

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

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:

$$\xi_{it}(\boldsymbol{\beta}) = y_{it} - (\beta_i^l l_{it} + \beta_i^k k_{it} + \beta_i^m m_{it} + \hat{E}_{it}).$$

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 corresponds 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:

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

C.2 Union's Power & Cooperation Variables

Table C.2.1 shows our mapping between Botero et al. (2004) and the OECD-ICTWSS dataset that we used to code the variable power, while table C.2.2 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 C.2.1: 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). 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)	Power=1 if WC_negot=1.
(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; 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.	Power=1 if WC_rights=2

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

Table C.2.2: Union's 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.3 Robustness Checks

C.3.1 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 (4.1) (both with market power and markups as dependent variables), and (4.7) without trimming.[5]

[5]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.

Table C.3.1: Main results without trimming

	Market Power	Markups	Markdown
euro	0.357***	-0.338***	
	(0.056)	(0.065)	
$euro \times C^1$			-0.101*
			(0.055)
$euro \times C^2$			-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 C.3.2, 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.

In table C.3.2, 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 C.3.2: Main results with industry-specific deflators

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

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.

C.3.2 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 C.3.3: Callaway and Sant'Anna (2021) DID

	Market Power	Markup
euro	0.231***	-0.330***
	(0.004)	(0.003)
Observations	10,037,882	10,037,882

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 C.3.3 we report the results of running (4.1) (both with market power and markups as outcomes) with pre-treatment control variables.[6] Concerning market power, the effect of the Euro is not particularly different from table 4.3: 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 (4.7) because it is difficult to capture interacted treatment effects with Callaway and Sant' Anna's (2021) methodology.

[6] 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.

C.3.3 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 (4.1) 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, 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.[7]

Table C.3.4: Effect of the Euro on sectoral revenue shares and price cost margins

	Sectoral Revenue Share			Price Cost Margin		
	TWFE	IPW	Matching	TWFE	IPW	Matching
euro	9.22e-05***	8.66e-05***	7.97e-05***	-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 C.3.4 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 Gutierrez and Philippon's (2023)

[7] 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.

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 4.5.3 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 (4.5) with Q^v defined on the pre-Euro average revenue distribution.

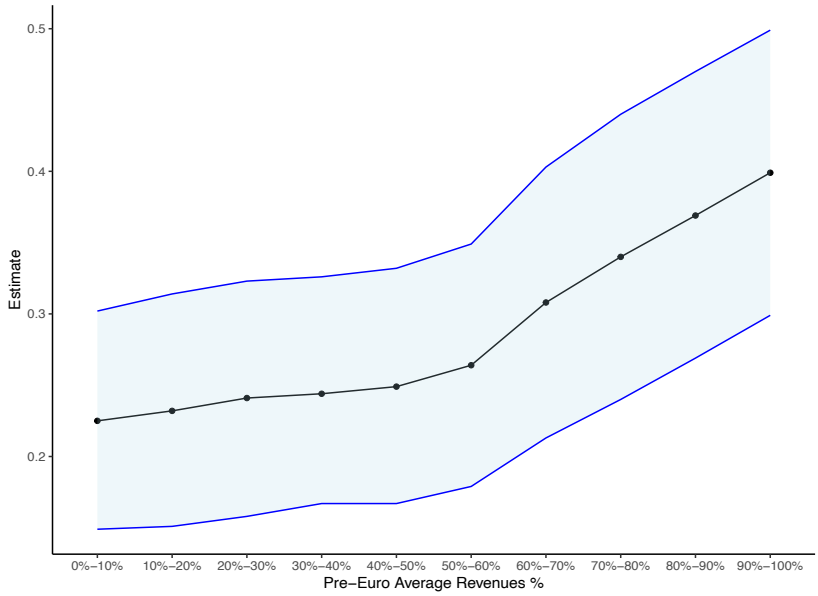


Figure C.3.1: The Euro and large firms

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

As in the case of productivity, the Euro has a greater effect on market power the larger was the firm before the Single Currency (figure C.3.1). However, in contrast to productivity, this effect increases monotonically. Again, this finding is consistent with the superstar firm dynamics since large corporations may have exploited the increasing openness to expand and consolidate their market power.

C.3.4 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 (4.1) with the inclusion of $euro \times T$ (table C.3.5), (4.6) (table C.3.6), and (4.7) (figure C.3.2). 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 C.3.5: Euro and market power in tradable industries (Mian and Sufi 2014 classification)

	TWFE	IPW	Matching
$euro \times T$	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

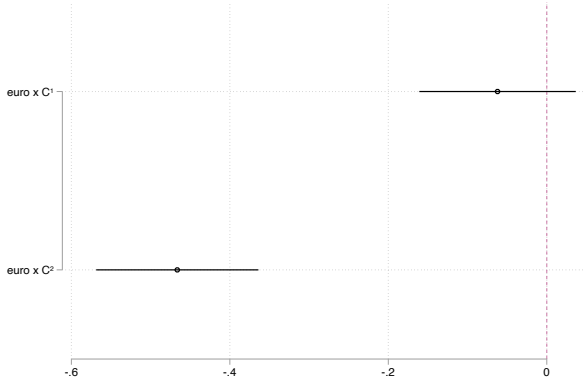
Note: *** p-value < 0.01, ** p-value < 0.05, * p-value < 0.1. All the specifications include controls, firm and year effects. Standard Errors are clustered at the country-industry level.

Table C.3.6: Unions and markdowns (Mian and Sufi 2014 classification)

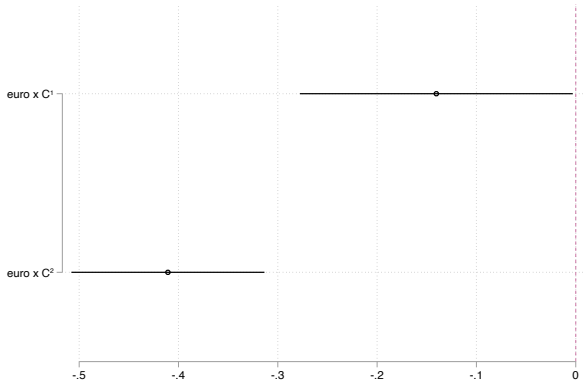
	(1)	(2)	(3)	(4)	(5)	(6)
cooperation	3.378***	4.751***	4.406***	3.373***	4.698***	3.937***
	(0.317)	(0.508)	(0.561)	(0.298)	(0.512)	(0.566)
power	2.948***	4.370***	4.122***	2.905***	4.267***	3.667***
	(0.305)	(0.518)	(0.556)	(0.293)	(0.526)	(0.571)
cooperation × *power*	-4.525***	-6.382***	-6.001***	-4.447***	-6.217***	-5.359***
	(0.453)	(0.698)	(0.744)	(0.424)	(0.700)	(0.801)
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	6,022,937	6,173,502	6,173,513	6,022,937	6,173,502	6,173,513
R-squared	0.853	0.318	0.269	0.856	0.321	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

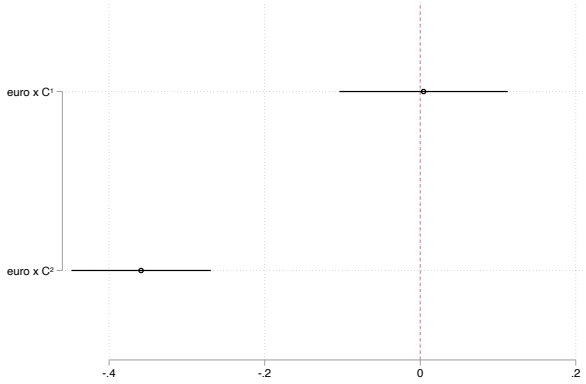


Figure C.3.2: Cooperative institutions, the Euro, and markdowns (Mian and Sufi 2014 classification)

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

C.3.5 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 is partly accounted for by controlling for the firm's labor shares in our regressions. Nevertheless, to further limit this issue, we run (4.1) 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 C.3.7: Euro effect on market power for large firms

	TWFE	IPW	Matching
euro	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 C.3.7 continues to show a positive effect of the Euro on market power, which is in line with baseline estimates.

C.3.6 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 (4.1) without including the latter as control. As we can see from table C.3.8, coefficients change very little.

Table C.3.8: Euro effect on market power without value-added labor Shares

	Full Sample - TWFE	Full Sample - IPW	Full Sample - 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.

Bibliography

Abadie, A. (2005), 'Semiparametric difference-in-differences estimators', *The Review of Economic Studies* **72**(1), 1–19.

Acemoglu, D. (2002), 'Technical change, inequality, and the labor market', *Journal of Economic Literature* **40**(1), 7–72.

Acemoglu, D., Johnson, S., Querubin, P. and Robinson, J. A. (2008), When does policy reform work? the case of central bank independence, Technical report, National Bureau of Economic Research.

Acemoglu, D., Naidu, S., Restrepo, P. and Robinson, J. A. (2019), 'Democracy does cause growth', *Journal of Political Economy* **127**(1), 47–100.

Achen, C. H. (2009), 'Institutional realism and bargaining models', *The European Union Decides* pp. 86–123.

Ackerberg, D. A., Caves, K. and Frazer, G. (2015), 'Identification properties of recent production function estimators', *Econometrica* **83**(6), 2411–2451.

Aghion, P. and Howitt, P. (1992), 'A model of growth through creative destruction', *Econometrica* **60**(2), 323–351.

Alemani, E., Klein, C., Koske, I., Vitale, C. and Wanner, I. (2013), 'New indicators of competition law and policy in 2013 for oecd and non-oecd countries', pp. 59–102.

Alesina, A., Ardagna, S., Nicoletti, G. and Schiantarelli, F. (2005), 'Regulation and investment', *Journal of the European Economic Association* **3**(4), 791–825.

Alesina, A. and Giavazzi, F. (2008), *The future of Europe: reform or decline*, Mit Press.

Altomonte, C. and Nicolini, M. (2012), 'Economic integration and the dynamics of firms' competitive behavior', *Structural Change and Economic Dynamics* **23**(4), 383–402.

Amoroso, S. and Martino, R. (2020), 'Regulations and technology gap in europe: The role of firm dynamics', *European Economic Review* **129**, 103551.

Angrist, J. D. and Pischke, J.-S. (2008), *Mostly harmless econometrics*, Princeton university press.

Arkolakis, C., Costinot, A., Donaldson, D. and Rodríguez-Clare, A. (2019), 'The elusive pro-competitive effects of trade', *The Review of Economic Studies* **86**(1), 46–80.

Arnold, J. M., Javorcik, B., Lipscomb, M. and Mattoo, A. (2016), 'Services reform and manufacturing performance: Evidence from india', *The Economic Journal* **126**(590), 1–39.

Arrow, K. (1962), Economic welfare and the allocation of resources to invention, *in* U.-N. B. C. for Economic Research and the Committee on Economic Growt, eds, 'The Rate and Direction of Inventive Activity: Economic and Social Factors', Princeton University Press., pp. 225–267.

Autor, D., Dorn, D., Katz, L. F., Patterson, C. and Van Reenen, J. (2017), The fall of the labor share and the rise of superstar firms, Technical report, National Bureau of Economic Research.

Autor, D., Dorn, D., Katz, L. F., Patterson, C. and Van Reenen, J. (2020), 'The fall of the labor share and the rise of superstar firms', *The Quarterly Journal of Economics* **135**(2), 645–709.

Autor, D. H. (2003), 'Outsourcing at will: The contribution of unjust dismissal doctrine to the growth of employment outsourcing', *Journal of Labor Economics* **21**(1), 1–42.

Baccini, L., Guidi, M., Poletti, A. and Yildirim, A. (2022), 'Trade liberalization and labor market institutions', *International Organization* **76**(1), 70–104.

Baccini, L., Pinto, P. M. and Weymouth, S. (2017), 'The distributional consequences of preferential trade liberalization: Firm-level evidence', *International Organization* **71**(2), 373–395.

Badinger, H. (2007), 'Has the eu's single market programme fostered competition? testing for a decrease in markup ratios in eu industries', *Oxford Bulletin of Economics and Statistics* **69**(4), 497–519.

Baldi, G. (2006), 'Europeanising antitrust: British competition policy reform and member state convergence', *The British Journal of Politics and International Relations* **8**(4), 503–518.

Baldwin, R. E., Di Nino, V., Fontagné, L., De Santis, R. A. and Taglioni, D. (2008), 'Study on the impact of the euro on trade and foreign direct investment', *European Economic and Monetary Union Working Paper* .

Barone, G. and Cingano, F. (2011), 'Service regulation and growth: evidence from oecd countries', *The Economic Journal* **121**(555), 931–957.

Barros, P. P., Clougherty, J. A. and Seldeslachts, J. (2013), 'Europeanization of eu member-state competition policy: The commission's leadership role', *International Review of Law and Economics* **34**, 41–51.

Bartle, I. (2002), 'When institutions no longer matter: reform of telecommunications and electricity in germany, france and britain', *Journal of Public Policy* **22**(1), 1–27.

Bartók, C. and Miroudot, S. (2008), The interactions amongst trade, investment, and competition policies, Trade Policy Papers No. 60, Organisation for Economic Cooperation and Development, Paris.

Bassanetti, A., Torrini, R. and Zollino, F. (2010), 'Changing institutions in the european market: The impact on markups and rents allocation', *Bank of Italy Temi di Discussione (Working Paper) No. 781* .

Battiati, C., Jona-Lasinio, C., Marvasi, E. and Sopranzetti, S. (2021), 'Market power and productivity trends in the european economies', *Luiss Working Paper 1/2021* .

Belke, A., Baumgärtner, F., Schneider, F. and Setzer, R. (2007), 'The different extent of privatization proceeds in oecd countries: a preliminary explanation using a public-choice approach', *FinanzArchiv/Public Finance Analysis* pp. 211–243.

Belloc, F., Nicita, A. and Sepe, S. M. (2014), 'Disentangling liberalization and privatization policies: Is there a political trade-off?', *Journal of Comparative Economics* **42**(4), 1033–1051.

Benassi, C., Doellgast, V. and Sarmiento-Mirwaldt, K. (2016), 'Institutions and inequality in liberalizing markets: Explaining different trajectories of institutional change in social europe', *Politics & Society* **44**(1), 117–142.

Bentolila, S. and Saint-Paul, G. (2003), 'Explaining movements in the labor share', *Contributions in Macroeconomics* **3**(1).

Bernard, A. B., Jensen, J. B., Redding, S. J. and Schott, P. K. (2007), 'Firms in international trade', *Journal of Economic Perspectives* **21**(3), 105–130.

Bernard, A. B., Van Beveren, I. and Vandenbussche, H. (2014), 'Multi-product exporters and the margins of trade', *The Japanese Economic Review* **65**(2), 142–157.

Berry, F. S. and Berry, W. D. (2007), Innovation and diffusion models in policy research, *in* P. Sabatier, ed., 'Theories of the Policy Process', Routledge, pp. 253–297.

Berry, S., Gaynor, M. and Scott Morton, F. (2019), 'Do increasing markups matter? lessons from empirical industrial organization', *Journal of Economic Perspectives* **33**(3), 44–68.

Bertrand, M., Duflo, E. and Mullainathan, S. (2004), 'How much should we trust differences-in-differences estimates?', *The Quarterly journal of economics* **119**(1), 249–275.

Besley, T. and Burgess, R. (2004), 'Can labor regulation hinder economic performance? evidence from india', *The Quarterly journal of economics* **119**(1), 91–134.

Besley, T., Fontana, N. and Limodio, N. (2021), 'Antitrust policies and profitability in nontradable sectors', *American Economic Review: Insights* **3**(2), 251–265.

Biais, B. and Perotti, E. (2002), 'Machiavellian privatization', *American Economic Review* **92**(1), 240–258.

Bighelli, T., Di Mauro, F., Melitz, M. J. and Mertens, M. (2023), 'European firm concentration and aggregate productivity', *Journal of the European Economic Association* **21**(2), 455–483.

Blackhurst, R. (1991), *Trade Policy Is Competition Policy*, Organisation for Economic Co-operation and Development, Paris, pp. 253–258.

Blanchard, O. and Giavazzi, F. (2003), 'Macroeconomic effects of regulation and deregulation in goods and labor markets', *The Quarterly journal of economics* **118**(3), 879–907.

Blundell, R., Griffith, R. and Reenen, J. V. (1995), 'Dynamic count data models of technological innovation', *The economic journal* **105**(429), 333–344.

Boix, C. (1997), 'Privatizing the public business sector in the eighties: Economic performance, partisan responses and divided governments', *British Journal of Political Science* **27**(4), 473–496.

Bonardi, J.-P. (2004), 'Global and political strategies in deregulated industries: The asymmetric behaviors of former monopolies', *Strategic Management Journal* **25**(2), 101–120.

Bond, E. W. (2013), Trade policy and competition policy: Conflict vs. mutual support, *in* M. Neumann and J. Weigand, eds, 'The International Handbook of Competition', 2 edn, Edward Elgar, Cheltenham, pp. 108–126.

Bonfiglioli, A., Crinò, R. and Gancia, G. (2022), 'Economic uncertainty and structural reforms: Evidence from stock market volatility', *Quantitative Economics* **13**(2), 467–504.

Bortolotti, B., Fantini, M. and Siniscalco, D. (2001), 'Privatisation: politics, institutions, and financial markets', *Emerging Markets Review* **2**(2), 109–137.

Bortolotti, B. and Pinotti, P. (2008), 'Delayed privatization', *Public Choice* **136**, 331–351.

Botero, J. C., Djankov, S., Porta, R. L., Lopez-de Silanes, F. and Shleifer, A. (2004), 'The regulation of labor', *The Quarterly Journal of Economics* **119**(4), 1339–1382.

Bradford, A., Chilton, A., Linos, K. and Weaver, A. (2019), 'The global dominance of european competition law over american antitrust law', *Journal of Empirical Legal Studies* **16**(4), 731–766.

Bradford, A. and Chilton, A. S. (2018), 'Competition law around the world from 1889 to 2010: The competition law index', *Journal of Competition Law & Economics* **14**(3), 393–432.

Bradford, A. and Chilton, A. S. (2019), 'Trade openness and antitrust law', *The Journal of Law and Economics* **62**(1), 29–65.

Brune, N., Garrett, G. and Kogut, B. (2006), The international monetary fund and the global spread of privatization, *in* 'Globalization and Self-Determination', Routledge, pp. 139–164.

Buch-Hansen, H. and Wigger, A. (2010), 'Revisiting 50 years of market-making: The neoliberal transformation of european competition policy', *Review of International Political Economy* **17**(1), 20–44.

Buch-Hansen, H. and Wigger, A. (2011), *The politics of European competition regulation: a critical political economy perspective*, Routledge.

Budzinski, O. and Christiansen, A. (2005), 'Competence allocation in the eu competition policy system as an interest-driven process', *Journal of public Policy* **25**(3), 313–337.

Bulfone, F. (2019), 'The state strikes back: industrial policy, regulatory power and the divergent performance of telefonica and telecom italia', *Journal of European public policy* **26**(5), 752–771.

Bulfone, F. (2020), 'New forms of industrial policy in the age of regulation: A comparison of electricity and telecommunications in italy and spain', *Governance* **33**(1), 93–108.

Börzel, T. A. (1999), 'Towards convergence in europe? institutional adaptation to europeanization in germany and spain', *JCMS: Journal of Common Market Studies* **37**(4), 573–596.

Büthe, T. (2015), The politics of market competition: Trade and antitrust in a global economy, *in* L. Martin, ed., 'The Oxford Handbook of the Political Economy of International Trade', Oxford University Press.

Callaway, B. and Sant'Anna, P. H. (2021), 'Difference-in-differences with multiple time periods', *Journal of econometrics* **225**(2), 200–230.

Carree, M., Günster, A. and Schinkel, M. P. (2010), 'European antitrust policy 1957–2004: An analysis of commission decisions', *Review of Industrial Organization* **36**, 97–131.

Cassidy, J. (2013), *How markets fail: The logic of economic calamities*, Penguin UK.

Cavalleri, M. C., Eliet, A., McAdam, P., Petroulakis, F., Soares, A. C. and Vansteenkiste, I. (2019), Concentration, market power and dynamism in the euro area, Technical Report 2253, ECB Working Paper.

Cavenaile, L., Roldan-Blanco, P. and Schmitz, T. (2022), 'International trade and innovation dynamics with endogenous markups', *The Economic Journal* .

Chen, Y.-F. and Funke, M. (2008), 'Product market competition, investment and employment-abundant versus job-poor growth: A real options perspective', *European Journal of Political Economy* **24**(1), 218–238.

Chernozhukov, V., Chetverikov, D., Demirer, M., Duflo, E., Hansen, C., Newey, W. and Robins, J. (2018), 'Double/debiased machine learning for treatment and structural parameters'.

Christopoulou, R. and Vermeulen, P. (2012), 'Markups in the euro area and the us over the period 1981–2004: a comparison of 50 sectors', *Empirical Economics* **42**(1), 53–77.

Clifton, J., Comín, F. and Diaz Fuentes, D. (2006), 'Privatizing public enterprises in the european union 1960–2002: ideological, pragmatic, inevitable?', *Journal of European Public Policy* **13**(5), 736–756.

Coen, D. and Thatcher, M. (2005), 'The new governance of markets and non-majoritarian regulators', *Governance* **18**(3), 329–346.

Cook, D. (2011), 'Markups and the euro', *Review of Economics and Statistics* **93**(4), 1440–1452.

Crescioli, T. (2023), 'Reinforcing each other: How the combination of european and domestic reforms increased competition in liberalized industries'.

Crescioli, T. and Martelli, A. (2023), 'Beyond the great reversal: Superstars, unions, and the euro', *SSRN* .

Cunningham, S. (2021), *Causal inference*, Yale University Press.

De Chaisemartin, C. and d'Haultfoeuille, X. (2020), 'Two-way fixed effects estimators with heterogeneous treatment effects', *American Economic Review* **110**(9), 2964–2996.

De Chaisemartin, C. and d'Haultfoeuille, X. (2023), 'Two-way fixed effects and differences-in-differences with heterogeneous treatment effects: A survey', *The Econometrics Journal* **26**(3), C1–C30.

De Loecker, J. and Eeckhout, J. (2018*a*), Global market power, Technical Report w24768, National Bureau of Economic Research.

De Loecker, J. and Eeckhout, J. (2018*b*), Some thoughts on the debate about (aggregate) markups measurement, Technical report, Unpublished working paper.

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

De Loecker, J., Goldberg, P. K., Khandelwal, A. K. and Pavcnik, N. (2016), 'Prices, markups, and trade reform', *Econometrica* **84**(2), 445–510.

De Loecker, J. and Warzynski, F. (2012), 'Markups and firm-level export status', *American economic review* **102**(6), 2437–71.

De Mesquita, B. B. and Stokman, F. N. (1994), *European Community decision making: Models, applications, and comparisons*, Yale University Press.

Degner, H. and Leuffen, D. (2020), 'Crises and responsiveness: Analysing german preference formation during the eurozone crisis', *Political Studies Review* **18**(4), 491–506.

DellaVigna, S. and Kim, W. (2022), Policy diffusion and polarization across us states, Technical report, National Bureau of Economic Research.

Desmet, K. and Parente, S. L. (2010), 'Bigger is better: Market size, demand elasticity, and innovation', *International Economic Review* **51**(2), 319–333.

Di Carlo, D. and Schmitz, L. (2023), 'Europe first? the rise of eu industrial policy promoting and protecting the single market', *Journal of European Public Policy* pp. 1–34.

Dixit, A. (1984), 'International trade policy for oligopolistic industries', *The Economic Journal* **94**(Supplement), 1–16.

Doern, G. B. and Wilks, S. (1996), *Comparative competition policy: National institutions in a global market*, Oxford University Press.

Drivas, K., Kalyvitis, S. and Katsimi, M. (2020), 'Export prices and markups with a common currency: Empirical evidence from greek exporting firms and euro adoption'. Working Paper.

Dumez, H. and Jeunemaitre, A. (1996), The convergence of competition policies in europe: internal dynamics and external imposition, *in* S. Berger and R. Dore, eds, 'The convergence of competition policies in Europe: internal dynamics and external imposition', Cornell University Press.

Duval, R., Furceri, D. and Miethe, J. (2021), 'Robust political economy correlates of

major product and labor market reforms in advanced economies: Evidence from bamle for logit models', *Journal of Applied Econometrics* **36**(1), 98–124.

ECFIN (1990), One market, one money: An evaluation of the potential benefits and costs of forming an economic and monetary union, Technical report, DG ECFIN.

Eichengreen, B. (2006), *The European economy since 1945: coordinated capitalism and beyond*, Princeton University Press.

Eising, R. (2002), 'Policy learning in embedded negotiations: Explaining eu electricity liberalization', *International Organization* **56**(1), 85–120.

Eising, R. and Jabko, N. (2001), 'Moving targets: national interests and electricity liberalization in the european union', *Comparative Political Studies* **34**(7), 742–767.

Ergen, T. and Kohl, S. (2019), 'Varieties of economization in competition policy: institutional change in german and american antitrust, 1960–2000', *Review of International Political Economy* **26**(2), 256–286.

Fink, S. (2011), 'A contagious concept: Explaining the spread of privatization in the telecommunications sector', *Governance* **24**(1), 111–139.

Finke, D. and Bailer, S. (2019), 'Crisis bargaining in the european union: Formal rules or market pressure?', *European Union Politics* **20**(1), 109–133.

Finke, D. and Fleig, A. (2013), 'The merits of adding complexity: non-separable preferences in spatial models of european union politics', *Journal of Theoretical Politics* **25**(4), 546–575.

Foreman-Peck, J. (2006), 'Industrial policy in europe in the 20th century', *EIB papers* **11**(1), 36–62.

Friberg, R. (2003), 'Common currency, common market?', *Journal of the European Economic Association* **1**(2-3), 650–661.

Frieden, J. A. (2002), 'Real sources of european currency policy: Sectoral interests and european monetary integration', *International Organization* **56**(4), 831–860.

Gardner, J. (2022), 'Two-stage differences in differences', *arXiv preprint arXiv:2207.05943* .

Gerber, D. J. et al. (1998), *Law and competition in twentieth century Europe: protecting Prometheus*, oxford university Press.

Giersch, H. (1985), Eurosclerosis, Technical report, Kiel Institute for the World Economy (IfW).

Goodman-Bacon, A. (2021), 'Difference-in-differences with variation in treatment timing', *Journal of Econometrics* **225**(2), 254–277.

Graack, C. (1996), 'Telecom operators in the european union: Internationalization strategies and network alliances', *Telecommunications Policy* **20**(5), 341–355.

Granger, C. W. (1969), 'Investigating causal relations by econometric models and cross-spectral methods', *Econometrica: journal of the Econometric Society* pp. 424–438.

Griffith, R., Harrison, R. and Simpson, H. (2010), 'Product market reform and innovation in the eu', *Scandinavian Journal of economics* **112**(2), 389–415.

Grossman, G. M. and Helpman, E. (1994), 'Protection for sale', *The American Economic Review* **84**(4), 833–850.

Grossman, G. M. and Oberfield, E. (2022), 'The elusive explanation for the declining labor share', *Annual Review of Economics* **14**, 93–124.

Guidi, M. (2014), 'Delegation and varieties of capitalism: Explaining the independence of national competition agencies in the european union', *Comparative European Politics* **12**, 343–365.

Guidi, M. (2015), 'The impact of independence on regulatory outcomes: The case of eu competition policy', *JCMS: Journal of Common Market Studies* **53**(6), 1195–1213.

Guillou, S. and Nesta, L. (2014), 'Heterogeneity in the euro effect on markups: Evidence from french manufacturing firms'. Working Paper.

Gunnella, V., Lebastard, L., Lopez-Garcia, P., Serafini, R. and Mattioli, A. Z. (2021), The impact of the euro on trade: Two decades into monetary union, Technical Report 2021/283, ECB Occasional Paper.

Gutiérrez, G. and Philippon, T. (2019), Fading stars, *in* 'AEA Papers and Proceedings', Vol. 109, American Economic Association 2014 Broadway, Suite 305, Nashville, TN 37203, pp. 312–316.

Gutierrez, G. and Philippon, T. (2023), 'How european markets became free: A study of institutional drift', *Journal of the European Economic Association* **21**(1), 251–292.

Hainmueller, J. and Hiscox, M. J. (2006), 'Learning to love globalization: Education and individual attitudes toward international trade', *International Organization* **60**(2), 469–498.

Hall, P. A. and Soskice, D. (2001), *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*, OUP.

Hancké, B. (2013*a*), 'The missing link: Labour unions, central banks, and monetary integration in europe', *Transfer: European Review of Labour and Research* **19**(1), 89–1.

Hancké, B. (2013*b*), *Unions, Central Banks, and EMU: Labour Market Institutions and Monetary Integration in Europe*, Oxford University Press.

Helpman, E. and Krugman, P. (1989), *Trade Policy and Market Structure*, MIT Press.

Henisz, W. J., Zelner, B. A. and Guillén, M. F. (2005), 'The worldwide diffusion of market-oriented infrastructure reform, 1977–1999', *American Sociological Review* **70**(6), 871–897.

Héritier, A. (1997), 'Market-making policy in europe: its impact on member state policies. the case of road haulage in britain, the netherlands, germany and italy', *Journal of European Public Policy* **4**(4), 539–555.

Héritier, A. (1999), *Policy-making and diversity in Europe: Escape from deadlock*, Cambridge University Press.

Héritier, A. and Knill, C. (2000), 'Differential responses to european policies: a comparison', *Max-Planck Project Group Preprint* .

Heyman, F., Sjöholm, F. and Tingvall, P. G. (2007), 'Is there really a foreign ownership wage premium? evidence from matched employer–employee data', *Journal of International Economics* **73**(2), 355–376.

Hicks, A. and Kenworthy, L. (1998), 'Cooperation and political economic performance in affluent democratic capitalism', *American Journal of Sociology* **103**(6), 1631–1672.

Holland, D. (2009), 'The impact of european and global integration on the mark-up of prices over costs', *National Institute Economic Review* **208**, 118–128.

Holmes, T. J., Levine, D. K. and Schmitz, J. A. (2012), 'Monopoly and the incentive to innovate when adoption involves switchover disruptions', *American Economic Journal: Microeconomics* **4**(3), 1–33.

Hölscher, J. and Stephan, J. (2009), 'Competition and antitrust policy in the enlarged european union: a level playing field?', *JCMS: Journal of Common Market Studies* **47**(4), 863–889.

Hope, D. and Martelli, A. (2019), 'The transition to the knowledge economy, labor market institutions, and income inequality in advanced democracies', *World Politics* **71**(2), 236–288.

Humphreys, P. and Padgett, S. (2006), 'Globalization, the european union, and domestic governance in telecoms and electricity', *Governance* **19**(3), 383–406.

Hylton, K. N. and Deng, F. (2007), 'Antitrust around the world: An empirical analysis of the scope of competition laws and their effects', *Antitrust Law Journal* **74**(2), 271–341.

Hyman, R. (1997), 'Trade unions and european integration', *Work and Occupations* **24**(3), 309–331.

Impullitti, G. and Licandro, O. (2018), 'Trade, firm selection and innovation: The competition channel', *The Economic Journal* **128**(608), 189–229.

Iversen, T. and Soskice, D. (2015), 'Democratic limits to redistribution: Inclusionary versus exclusionary coalitions in the knowledge economy', *World Politics* **67**(2), 185–225.

Jäger, S., Noy, S., Schoefer, B. and Welcome, P. D. (2022), 'The german model of industrial relations: A primer', *J. Econ. Perspect.* .

Johnston, A. and Hancké, B. (2009), 'Wage inflation and labour unions in emu', *Journal of European Public Policy* **16**(4), 601–622.

Jordà, Ò., Schularick, M. and Taylor, A. M. (2017), 'Macrofinancial history and the new business cycle facts', *NBER macroeconomics annual* **31**(1), 213–263.

Jordana, J., Levi-Faur, D. and Puig, I. (2006), 'The limits of europeanization: regulatory reforms in the spanish and portuguese telecommunications and electricity sectors', *Governance* **19**(3), 437–464.

Kalemli-Ozcan, S., Sorensen, B., Villegas-Sanchez, C., Volosovych, V. and Yesiltas, S. (2015), How to construct nationally representative firm level data from the orbis global database: New facts and aggregate implications, Technical report, National Bureau of Economic Research.

Karabarbounis, L. and Neiman, B. (2014), 'The global decline of the labor share', *The Quarterly Journal of Economics* **129**(1), 61–103.

Kennard, A. (2020), 'The enemy of my enemy: when firms support climate change regulation', *International Organization* **74**(2), 187–221.

Kim, I. S., Londregan, J. and Ratkovic, M. (2019), 'The effects of political institutions on the extensive and intensive margins of trade', *International Organization* **73**(4), 755–792.

Kim, I. S. and Osgood, I. (2019), 'Firms in trade and trade politics', *Annual Review of Political Science* **22**, 399–417.

Krugman, P. (1982), Trade in differentiated products and the political economy of trade liberalization, *in* 'Import competition and response', University of Chicago Press, pp. 197–222.

Kurz, H. D. (2016), 'Adam smith on markets, competition and violations of natural liberty', *Cambridge Journal of Economics* **40**(2), 615–638.

Kwoka, J. (2017), 'Issue brief: Us antitrust and competition policy amid the new merger wave'.

Laruelle, A. and Valenciano, F. (2008), 'Noncooperative foundations of bargaining power in committees and the shapley–shubik index', *Games and Economic Behavior* **63**(1), 341–353.

Levi-Faur, D. (1999), 'The governance of competition: the interplay of technology, economics, and politics in european union electricity and telecom regimes', *Journal of Public policy* **19**(2), 175–207.

Levi-Faur, D. (2003), 'The politics of liberalisation: Privatisation and regulation-for-competition in europe's and latin america's telecoms and electricity industries', *European Journal of Political Research* **42**(5), 705–740.

Levi-Faur, D. (2004), 'On the "net impact" of europeanization: The eu's telecoms and electricity regimes between the global and the national', *Comparative Political Studies* **37**(1), 3–29.

Levinsohn, J. (1993), 'Testing the imports-as-market-discipline hypothesis', *Journal of international Economics* **35**(1-2), 1–22.

Levinsohn, J. and Petrin, A. (2003), 'Estimating production functions using inputs to control for unobservables', *The Review of Economic Studies* **70**(2), 317–341.

Lowe, W., Benoit, K., Mikhaylov, S. and Laver, M. (2011), 'Scaling policy preferences from coded political texts', *Legislative studies quarterly* **36**(1), 123–155.

Lu, Y. and Yu, L. (2015), 'Trade liberalization and markup dispersion: evidence from china's wto accession', *American Economic Journal: Applied Economics* **7**(4), 221–53.

Mansfield, E. D. and Mutz, D. C. (2009), 'Support for free trade: Self-interest, sociotropic politics, and out-group anxiety', *International Organization* **63**(3), 425–457.

Martin, S. (2002), *Advanced Industrial Economics*, 2nd edn, Blackwell, Oxford, UK.

Marx, K. and Engels, F. (1848), *The communist manifesto. 1848*, Pluto Press.

Mayer, T. and Ottaviano, G. I. (2008), 'The happy few: The internationalization of european firms', *Intereconomics* **43**(3), 135–148.

McGowan, L. and Wilks, S. (1996), Competition policy in the european union: creating a federal agency, *in* G. B. Doern and S. Wilks, eds, 'Comparative competition policy: national institutions in a global market', Clarendon Press, pp. 225–267.

Megginson, W. L., Nash, R. C., Netter, J. M. and Poulsen, A. B. (2004), 'The choice of private versus public capital markets: Evidence from privatizations', *The Journal of Finance* **59**(6), 2835–2870.

Melitz, M. J. (2003), 'The impact of trade on intra-industry reallocations and aggregate industry productivity', *Econometrica* **71**(6), 1695–1725.

Melitz, M. J. and Ottaviano, G. I. (2008), 'Market size, trade, and productivity', *The Review of Economic Studies* **75**(1), 295–316.

Mertens, M. (2022), 'Micro-mechanisms behind declining labor shares: Rising market power and changing modes of production', *International Journal of Industrial Organization* **81**.

Meseguer, C. (2004), 'What role for learning? the diffusion of privatisation in oecd and latin american countries', *Journal of Public Policy* **24**(3), 299–325.

Meunier, S. (2019), 'Beware of chinese bearing gifts: Why china's direct investment poses political challenges in europe and the united states', pp. 345–59.

Meunier, S. and Mickus, J. (2020), 'Sizing up the competition: explaining reform of european union competition policy in the covid-19 era', *Journal of European Integration* **42**(8), 1077–1094.

Mo, J. (1994), 'The logic of two-level games with endogenous domestic coalitions', *Journal of Conflict Resolution* **38**(3), 402–422.

Mo, J. (1995), 'Domestic institutions and international bargaining: The role of agent veto in two-level games', *American Political Science Review* **89**(4), 914–924.

Moravcsik, A. (1998), *The Choice for Europe: Social Purpose and State Power from Messina to Maastricht*, Cornell University Press.

Morlacco, M. (2019), 'Market power in input markets: Theory and evidence from french manufacturing', *Unpublished, March* **20**, 2019.

Motta, M. (2004), *Competition policy: theory and practice*, Cambridge university press.

Mukand, S. W. and Rodrik, D. (2005), 'In search of the holy grail: policy convergence, experimentation, and economic performance', *American Economic Review* **95**(1), 374–383.

Nash, J. (1950), 'The bargaining problem', *Econometrica* pp. 155–162.

Neven, D. and Seabright, P. (1997), *Trade Liberalization and The Coordination of Competition Policy*, Routledge.

Nickell, S. J. (1996), 'Competition and corporate performance', *Journal of political economy* **104**(4), 724–746.

Nicolaïdis, K. and Vernon, R. (1997), 'Competition policy and trade policy in the european union', *Global Competition Policy* p. 271.

Nicoletti, G. and Scarpetta, S. (2003), 'Regulation, productivity and growth: Oecd evidence', *Economic policy* **18**(36), 9–72.

North, D. (1981), *Structure and Change in Economic History*, Norton, London.

North, D. (1991), 'Institutions', *Journal of Economic Perspectives* **5**(1), 97–112.

Obinger, H. and Schmitt, C. (2011), 'Guns and butter? regime competition and the welfare state during the cold war', *World Politics* **63**(2), 246–270.

Obinger, H., Schmitt, C. and Traub, S. (2016), *The political economy of privatization in rich democracies*, Oxford University Press.

Olley, S. and Pakes, A. (1996), 'The dynamics of productivity in the telecommunications equipment industry', pp. 1263–1297.

Osgood, I. (2017), 'The breakdown of industrial opposition to trade: Firms, product variety, and reciprocal liberalization', *World Politics* **69**(1), 184–231.

Osgood, I., Tingley, D., Bernauer, T., Kim, I. S., Milner, H. V. and Spilker, G. (2017), 'The charmed life of superstar exporters: Survey evidence on firms and trade policy', *The Journal of Politics* **79**(1), 133–152.

Philippon, T. (2019), *The Great Reversal: How America Gave Up on Free Markets*, Harvard University Press.

Philippon, T. (2021), 'The case for free markets', *Oxford Review of Economic Policy* **37**(4), 707–719.

Pollak, J. and Slominski, P. (2011), Liberalizing the eu's energy market, *in* G. Falkner, ed., 'The EU's decision traps: comparing policies', OUP Oxford, p. 92.

Prager, E. and Schmitt, M. (2021), 'Employer consolidation and wages: Evidence from hospitals', *American Economic Review* **111**(2), 397–427.

Putnam, R. D. (1988), 'Diplomacy and domestic politics: the logic of two-level games', *International organization* **42**(3), 427–460.

Roberts, B. M. and Saeed, M. A. (2012), 'Privatizations around the world: economic or political determinants?', *Economics & Politics* **24**(1), 47–71.

Robinson, J. (1969), *The economics of imperfect competition*, Springer.

Rooney, W. H., Lee, C. and Payne, A. M. (2023), 'Taking innovation seriously: A dynamic competition model for antitrust law', *Columbia Business Law Review* **2023**(1).

Rose, A. K. (2000), 'One money, one market: Estimating the effect of common currencies on trade', *Economic Policy* **30**, 9–45.

Rosenbaum, P. R. and Rubin, D. B. (1983), 'The central role of the propensity score in observational studies for causal effects', *Biometrika* **70**(1), 41–55.

Rovigatti, G. and Mollisi, V. (2018), 'Theory and practice of total-factor productivity estimation: The control function approach using stata', *The Stata Journal* **18**(3), 618–662.

Rubinstein, A. (1982), 'Perfect equilibrium in a bargaining model', *Econometrica: Journal of the Econometric Society* pp. 97–109.

Russo, F., Schinkel, M. P., Günster, A. and Carree, M. (2010), *European commission decisions on competition: economic perspectives on landmark antitrust and merger cases*, Cambridge University Press.

Sandholtz, W. (1993), 'Choosing union: Monetary politics and maastricht', *International Organization* **47**(1), 1–39.

Sandholtz, W. (1998), The emergence of a supranational telecommunications regime, *in* W. Sandholtz and A. Stone-Sweet, eds, 'European integration and supranational governance', Clarendon Press, pp. 134–163.

Sandholtz, W. and Zysman, J. (1989), '1992: recasting the european bargain', *World politics* **42**(1), 95–128.

Sant'Anna, P. H. and Zhao, J. (2020), 'Doubly robust difference-in-differences estimators', *Journal of Econometrics* **219**(1), 101–122.

Sarkar, M., Cavusgil, S. T. and Aulakh, P. S. (1999), 'International expansion of telecommunication carriers: The influence of market structure, network characteristics, and entry imperfections', *Journal of International Business Studies* **30**(2), 361–381.

Scheve, K. and Slaughter, M. J. (2004), 'Economic insecurity and the globalization of production', *American Journal of Political Science* **48**(4), 662–674.

Schmidt, K. M. (2000), 'The political economy of mass privatization and the risk of expropriation', *European Economic Review* **44**(2), 393–421.

Schmitt, C. (2011), 'What drives the diffusion of privatization policy? evidence from the telecommunications sector', *Journal of Public Policy* **31**(1), 95–117.

Schmitt, C. (2014), 'The diffusion of privatization in europe: Political affinity or economic competition?', *Public Administration* **92**(3), 615–635.

Schmitt, C. and Zohlnhöfer, R. (2019), 'Partisan differences and the interventionist state in advanced democracies', *Socio-Economic Review* **17**(4), 969–992.

Schneider, C. J. and Slantchev, B. L. (2018), 'The domestic politics of international cooperation: Germany and the european debt crisis', *International Organization* **72**(1), 1–31.

Schneider, G. and Cederman, L.-E. (1994), 'The change of tide in political cooperation: A limited information model of european integration', *International Organization* **48**(4), 633–662.

Schneider, G., Finke, D. and Bailer, S. (2010), 'Bargaining power in the european union: An evaluation of competing game-theoretic models', *Political Studies* **58**(1), 85–103.

Schumpeter, J. A. (2013), *Capitalism, socialism and democracy*, routledge.

Schuster, P., Schmitt, C. and Traub, S. (2013), 'The retreat of the state from entrepreneurial activities: A convergence analysis for oecd countries, 1980–2007', *European Journal of Political Economy* **32**, 95–112.

Sembenelli, A. and Siotis, G. (2008), 'Foreign direct investment and mark-up dynamics: Evidence from spanish firms', *Journal of International Economics* **76**(1), 107–115.

Shadmehr, M. (2019), 'Investment in the shadow of conflict: Globalization, capital control, and state repression', *American Political Science Review* **113**(4), 997–1011.

Siotis, G. (2003), 'Competitive pressure and economic integration: An illustration for spain, 1983–1996', *International Journal of Industrial Organization* **21**(10), 1435–1459.

Smith, A. (1776), *An Inquiry into the Nature and Causes of the Wealth of Nations*, The Electric Book Company.

Stiebale, J., Suedekum, J. and Woessner, N. (2020), Robots and the rise of european superstar firms, Technical report, SSRN Working Paper.

Stigler, G. J. (1971), 'The theory of economic regulation', *The Bell Journal of Economics and Management Science* **2**(1), 3.

Stuart, M. (1848), *Principles of Political Economy*, Batoche Books.

Tambe, P., Hitt, L., Rock, D. and Brynjolfsson, E. (2020), Digital capital and superstar firms, Technical Report w28285, National Bureau of Economic Research.

Teece, D. J. (2011), Favoring dynamic over static competition: implications for antitrust analysis and policy, *in* A. M. Geoffrey and D. W. Joshua, eds, 'Competition policy and patent law under uncertainty: Regulating innovation', Cambridge University Press, pp. 203–227.

Thatcher, M. (1999), *The politics of telecommunications: National institutions, convergence, and change in Britain and France*, Oxford University Press on Demand.

Thatcher, M. (2001), 'The commission and national governments as partners: Ec regulatory expansion in telecommunications 1979–2000', *Journal of European Public Policy* **8**(4), 558–584.

Thatcher, M. (2014), 'From old to new industrial policy via economic regulation', *Rivista della regolazione dei mercati* **2**, 6–22.

Thelen, K. (1993), 'West european labor in transition: Sweden and germany compared', *World Politics* **46**(1), 23–49.

Tortarolo, D. and Zarate, R. D. (2018), 'Measuring imperfect competition in product and labor markets. an empirical analysis using firm-level production data'.

Tybout, J. R. (2003), Plant-and firm-level evidence on" new" trade theories, *in* E. K. Choi and J. Harrigan, eds, 'Handbook of international trade', Oxford, UK: Blackwell Publishing, pp. 388—-415.

Volden, C., Ting, M. M. and Carpenter, D. P. (2008), 'A formal model of learning and policy diffusion', *American Political Science Review* **102**(3), 319–332.

Waarden, F. and Drahos, M. (2002), 'Courts and (epistemic) communities in the convergence of competition policies', *Journal of European Public Policy* **9**(6), 913–934.

Wallerstein, M., Golden, M. and Lange, P. (1997), 'Unions, employers' associations, and wage-setting institutions in northern and central europe, 1950–1992', *ILR Review* **50**(3), 379–401.

Wang, S. and Yang, D. Y. (2021), Policy experimentation in china: The political economy of policy learning, Technical report, National Bureau of Economic Research.

Warlouzet, L. (2016), 'The centralization of eu competition policy: Historical institutionalist dynamics from cartel monitoring to merger control (1956–91)', *JCMS: Journal of Common Market Studies* **54**(3), 725–741.

Weche, J. P. (2018), 'The heterogeneous competitive effects of trade and foreign direct investment: Firm-level evidence for european countries', *The World Economy* **41**(3), 801–830.

Weyerstrass, K. and Jaenicke, J. (2011), 'Is more competition conducive to the macroeconomic performance in the euro area?', *Empirica* **38**(3), 351–380.

Wilks, S. (2005), 'Agency escape: decentralization or dominance of the european commission in the modernization of competition policy?', *Governance* **18**(3), 431–452.

Wilks, S. (2007), 'Agencies, networks, discourses and the trajectory of european competition enforcement', *European Competition Journal* **3**(2), 437–464.

Wren, A. (2013), Introduction: The political economy of post-industrial societies, *in*

A. Wren, ed., 'The Political Economy of the Service Transition', Oxford University Press, Oxford, UK.

Wu, Q. (2012), 'Eu–china competition dialogue: a new step in the internationalisation of eu competition law?', *European Law Journal* **18**(3), 461–477.

Yeh, C., Macaluso, C. and Hershbein, B. (2022), 'Monopsony in the us labor market', *American Economic Review* **112**(7), 2099–2138.

Zohlnhöfer, R., Obinger, H. and Wolf, F. (2008), 'Partisan politics, globalization, and the determinants of privatization proceeds in advanced democracies (1990–2000)', *Governance* **21**(1), 95–121.