Government Intervention in European Mergers and Acquisitions

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ABSTRACT
The increasing globalization of economies has leveraged protectionist attitudes in different countries during the last decades. In the context of cross-border mergers and acquisitions (M&A), national governments have intervened to "protect" big domestic firms and their industries from foreign bidders. Despite the potential for severe implications of these actions on the internationalization of firms and development of markets, the research in this area is relatively scarce, and we still know very little about the real causes and consequences of government intervention. In this paper, we study government opposition to cross-border European M&A during the period 1997-2017, an era of important changes in Europe. Using an event study methodology, we examine abnormal returns for targets and their rivals in the time period prior to actual intervention to gauge if investors perceive intervened deals as harmful events for the industry, which could justify government intervention. We use a hand collected sample of 1,574 EU15 rival firms for 48 mergers, of which 18 experience government intervention. Entropy balanced regression models show that rivals of intervened targets earn significantly lower returns relative to rivals of non-intervened targets on deal announcement. Nevertheless, rivals' abnormal returns are not negative, suggesting that intervened deals are not perceived ex ante as harmful for industry competitiveness. The results are more consistent with investors' ability to identify likely blocked deals, which puts downward pressure on abnormal returns to both the target companies and their rivals. These findings indicate that government interventions against foreign bidders seem to have an economic cost in the sector that is anticipated by the investors.

Keywords: Mergers and acquisitions; Government intervention; Economic nationalism; Event studies; Competitors

JEL classifications: G34; G38

1. INTRODUCTION

Cross-border mergers and acquisitions (M&A) have become one of the most important growth strategies for companies as a consequence of the increasing globalization of economies. Data from Thomson Reuters indicate that since 2015, cross-border M&A have hovered close to $1.0 trillion (except 2019 and 2020, when it decreased to $0.8 and $0.7 trillion, respectively), representing around one third of total global M&A.

Meanwhile, a continuous increase in protectionist policies and regulations is observed in many countries around the world (UNCTAD, 2021). Government intervention against foreign firms in cross-border M&A forms part of these policies and can render cross-border deals difficult, or even impossible.[1] These interventions are often justified by governments as being necessary based on national interest considerations (Bertrand et al., 2016; Heinemann, 2012; Callaghan, 2018). Nevertheless, academic research has often questioned the effectiveness and real motivation of governmental regulatory interventions (see, for example, Aktas et al., 2004; Aktas et al, 2007; Dinc and Erel, 2013; or Deshpande et al., 2016).

Europe has not been absent to these trends. The ownership structure of continental European companies is characterized by a high degree of concentration and a predominance of cross-holdings. As a consequence, the European market for corporate control (with the exception of UK) has been characterized by its low level of activity and the absence of hostile takeovers. However, various events (globalization of the economy, industry deregulation, the introduction of the single currency, and the development of a common legal framework for corporate takeovers) lead to a significant growth since the 1990s of the European market for corporate control, largely explained by the increase in intra-European cross-border transactions (Martynova and Renneboog, 2006; Moschieri and

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[1] Cross-border M&A deals (exceeding $50 million) fell through in 2018 because of government interventions (UNCTAD, 2019)

Campa, 2014). The increasing number of cross-border mergers leveraged protectionist attitudes in different European countries (see Kim, 2007, and Heinemann, 2012). Appealing to the protection of national interests, many governments have tried to impose barriers to the acquisition of national companies by foreign firms, or, alternatively, have encouraged the creation of national champions that are too big to be taken over by foreign companies (Vives, 2007).

Despite the recent rise of protectionism and the potential for severe implications on the internationalization of firms, the influence of economic nationalism on European M&As has received little empirical attention (Zhang and He, 2014), so we still know very little about what drives government intervention in the host market and about the implications of intervention on the firms and industries involved (Bertrand et al., 2016). Our paper attempts to fill this void by analysing government opposition to cross-border European M&A during the period 1997-2017, an era of important changes in Europe. During these years, many efforts have been done to achieve the goal of economic integration and capital market union. At the same time, and especially after the global financial crisis, greater emphasis in political risk and the rise of populism and extreme right parties, have strengthened nationalist sentiments in many European countries, favoring domestic ownership over foreign ownership. Domestic government opposition to foreign bidders affects (directly and indirectly) the workings of the market economy (Dinc and Erel, 2003), so it is important to have a greater understanding on what motivates opposition and its economic implications.

Our paper is closely related to Dinc and Erel (2013), who focus on protectionism in Western-European countries. They examine the impact of government intervention to large M&A attempts in the EU15 during 1997-2006. They show that intervention clearly determines the success or failure of a deal, and further, negatively influences foreign

acquisitions of other companies in that country in the future. As for the motives, they document that sociological and political factors seem to play the most important role in explaining nationalism in mergers. However, they do not examine what impact intervened deals has on industry competitors returns, and if this plays a role in motivating governments to intervene. Our investigation fills this gap by analysing if expected losses for industry competitors could help explain government intervention in European M&As.

We use information on 1,574 EU rival firms from a hand collected sample of 48 merger deals. Eighteen of these deals were intervened by European national governments in the period 1997-2017, and the remaining 30, made up of both domestic and cross-border deals, were selected as a matched (time period and industry) control sample.

Our analysis begins with an event study methodology and we rely on prior literature on rivals' returns to M&A announcements (e.g., Eckbo, 1983; Song and Walkling, 2000; Fee and Thomas, 2004; Li et al., 2017) to infer the potential effects that the merger would have had on the targeted sector. If the proposed deal is expected to benefit rivals, e.g., through collusion, increased future takeover likelihood, or signalling on economic efficiencies, rivals should experience an increase in returns around the merger announcement date. If, on the other hand, the proposed merger is expected to harm competitors through greater competition, rivals' abnormal returns will decrease on deal announcement. Overall, the returns earned by rivals during the announcement period will provide governments and regulators with valuable information about the likely impact of the deal on the targeted industry.

Some prior work has partly examined this issue. For example, in an unpublished paper Powell et al. (2017) report positive abnormal returns for rivals of 6 EU15 blocked deals, supporting a contagion effect. While their sample size is relatively small at only 6 blocked

deals, the identification strategy is also less precise as they do not examine a counter factual sample of firms.

We find that rivals of targets of intervened deals obtain insignificant abnormal returns of 0.01% around the 5-day announcement date. By contrast, for the same announcement period, industry rivals of targets of non-intervened deals obtain positive and significant abnormal returns of 0.90%. Differences between both samples are also statistically significant and persist in OLS regressions that control for typical variables used by prior studies (Schuman, 1993; Song and Walkling, 2000; Becher et al., 2012; Gaur et al., 2013; Derrien et al., 2017; Li et al., 2017; Bernile and Lyandres, 2019) that are related to the characteristics of the rival firm, M&A deal variables, industry, year, and country fixed effects. To address possible selection bias and other endogeneity concerns, we also report Entropy Balanced (Hainmueller, 2012) regressions.

Although competitors (rivals) react less positively to the announcement of deals subsequently intervened, we show no evidence of negative abnormal returns for domestic rivals. Based on this evidence we conclude that the deal does not harm the domestic industry. Additional analysis suggests that the lower abnormal returns earned by rival companies of intervened deals seem to be linked with the anticipation of future government intervention. We show that variables used in prior literature (Dinc and Erel, 2013; Rowoldt and Starke, 2016) to determine the probability of intervention, including transaction size, hostility, low investment freedom and low GDP growth rate in the host country, significantly reduce rival abnormal returns.

This study contributes to the existing literature in several ways. First, our results extend previous studies on rivals' returns to M&A announcements, analysing a novel and special case: deals intervened on the grounds of economic nationalism. Although there are some literatures evaluating spillover effects of government regulation and actions on rivals

of target firms (e.g., Eckbo, 1983; Aktas et al., 2007; Duso et al, 2007), stock market reaction to national government intervened deals is an unexplored issue, which should be of interest to regulators, investors, and managers. Our paper also extends Dinc and Erel (2013) on the motives for nationalistic interventions on M&A in Europe as we empirically examine if expected losses for competitors in the industry could partly explain or justify government intervention. Lastly, we also shed some light on the idea proposed by Eckbo (1985) and Aktas et al., (2004; 2007) who indicate that the market considers the prospect for regulatory intervention in its initial assessment of the proposed mergers.

The rest of the paper is structured as follows. Section 2 provides a brief literature review on economic nationalism in M&A and on the impact of M&A on rivals. Section 3 describes the construction of our sample, and Section 4 outlines the methodology employed, and reports summary statistics. Section 5 reports the empirical results, and Section 6 summarizes and concludes.

2. BACKGROUND AND RELATED LITERATURE

The papers most closely related to our study are those that focus on government intervention on M&A, and papers that examine intra-industry effects of mergers.

2.1. Economic nationalism in M&A

Nationalism is "a set of policies emphasizing domestic economic activities and unified national interests" (Enderwick, 2011, p. 326). Preserving domestic ownership of companies is part of economic nationalism, so countries explore the adoption of policies to protect domestic firms from foreign takeovers (Kim, 2007). The influence of economic nationalism on M&A can take the form of opposition to a foreign acquirer but can also include support for a domestic acquirer to create a national champion that is considered too big to be acquired by foreign firms (Dinc and Erel, 2013).

These actions occur in developing, but also in developed countries. Moschieri and Campa (2014) note that European M&A have important idiosyncrasies, largely driven by less developed capital markets, and greater ownership concentration of European companies (with the exception of UK). M&A deals are typically friendly and are largely arranged through private transactions. Furthermore, public control and state ownership of companies operating in key industries have been common in European countries. As a consequence, deals in regulated industries, or in other industries perceived to be of greater national interest due to the activity they perform (telecommunications, electricity, banking, etc), are often subject to additional regulatory approval or even direct government intervention (Campa & Hernando, 2004). The intervention of governments against foreign acquirers in Europe (Dinc and Erel, 2013), as well as in other parts of the world (Zhang and He, 2014), is often justified as being necessary for the protection of imprecisely defined national security interests (Bertrand et al, 2016; Heinemann, 2012).[2] In this sense, it is sometimes hard to know exactly what the opponents of foreign ownership fear (Lommerud et al., 2011). Some seem to worry that international firms will be too profit oriented and might have harmful effects on domestic employment (Edwards, 2004; Siems, 2004) and that headquarter services will disappear from the national economy (Lommerud et al., 2011). Governments also argue that the innovative activity of the target firm could be reduced following acquisition (Bertrand et al., 2016, Moran, 2013). In other cases, the government aims at attaining and securing the resources that are essential to a country's economic prosperity and political autonomy. Infrastructure, utilities, defence, cultural

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[2] With reference to transnational mergers in the European Union, the EC Merger Regulation (Council Regulation (EC) No 139/2004 of 20 January 2004) proposed that when mergers are sufficiently large (in both a geographic and economic sense) in scale to have a 'Community Dimension' they should, as a general rule, be reviewed exclusively at Community level. In order for EU Member States to intervene in a proposed merger with a "Community Dimension", article 21(4) states that the Member State must be able to argue that the action protects one of the specified interests (public security, plurality of the media or prudential rules), or alternatively it must request the Commission's authorisation to intervene on other legitimate grounds.

industries, banking, energy or steel are considered sensitive areas linked to national interest (Kim, 2007) and governments fear that leaving companies in these sectors under the control of foreign companies solely interested in financial results, would be dangerous to the national economy. Foreign M&A transactions raise, for instance, fears that they create dependencies on foreign-controlled suppliers of goods or services essential to the host country's economy (Bertrand et al., 2016). In this sense, Heinemann (2012) indicates that there may be the intention to defend sectors of strategic importance, such as the energy sector, where the takeover of domestic firms may create or reinforce energy dependence.

Governments can also intervene on the initiative of the target (Bertrand et al., 2016), especially when the proposed merger or acquisition impacts on a so-called "national champion". Governments can decide to interfere in the acquisition process of national champions on their own initiative or, potentially, lobbying can lead to policies supporting domestic firms (Motta and Ruta, 2012).

There are several methods of implementing economic nationalism in M&As (Dinc and Erel, 2013). Public statements are usually made by members of the government voicing the need to protect national interests. Furthermore, governments may intervene by playing for time, citing non-compliance with certain formalities or administrative requirements. While gaining time, governments may support the target's search for more suitable domestic bidders (Rowoldt and Starke, 2016). Further, governments can provide financing to domestic bidders to act as white knights for the target. On other occasions, governments can intervene in other ways to deter foreign bidders (Vives, 2007), including the use of "golden shares" in privatized companies, as well as the implementation of legislative barriers through ad hoc laws or regulations that make the proposed deal unfeasible.

In Europe, some papers have empirically analysed the protectionist behaviour of the European Commission in their decisions on mergers and acquisitions (Aktas et al, 2004;

2007; Deshpande et al., 2016; Bradford et al., 2018), finding mixed evidence about this supranational regulator to favour EU firms. Evidence on nationalistic interventions by governments of EU countries on mergers and acquisitions is, nevertheless, scarce. Beyond illustrating the topic with the experience derived from real cases, the only papers that address this topic are Dinc and Erel (2013), Rowoldt and Starke (2016) and, more recently, Powell et al. (2017).

Dinc and Erel (2013) analyse the economic effects derived from nationalist government intervention in M&A in Europe during the period 1997-2006. They show a clear influence of government opposition (support) in the failure (success) of the deal, as well as evidence that government intervention discourages foreign companies from bidding for other companies in that country in the future. They show that sociological and political factors play a more important role than economic factors in explaining government intervention, but as for economic factors, they only consider the unemployment rate and GDP growth rate in the country of the target.

Rowoldt and Starke (2016) specifically focus on analysing the role of governments in hostile takeovers during the period 2000-2014 in Europe and the USA. They report that government opposition is a clear determinant of bid failure. Additionally, they find positive government interventions to be positively influenced by transaction size as well as by the unemployment rate in the target nation, supporting the idea that government intervention follows populist motives in search for votes.

Our work extends these previous papers as we empirically examine if economic motivations exist that could explain or justify government intervention. More specifically, we analyse how investors in the industry evaluate these deals at announcement. If they expect the deal will have harmful effects for the firms in the industry, that might motivate government intervention that attempts to block foreign bidders.

Powell et al. (2017) provides some evidence on this issue by analysing the wealth effects of economic nationalism on domestic and foreign rivals of targets firms of 6 intervened deals in Europe during the period 1990-2013. Our study also complements this work by using a larger sample of intervened deals and providing a counterfactual analysis that also focuses on the impact for non-intervened deals. This allows us to show on bid announcement if investors price intervened and non-intervened deals differently, so providing a more accurate analysis of investors predictive ability and valuation consequences.

2.2. Impact of merger bids on industry rivals

While takeovers are significant events for both parties, they will also impact on rival or competitor firms as they reshape industry structures and boundaries, and rebalance the relative bargaining powers within industries (Derrien et al., 2017).

Using equity returns around the deal announcement date captures the markets assessment of gains (losses) for bidder, target, and rival firms (industry effect). Prior work generally shows positive abnormal announcement returns to targets, and bidders typically earn zero or small positive returns, especially if cash is used to finance the deal[3]. The impact on rivals is less clear but a number of theories have been purported to explain the likely impact on the returns to targets and rivals (see Table 1).

Table 1: Hypotheses development and predicted sign on returns

HYPOTHESIS	TARGETS RETURNS PREDICTED	RIVALS RETURNS PREDICTED
Collusion hypothesis	Positive	Positive
Signalling hypothesis on productive efficiencies	Positive	Positive
Acquisition probability	Positive	Positive

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[3] For a review of the extensive research on mergers and acquisitions, see Mulherin et al. (2017) or Yaghoubi et al. (2016).

hypothesis		
Competitive hypothesis	Positive	Negative

This table presents the main hypotheses formulated in specialized literature about the impact of mergers on the industry and, consequently, on the returns obtained by targets and rivals

Three of these theories predict a positive impact for rivals of the target firm on bid announcement, arising due to collusion in the industry, signalling related to productive efficiencies attainable in the whole industry, or an increase in the probability of future takeover for rivals.

Collusion typically applies to horizontal deals which reduce the number of competitors in the industry and enable the merging firms and their rivals to gain economic rents at the expense of customer and suppliers, by dampening competition in the industry (Stigler, 1964). Signalling suggests that even if a merger is justified on the grounds of increased productivity of the merged firms (e.g., realization of technological complementarities, financial synergies, replacement of inefficient management teams, etc), rival firms can benefit if the merger announcement signals information regarding innovative uses of capital, or productivity increases, that can also be exploited by rival firms (Eckbo, 1983; Akhigbe et al., 2000). Note that benefits from signalling occur even if the deal later fails as industry-based efficiencies become known at deal announcement. Finally, the acquisition probability hypothesis (Song and Walkling, 2000) asserts that rivals can earn positive abnormal returns because of the increased probability that they will be targets themselves. Prior work (Mitchell and Mulherin, 1996; Harford, 2005; Powell and Yawson, 2005) shows that acquisitions cluster by industry, so the announcement of a deal within an industry signals an increased likelihood of more acquisitions in that industry (Gort, 1969).

The competitive hypothesis, unlike the others, predicts a negative impact for rivals of the target firm on bid announcement. Negative abnormal returns to rivals of the target are justified by the competitive hypothesis as the deal might give the combined firm a

competitive advantage over industry rivals. If rival firms fail to mirror similar productive efficiencies as the new merged firm they will become less competitive and lose market share and value (Chatterjee, 1986).

The bulk of prior work support a contagion effect, with rivals, as with targets, earning positive returns on deal announcement. While the returns are lower than targets', the findings support the idea that competitors benefit (e.g., Eckbo, 1983; Eckbo, 1985; Eckbo and Wier, 1985; Chatterjee, 1986; Song and Walkling, 2000; Akhigbe et al., 2000; Bley and Madura, 2003; Fee and Thomas, 2004; Li et al., 2017). Most work generally supports contagion arising from increased acquisition probability (e.g., Song and Walkling, 2000; Akhigbe et al., 2000; Li et al., 2017) and from signalling related to possible efficiencies (e.g., Eckbo, 1985; Eckbo and Wier, 1985). Prior work (e.g., Eckbo, 1983; Aktas et al., 2007; Duso et al, 2007) also shows that collusion is unlikely to hold, even using data on deals investigated by antitrust authorities were a greater collusive effect is expected (see Cichello and Lamdin, 2006, for a review of literature on this topic). Evidence supporting the competitive hypothesis is uncommon, but studies that provide some support include Bernile and Lyandres (2019), Aktas et al. (2007) and Derrien et al (2017)[4].

The above review begs the question of what should we observe for rivals of targets for deals intervened by national governments? Unlike intervention by antitrust authorities, government intervention poses additional problems for investors as it should typically not occur under EU law for EU bidders, and is likely to be influenced by political leanings, domestic policy and short-term interests under the current incumbent government. Previous evidence on this issue is scarce, with only Powell et al. (2017) reporting a contagion effect for rivals around the merger announcement date. This seems to fit with prior work noted above on the impact of bids on rivals.

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[4] Derrien et al. (2017) only find support for the competitive hypothesis for the subsample of mergers of unlisted companies.

However, if investors expect competitors to be harmed by deals we should observe negative abnormal returns for rivals at announcement, and this could be the reason for subsequent intervention by governments. For example, Aktas et al. (2007) conclude that European antitrust authorities are protectionist given that the probability of European regulator intervention is higher when foreign takeovers have a negative impact on the announcement returns to European competitors. Similar arguments also likely apply to government intervention when the motive is to protect domestic industries.

Even if the deal does not harm rivals, Eckbo (1985) Aktas et al. (2004; 2007) also indicate that investors can recognise the threat of regulatory intervention and bid up prices less at announcement because of the uncertainty about the final outcome of the deal. These papers refer to the anticipation by investors of decisions by antitrust authorities. Anticipation of nationalistic interventions by national governments is also very likely. Powell et al. (2017) in their study of 6 intervened deals, do not observe significant rivals' abnormal returns around intervention dates. They argue that the absence of a strong reaction around intervention dates is likely due to anticipation of government intervention prior to the actual intervention. In fact, at the time of the announcement, there may have already been some statements by members of the government that give investors advance notice of the uncertainty about the final outcome of the deal.

Overall, we expect lower abnormal returns for rivals of intervened deals relative to rivals of non-intervened deals on deal announcement. Formally, our key hypothesis is:

"Rivals of targets of intervened deals will obtain lower abnormal returns at announcement than rivals of targets of non-intervened deals, after controlling for rival firm, deal, industry, year, and country factors that predict rival returns".

3. DATA SOURCES AND SAMPLE DESIGN

3.1. Selection of intervened deals

To select the sample, we first sought information on M&A over targets domiciled in any of the EU15 countries, announced over the period 1997-2017, in which host governments intervened on the grounds of economic nationalism. For this purpose, we used the Lexis-Nexis database that provides access to full-text news, business, and legal publications around the world (35,000 international sources). We used keywords such as "economic nationalism", "government intervention" or "government opposition" combined with "merger", "acquisition" or "takeover".

A detailed analysis of all related newspaper articles was used to determine if government intervention occurred in the corresponding deal and, if such intervention was motivated by economic nationalism. There are various ways in which the government interferes in deals, e.g., approval of regulations that hinder the deal, use (or threat to use) of its shareholding (*golden share*) in the target to deter the acquirer, search for a domestic bidder, or political speeches showing opposition to the deal to build negative sentiment. Typically, several of these methods are used simultaneously on a continuous basis during the bid process. Our search reveals 25 clear cases of nationalist intervention. In three of them, the intervention aimed to support a deal between domestic companies in order to prevent the entry of a foreign acquirer. These deals were eliminated from the sample as our arguments refer more specifically to nationalistic interventions aimed to block deals. Four other deals were eliminated due to lack of financial data on equity prices for the targets or their rivals from DataStream. Our final sample of intervened deals is made up of 18 cases in which the government intervention was to oppose the deal (14 of these deals were subsequently unsuccessful for the original bidder). Although 18 deals are a very small number of merger events, our main focus is on the samples of rival firms. In addition, it is important to note that these 18 deals are significant considering the rare phenomenon under

analysis (Rowoldt and Starke (2016) find 9 hostile deals opposed by European governments during the period 2000-2014) and in terms of value (the mean market capitalization of targets is $14,000 million, and the aggregate deal value is over $0.5 billion). The sample of deals is also representative relative to prior work. For example, Powell et al. (2017) examine a sample of 6 blocked deals. The countries with the highest number of intervened deals in our sample are Italy (6) and Portugal and Spain (3 in each country).[5] Table 2 shows the distribution of the 18 cases by year and sector. As can be seen, the cases mainly belong to traditionally highly regulated sectors, such as banking, telecommunications and energy. Regarding the temporal distribution, a peak is observed in the year prior to the adoption of the euro and in the middle of the first decade of the 21st century.[6] The appendix provides greater detail on each deal, including bidder and target names and country, affiliated industry, announcement date, and whether the deal was ultimately completed.

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[5] Nevertheless, if we consider the 25 deals, France is the second more interventionist country after Italy. The French government has intervened on several occasions, not to oppose, but to support the merger of two national companies in order to prevent the entry of a foreign company. It is the case of ELF and Total Fina in 1999, Aventis and Sanofi in 2004, and Gaz de France and Suez in 2007.

[6] A similar pattern is observed for total M&As in Europe https://imaa-institute.org/mergers-and-acquisitions-statistics/.

Table 2: Distribution of intervened deals by year and industry

YEAR	Bank	Construction	Energy	Food	Insurance	Motor	Motorway operator	Telecoms	Transport	TOTAL
1997					1					1
1999	1							2		3
2000		1								1
2001								1		1
2003			1							1
2005	3									3
2006			1			1	1		1	4
2009		1								1
2011				1						1
2016								1		1
2017							1			1
TOTAL	4	2	2	1	1	1	2	4	1	18

The table shows the distribution of the sample of intervened deals by industry and year.

3.2. Selection of matching non-intervened deals

To select the matching sample of non-intervened deals we extract information from Thomson Reuters Securities Data Company (SDC) Platinum database. We focus on comparable deals from our M&A dataset using time (year prior to announcement) and industry (SIC 1-digit) in which no government intervention occurred. For each of the 18 cases that make up the sample of intervened deals, those M&As with a deal value of over US$1 million, announced in the previous year and whose target firm operated in a similar sector as the target company of the corresponding intervened deal were selected.

In order to ensure that investors' perceptions on the benefits of the deals that made up the matching sample were minimally influenced by the likelihood of a subsequent government intervention, it was also required that the target company be based in the UK - the least interventionist European country during these years. As indicated by Vives (2007), protectionist reactions have spread to many countries on the European continent, with the UK being the only case in which competition policy really seems to have priority over considerations of economic nationalism. Kim (2007) also states that the UK has shown during many years a high openness toward foreign investment even in areas heavily protected in other countries, such as electricity or water industries. Furthermore, since returns at announcement of intervened deals likely relate to the anticipation of future intervention (Aktas et al., 2007), using "similar" UK deals allows for a better counterfactual where intervention is not likely. With these criteria, 30 non-intervened deals were identified, constituting the matching sample.

3.3. Selection of rivals

The sample of rivals was obtained from DataStream. Bley and Madura (2003) demonstrate that intra-industry effects of M&A in Europe spill over into other European countries, so

we consider domestic and international competitors in order to analyse the expected impact of the deal in the targeted industry. The list of rivals from within the EU15 countries for each target was obtained using the targets DataStream Level 5 industry code (similar to SIC 4-digit). The list was checked to: (1) remove from the list the target and acquirer of the deal; (2) filtering out duplicate rivals (e.g., firms with "A" and "B" stock listings); and (3) ensure that data on returns were available. After controlling for the above restrictions, we are left with a sample of 1,574 rival firms. A summary of the composition of the sample of rivals is reported in Table 3.

Table 3: Sample composition of rival firms

	Number of deals	Number of rivals	Number of domestic rivals	Median number of rivals per deal	Minimum number of rivals per deal	Maximum number of rivals per deal
Intervened deals	18	797	85	30	5	105
Non-intervened deals	30	777	152	8	1	137

The table shows the number of rival firms in the sample for intervened and non-intervened deals.

4. METHODOLOGY

We follow an event study research design (e.g., Brown and Warner, 1980; MacKinlay, 1997), which is typical in the M&A performance literature (e.g., Datta et al., 1992; Martynova and Renneboog, 2011). We also employ cross-sectional OLS and logit regressions which are discussed later. We estimate abnormal returns using a market-adjusted returns model[7], as shown in equation (1):

$$AR_{j,t} = R_{j,t} - R_{m,t} \tag{1}$$

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[7] Brown and Warner (1980; 1985) point out that this model often yields results similar to those of more sophisticated models.

where $AR_{j,t}$ represents the abnormal stock return of firm j on day t, $R_{j,t}$ is the observed stock return of firm j on day t, and $R_{m,t}$ is the return of the market index (the index of the Stock Exchange on which the firm j is quoted) on day t, which is considered to be an approximation of the expected stock return of the firm j on day t, if the event (the announcement of the deal) had not occurred. The day the transaction is made public is denoted t = 0; the following day, t+1; the day before, t-1, and so on. For each deal, information on the date of the announcement is obtained from SDC Thomson Reuters, complementing and corroborating it with information in the financial press.

We compute the cumulated abnormal return (CAR_j) for each firm j by adding its daily abnormal returns ($AR_{j,t}$) over different event-day windows:

$$CAR_j\ (t_1,\ t_2) = \sum_{t=t_1}^{t_2} AR_{jt} \tag{2}$$

When evaluating abnormal returns for rivals in descriptive analyses, we group the rivals of each target firm into an equal-weighted portfolio so treating each portfolio as a single observation. Prior work typically (e.g., Eckbo, 1983; Song and Walkling, 2000; Bley and Madura, 2003; Fee and Thomas, 2004; Aktas et al., 2007; and Bernile and Lyandres, 2019) use portfolios when analyzing rivals reaction. The reason is that caution should be taken in interpreting simple statistics on rival returns because: (1) the number of rivals per deal varies; and (2) there is likely to be significant correlation in the individual rival returns to a particular announcement. Portfolio returns are given by:

$$RCARP_i(t_1, t_2) = \frac{1}{N_i} \sum_{j=1}^{N_i} CAR_j(t_1, t_2) \tag{3}$$

Where, $RCARP_i (t_1, t_2)$ is the cumulated abnormal return for the portfolio of rivals for target deal i, $CAR_j(t_1, t_2)$ is the cumulated abnormal return for rival firm j, defined in (2) above, and N_i is the number of rivals for target deal i.

We also report average daily abnormal returns and cumulated abnormal returns along each subsample (targets of intervened deals, targets of non-intervened deals, rival portfolios of intervened deals and rival portfolios of non-intervened deals) to obtain AAR_t (average abnormal return on day t) and CAAR (t_1, t_2) (cumulated average abnormal return on the event window (t_1, t_2)), respectively.

4.1. Summary statistics for announcement returns

In Table 4 we report the CAAR for the targets and their rival portfolios in five different event windows around the deal announcement date. We present the abnormal returns for targets of intervened deals (panel A), for targets of non-intervened deals (panel B), for the portfolios of rivals of targets of intervened deals (panel C) and non-intervened deals (panel D). In order to test if CAAR at deal announcement are significantly different from 0, we use a simple t-test. We also use a non-parametric test (the sign test or the median test) that indicates if the median is significantly different from 0, that is, if the number of firms (or portfolios, in the case of rivals) who experience positive abnormal returns is significantly different from the number of them that experience negative abnormal returns.

In order to test if there are significant differences between the abnormal returns accruing to targets of intervened and non-intervened deals and between the returns accruing to their respective rivals, we perform a t-test of difference of means and a non-parametric median test which tests the null hypothesis that the two samples were drawn from populations with the same median. The results of these tests are presented in the last rows of the table.

Table 4: Price reaction to initial announcement (targets and rivals)

	Event window				
	(-2,2)	(-1,1)	0	(-2,-1)	(1,2)
PANEL A: TARGETS OF INTERVENED DEALS					
CAAR	6,47%	5,63%	4,83%	0.91%	0.95%
t-value	3.75***	3.46***	3.78***	0.89	1.18
% positives	83%***	72%*	82%***	65%	47%
PANEL B: TARGETS OF NON-INTERVENED DEALS					
CAAR	18.24%	17.54%	11.63%	4.75%	1.86%
t-value	6.01***	5.85***	5.29***	2.75**	1.01
% positives	93%***	97%***	97%***	70%**	50%
PANEL C: RIVALS PORTFOLIOS OF INTERVENED DEALS					
CAAR	0.01%	0.01%	0.29%	-0.12%	-0.14%
t-value	0.03	0.04	1.75**	-0.63	-0.49
% positives	55%	55%	72%*	44%	39%
PANEL D: RIVALS PORTFOLIOS OF NON-INTERVENED DEALS					
CAAR	0.90%	0.62%	0.55%	-0.13%	0.43%
t-value	1.78*	1.75*	1.88*	-0.52	1.89*
% positives	70%**	67%*	60%	50%	73%**
PANEL E: DIFFERENCES IN CAARs					
Differences between targets of intervened and non-intervened deals					
Difference	-11.76%	-11.90%	-6.80	-3.84%	-0.92
t-value	-2.83***	-2.91***	-2.20**	-1.53	-0.36
Nonparametric median test (Chi2)	3.20*	8.89***	4.06**	0.17	0.04
Differences between rivals of targets of intervened and non-intervened deals					
Difference	-0.89%	-0.59%	-0.27%	0.01%	-0.57%
t-value	-1.24	-1.21	-0.67	0.02	1.56
Nonparametric median test (Chi2)	5.85***	5.84***	0.35	0.09	3.20*

This table presents the CAARs to target and equally-weighted portfolios of rival firms involved in the 48 deals that made up the sample of the study (18 intervened and 30 non-intervened). Rival portfolios contain all firms operating in the DataStream Level 5 industry code (similar to SIC 4-digit) as the target, that were publicly traded in the EU15 countries at the time of the announcement. CAARs are the cumulative average abnormal returns over different event windows around the announcement. The t-statistic tests the null hypothesis that the CAARs equal zero. We also test the significance of the percentage of positive CARs using the nonparametric median test. In Panel E, differences between CARs accruing to targets of intervened and non-intervened deals, and between CAARs accruing to portfolios of rivals in intervened and non-intervened deals, are presented. To evaluate if these differences are statistically significant, we use the parametric t-test of difference of means and a non-parametric median test which tests the null hypothesis that the two samples were drawn from populations with the same median. ***, ** and * denote significance at the 0.01, 0.05 and 0.10 level, respectively.

Consistent with previous research, we obtain statistically significant positive abnormal returns for target shareholders at merger announcement. Targets of intervened deals

experience positive abnormal returns (6.5% on average) during the 5-day period surrounding the merger announcement, while targets of non-intervened deals during the same period earn up to 18.2% (this figure is similar to the average 5-day CAR of 21% reported by Gregory and O'Donohoe (2014) over a sample of completed acquisitions of UK public companies for the period 1990 to 2005). Differences between abnormal returns accruing to shareholder of targets of intervened deals and non-intervened deals are statistically significant.

This result could reflect differences in wealth creation for targets shareholders between intervened and non-intervened deals. Nevertheless, the results can also be explained by the fact that targets of intervened deals are from Continental Europe, whereas the targets of non-intervened deals are from the UK. Prior work (e.g., Goergen and Renneboog, 2004; Clougherty and Duso, 2011; Alexandridis et al., 2010) show that shareholders of targets in mergers experience lower returns in Continental Europe than in the UK or Anglo-Saxon countries. Although this is true, our results for targets of intervened deals are below those reported by other studies. For the same event window (-2,+2), Goergen and Renneboog (2004) report abnormal returns of 8.8% for Continental European targets (and 17.4% for UK targets). Alexandridis et al. (2010), for the same event window, report 9.5% abnormal returns for Continental European targets (and 14.7% for UK targets).

We now turn to the key part of our analysis: the impact of M&A announcements on rivals of the target firms. According to results reported in Table 4 (panels C and D), in our sample, only the rivals of the targets of the non-intervened deals clearly obtain statistically significant positive abnormal returns at merger announcement (0.9% during the 5 days surrounding and including the day of merger announcement). Rivals of targets of intervened deals, with the only exception of the announcement day, obtain statistically

insignificant abnormal returns (0.01% for a 5-day window). The non-parametric test indicates that differences between abnormal returns accruing to rivals of intervened and non-intervened targets are statistically significant in three of the event windows considered. We rely more on non-parametric tests as our sample of portfolios is small. Using individual data on rival abnormal returns instead of portfolios, which considerably increases the sample size, the results of the parametric tests also indicate statistically significant differences between rivals of intervened and non-intervened deals.

Overall, the results show that abnormal returns obtained around the announcement date by target companies and their rivals in intervened deals differ significantly from those observed for non-intervened deals and from those generally observed in related literature.[8]

In order to analyse the different pattern of abnormal returns for intervened and non-intervened deals in more detail, we present additional information in Table 5. Using the sign of the CARs for target firms and their rival firms over the 5 days window (-2,+2), we classify each particular deal into four merger types (target and its rivals obtain positive abnormal returns; target and its rivals obtain negative abnormal returns; target obtains positive abnormal returns and its rivals negative abnormal returns; target obtains negative abnormal returns whereas its rivals obtain positive abnormal returns). The Chi-Square test indicates that the distribution of mergers along these four categories is different between intervened and non-intervened deals.

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[8] As noted in Section 2.2, although the quantification of abnormal returns differs, most of the empirical studies (Eckbo, 1983; Chatterjee, 1986; Akhigbe et al., 2000; Song and Walkling, 2000; Fee and Thomas, 2004; Li et al., 2017 among others) reports positive and significant abnormal returns for rival firms around the date of the announcement.

Table 5: Split Sample CAR Analysis

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Panel A: Intervened deals			
	Target firms gain	*Target firms lose*	*Total*
Rivals gain	7 (38.9%)	3 (16.7.0%)	10 (55.6%)
Rivals lose	8 (44.4%)	0 (0.0%)	8 (44.4%)
Total	15 (83.3%)	3 (16.7%)	18 (100.0%)
Panel B: Non-intervened deals			
	Target firms gain	Target firms lose	Total
Rivals gain	19 (63.3%)	2 (6.7%)	21 (70.0%)
Rivals lose	9 (30.0%)	0 (0.0%)	9 (30.0%)
Total	28 (93.3%)	2 (6.7%)	30 (100.0%)

The first number in each cell reflects how many deals gain or lose in the subsample (intervened deals in panel A and non-intervened deals in panel B), while the second number (in parentheses) refers to the percentage of all observations in each subsample the cell represents. We measure CAR using the 5-day window

Although some of these results have been presented in Table 4, we can now analyze them in more detail. Targets obtain positive abnormal returns in 86.3% and 93.3% of the cases for the sample of intervened deals and non-intervened deals, respectively. Factoring the impact of mergers on rival firms, we can see that rivals obtain positive abnormal returns in 55.6% and 70% of the cases for the sample of intervened deals and non-intervened deals, respectively. Therefore, for the sample of intervened deals, the most common case is when target gains and rivals lose (44.4% of the sample), but for non-intervened deals, the pattern is different, being the most common case when both (target and rivals) gain (63.3% of the sample).

These data can be interpreted as a signal that intervened deals often create value for targets but harm their rivals (*competitive hypothesis*), which could motivate intervention by governments in order to protect the domestic industry. This finding is consistent with

Aktas et al. (2007), who shows greater intervention by the EU regulator in the 1990s when non-EU takeover bids resulted in negative announcement returns for EU rival firms.

Table 6: Initial announcement effects for domestic rivals
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| | Event window | | | | |
	(-2,2)	(-1,1)	0	(-2,-1)	(1,2)
PANEL A: DOMESTIC RIVALS PORTFOLIOS OF INTERVENED DEALS					
INTERVENED DEALS					
CAAR	0.77%	0.45%	0.58%	0.89%	-0.14%
t-value	1.32	0.77	1.45	1.91*	-0.24
% positives	71%	57%	57%	57%	36%
PANEL B: DOMESTIC RIVALS PORTFOLIOS OF NON-INTERVENED DEALS					
CAAR	0.95%	0.44%	0.61%	0.11%	0.16%
t-value	1.38	0.90	1.28	0.43	0.52
% positives	63%	54%	54%	58%	62%
Differences					
Difference	-0.18%	0.01%	-0.02%	0.77%	-0.29%
t-value	-0.18	0.02	-0.03	1.56	-0.50
Nonparametric median test (Chi2)	0.45	0.01	0.45	0.00	1.01

This table presents the CAARs to equally-weighted portfolios of domestic rival firms involved in the 48 deals that made up the sample of the study (18 intervened and 30 non-intervened). CAARs are the cumulative average abnormal returns over different event windows around the announcement. The t-statistic tests the null hypothesis that the CAARs equal zero. We also test the significance of the percentage of positive CARs using the nonparametric median test. Differences between CAARs accruing to portfolios of rivals in intervened and non-intervened deals, are presented. In order to evaluate if these differences are statistically significant, we use the parametric t-test of difference of means and a non-parametric median test which tests the null hypothesis that the two samples were drawn from populations with the same median. ***, ** and * denote significance at the 0.01, 0.05 and 0.10 level, respectively

Nevertheless, as we can see in Table 6, abnormal returns accruing to domestic rivals of intervened deals in our sample are not negative and not lower than abnormal returns obtained by domestic rivals of non-intervened deals. In this way, there is no evidence that subsequent intervention could be justified in order to avoid economic losses in the domestic sector.

5. RIVAL REACTIONS: MULTIVARIATE ANALYSIS

5.1 Regression results

In this section we examine if the returns to rivals differ significantly for intervened and non-intervened deals, while controlling for firm, deal and industry characteristics that might explain returns. This is a cross-sectional firm-level analysis, and we employ OLS to estimate our models. The dependent variable is the CAR (%) experienced by rival firms around the deal announcement date over a 5-day event window (i.e., CAR(-2+2)). Formally, our baseline model (Model 1) takes the following form (firm notation (j) dropped for convenience):

$$CAR(-2,+2) = \alpha + \beta_1 INTERVDEAL + \beta_2 RLNASS + \beta_3 RLEVER + \beta_4 RMTB +$$

$$\beta_5 DOMESTICRIVAL + \beta_6 LNMAVALUE + \beta_7 HERFINDAHL + \beta_8 HOSTILE +$$

$$\beta_9 RELATED + \beta_{10} CROSSBORDERBIDDER + \gamma + \epsilon \qquad (4)$$

Where, INTERVDEAL is the key independent variable and takes a value 1 for rivals of deals intervened by government and 0 for rivals of non-intervened-deals. The univariate tests highlight that rivals earn significantly lower returns for intervened deals. The results from the regressions will show if this difference remains after controlling for other factors.

Based on previous literature on determinants of rivals' abnormal stock returns around merger announcement (e.g., Schuman, 1993; Song and Walkling, 2000; Becher et al., 2012; Gaur et al., 2013; Derrien et al., 2017; Li et al., 2017; and Bernile and Lyandres, 2019, Chen et al., 2020), we control for financial characteristics of the rival firm, industry characteristics where the rival operates, and other factors related to the deal. All financial data on rivals are obtained from DataStream using fiscal year ends preceding the announcement of the deal. We obtain complete financial data on 1,472 rivals (221 domestic rivals; 1,251 international (EU-15) rivals). Information on the characteristics of the deals is obtained from SDC Thomson Reuters, complementing and corroborating it

with information in the financial press. Data on industrial characteristics are obtained from both SDC and DataStream.

The financial and accounting characteristics of the rival firm include size, calculated as the natural logarithm of total assets (RLNASS), leverage (RLEVER) calculated as total liabilities divided by total book assets, and the market to book ratio (RMTB), calculated at market value of equity divided by book value of equity, which captures the growth options of the firm. We also include a dummy variable that takes on the value 1 if the rival firm belongs to the same country as the target, and 0 otherwise (DOMESTICRIVAL). To capture time-varying characteristics of the industry, we use the Herfindahl index (HERFINDAHL) to capture concentration and market power. A higher value of the index (comprised between 0 and 1) indicates higher concentration and likely market power in the industry. The index is calculated using the information reported by Datastream for all EU15 firms in the same subsector. We also include the logarithm of the total value of M&A transactions reported in SDC database in the same 4-digit SIC code as the target of the acquisition in the year preceding it (LNMAVALUE). This variable captures the intensity of the M&A market in the industry of the target in the year preceding the acquisition, and so captures the likely impact of greater future takeover likelihood on returns.

For deal characteristics, we include industry relatedness (RELATED) as a dummy variable coded as 1 if the target and acquirer firms involved in the deal have the same 4-digit SIC codes, and 0 otherwise. We capture the location of the bidder by including a crossborder dummy (CROSSBORDERBIDDER) that takes the value of 1 if the acquirer is from a different country than the target, and 0 if domestic. The attitude of the management of the target firm to the deal is included (HOSTILE) and is equal to 1 if the transaction is considered hostile, and 0 otherwise. To address possible time invariant omitted variables,

the regressions control for fixed effects at the year- industry level, and country level. Since there are multiple rivals for each deal, standard errors (ϵ) are robust clustered at the deal level. Continuous variables are winsorized at the top and bottom 1% levels to control for potential outliers.

Table 7 provides pairwise correlations and descriptive statistics for the above-defined variables. These correlations are below the 0.7 threshold that is commonly set as the limit for multicollinearity. It should also be noted that the Tolerance and VIF (Variance Inflation Factor) values have been calculated in order to detect possible problems of collinearity. The results (not reported, but available on request) indicate that there are no problems of collinearity since none of the VIF values is greater than 10 and no Tolerance value is less than 0.1, as is recommended in Kleinbaum et al. (1988).

Table 7: Descriptive statistics

	1	2	3	4	5	6	7	8	9	10	11
Correlations (correlation significance)											
1 CAR (-2,+2)	1										
2 RNLASS	-0.010	1									
	0.689										
3 RLEVER	-0.018	0.521	1								
	0.501	0.000									
4 RMTB	0.009	-0.048	-0.004	1							
	0.722	0.065	0.868								
5 DOMESTIC	0.055	-0.032	-0.039	0.038	1						
	0.030	0.211	0.133	0.144							
6 INTERVDEAL	-0.079	0.278	0.263	-0.052	-0.124	1					
	0.002	0.000	0.000	0.042	0.000						
7 HERFINDAHL	0.060	-0.103	-0.261	0.010	0.098	-0.250	1				
	0.017	0.000	0.000	0.704	0.000	0.000					
8 LNMAVALUE	-0.018	0.408	0.435	-0.020	0.030	0.194	-0.129	1			
	0.468	0.000	0.000	0.445	0.231	0.000	0.000				
9 HOSTILE	-0.072	-0.058	-0.099	-0.015	-0.048	0.471	-0.025	-0.082	1		
	0.004	0.027	0.000	0.559	0.057	0.000	0.322	0.001			
10 RELATED	0.028	0.331	0.445	0.073	-0.060	0.199	-0.321	0.448	-0.112	1	
	0.268	0.000	0.000	0.776	0.018	0.000	0.000	0.000	0.000		
11 CROSSBORDER	-0.023	0.297	0.240	-0.168	-0.118	0.600	-0.146	0.131	0.371	-0.003	1
	0.366	0.000	0.000	0.000	0.000	0.000	0.001	0.003	0.000	0.909	
Mean	-0.012	13.802	0.676	2.053	0.151	0.506	0.101	8.125	0.323	0.580	0.717
Std. Dev.	3.877	2.843	0.242	2.846	0.357	0.500	0.119	2.052	0.468	0.491	0.451
Min	-11.873	7.590	0.024	-5.441	0.000	0.000	0.028	1.025	0.000	0.000	0.000
Max	13.088	20.480	1.144	20.920	1.000	1.000	0.603	11.236	1.000	1.000	1.000
Obs	1574	1473	1472	1511	1574	1574	1574	1574	1574	1574	1574

Regression results are presented in Table 8. The first two columns report estimates of rival returns regressions performed using OLS. Model 1 is our baseline model as per equation (4). For Model 2 we add two interactive terms: (1) the interaction between INTERVDEAL and DOMESTICRIVAL to test if domestic rivals of intervened deals earn lower returns than domestic rivals of non-intervened deals; and (2) the interaction between HERFINDAHL and RELATED, in order to test if horizontal or related deals in highly concentrated industries increases the ability of merging firms to earn larger rents, so harming rivals (Tirole, 1988).

Looking at the results in Table 8, we can see that the coefficient of the INTERVDEAL variable is negative and statistically significant in Models 1 and 2, so overall the findings corroborate the results of the univariate analysis. That is, abnormal returns to rivals around the announcement date are significantly lower for intervened deals at about 0.62% (Model 2), after controlling for a wide range of firm, industry, deal characteristics, and year-industry and country fixed effects.

Table 8: Regression analysis for rival returns

	Model 1 OLS	Model 2 OLS	Model 1 EB	Model 2 EB
INTERVDEAL	-0.786**	-0.617**	-0.700***	-0.589**
	(0.029)	(0.050)	(0.008)	(0.035)
RLNASS	-0.020	-0.020	0.010	0.013
	(0.765)	(0.765)	(0.824)	(0.784)
RLEVER	-0.440	-0.408	-0.296	-0.336
	(0.510)	(0.542)	(0.688)	(0.645)
RMTB	0.017	0.026	0.003	0.011
	(0.751)	(0.616)	(0.955)	(0.848)
DOMESTICRIVAL	0.758**	0.506	0.845**	0.752
	(0.034)	(0.408)	(0.014)	(0.153)
LNMAVALUE	-0.107	-0.215***	-0.132*	-0.211***
	(0.156)	(0.001)	(0.055)	(0.003)
HERFINDAHL	-0.493	3.120*	-0.372	2.328
	(0.799)	(0.093)	(0.800)	(0.128)
HOSTILE	-0.200	0.003	-0.041	0.125
	(0.591)	(0.993)	(0.875)	(0.638)
RELATED	1.270***	3.022***	1.008**	2.296***
	(0.003)	(0.000)	(0.029)	(0.001)
CROSSBORDERBIDDER	0.661	0.654	0.617	0.599
	(0.253)	(0.180)	(0.187)	(0.199)
HERFINDAHLxRELATED		-10.592***		-7.677**
		(0.001)		(0.017)
DOMESTICRIVALxINTERVDEAL		0.581		0.285
		(0.394)		(0.688)
Constant	1.660	1.526	0.914	0.907
	(0.167)	(0.161)	(0.326)	(0.329)
Industry x Year dummies	Yes	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes	Yes
R-squared	0.075	0.086	0.068	0.075
Observations	1,472	1,472	1,472	1,472

This table presents cross-section regression analysis results from the following base model (Model 1):
$CAR(-2+2) =$
$\alpha + \beta_1 INTERVDEAL + \beta_2 RLNASS + \beta_3 RLEVER + \beta_4 RMTB + \beta_5 DOMESTICRIVAL + \beta_6 LNMAVALUE + \beta_7 \text{HERFINDAHL} + \beta_8 HOSTILE + \beta_9 RELATED + \beta_{10} CROSSBORDERBIDDER + \beta_{11} \text{HERFINDAHLxRELATED} + \gamma + \epsilon$

CAR (-2+2) is the 5-day (-2 to +2) cumulative abnormal return around deal announcement date for the rival firm. INTERVDEAL is our key variable and is defined as a dummy variable that takes on the value 1 if the firm is a rival of the target of an intervened deal, and 0 otherwise. RLNASS is the natural logarithm of total assets of the rival firm. RLEVER represents the level of leverage of the rival firm. RMTB is the market to book ratio for the rival firm. DOMESTICRIVAL is a dummy variable that takes on the value 1 if the rival firm belongs to the same country as the target, and 0 otherwise. LNMAVALUE is the logarithm of the total value of M&A transactions in the same 4-digit SIC code as the target of the acquisition in the year preceding it reported in SDC. HERFINDAHL is the Herfindahl index of the industry in which the target and their rivals operate. All these variables are measured at the financial year-end prior to the announcement date. Variables related to deal characteristics are: HOSTILE, a dummy variable that is equal to 1 if the transaction is considered hostile, and 0 otherwise; RELATED, which is a dummy variable coded as 1 if the target and acquirer firms operate in the same industry, and 0 otherwise; CROSSBORDERBIDDER, a dummy that takes the value of 1 if the acquirer is from a different country than the target, and 0 otherwise. In Model (2), the interaction variables HERFINDAHL x RELATED and DOMESTICRIVAL x INTERVDEAL are included. In the first two columns, ordinary least squares (OLS) regression estimates are presented. In the last two columns, entropy-balance-weighted (EB) regression estimates appear. Standard errors are cluster robust (by rival firm), and p-values are reported in parentheses. ***, ** and * denote significance at the 0.01, 0.05 and 0.10 level, respectively.

To examine the robustness of our findings to possible sample selection bias and endogeneity concerns, we also present results when the two subsamples, i.e., rivals of targets intervened and non-intervened deals, are entropy balanced (Hainmueller, 2012). As indicated by Antonakis et al. (2010), the counterfactual cannot be observed if the two groups are systematically different. That is, if rivals of intervened and non-intervened deals are not interchangeable and their differences affect CARs, the estimated coefficient of the treatment variable (INTERVDEAL) can be erroneous, as an endogeneity problem will exist in the model. Entropy balancing is a novel data processing method that allows for covariate balance among various observable characteristics for the two groups. As entropy balancing directly reweights units appropriately to achieve balance, and at the same time keeps the weights as close as possible to the base weights, it always improves on the balance obtained by conventional matching procedures and obviates the need for continual checking for characteristics included in the specified balance constraints (Hainmueller, 2012).

In the last columns of Table 8, we present the results of estimating Models 1 and 2, after the matched subsamples are entropy balanced with respect to the first moment on all the rivals' characteristics used in the regressions. The coefficient on INTERVDEAL is negative and statistically significant in both regressions, confirming our OLS findings. The economic magnitude is also similar at about 0.59% in EB estimations of Model 2 relative to the OLS estimate of 0.62%.

As for the rest of the variables, we find that the higher the intensity of the M&A market in the industry, the lower the rivals' stock reactions to the new announced transaction. The results across the different models indicate that the variable RELATED is positive and statistically significant, indicating that, on average, the market values horizontal deals more highly for industry rivals. This suggests a contagion effect, and

rival firms, on average, are expected to gain more from horizontal deals, which might arise from the ability to earn increased rents, greater productivity or increased takeover likelihood in the industry. To examine this in more detail, we also show that the coefficient of the interaction term between HERFINDAHL and RELATED is negative and significant, indicating that a horizontal acquisition in a more concentrated industry seems to harm rivals more (competitive effect). This suggests that the new company resulting from the merged deal is expected to enjoy greater market power and can adopt low or even predatory pricing tactics (Tirole, 1988), which places significant pressure on rival firms. Similar results are reported by Gaur et al. (2013) in their study of acquisitions in China.

In summary, the evidence suggests that rivals of targets of intervened deals obtain lower announcement abnormal returns of about 0.60% than rivals of targets of non-intervened deals. Do the lower returns to intervened deals explain subsequent government intervention? If so, you would expect a stronger negative impact on rivals for domestic intervened deals. This does not appear to be the case as the interaction between domestic and intervened is insignificant in Model 2, indicating that domestic rivals perform similarly in intervened and non-intervened deals on the announcement of the deal. Overall, we find no evidence that, ex ante, that intervened deals harm domestic competitors.

An alternative explanation for these findings is that right from the day when the deal is announced (or in the days immediately following) investors can anticipate future intervention on the part of the government, and consequent problems in the development of the deal, which would put downward pressure on the abnormal returns of companies in the sector. In this sense, Aktas et al. (2007) and Duso et al. (2011) in their studies on EU Commission decisions on mergers, also indicate that investors can

recognise the threat of regulatory actions and bid up prices less at announcement because of the uncertainty about the final outcome of the deal. Powell et al. (2017) in their study of 6 intervened deals, analyse stock reactions of rival firms around different dates. They do not observe a strong reaction for rivals around intervention dates, and argue that this is likely due to the anticipation of government intervention prior to the actual intervention. We address this question in next section.

5.2. Do investors anticipate government intervention?

In order to shed some light on this question we estimate if the likelihood that a rival firm gets lower abnormal returns is related to the probability that the merger will be intervened by governments.

For each intervened deal, we construct a benchmark using the abnormal returns of the rival portfolios of their matching deals.[9] Considering the window (-2, + 2) for each intervened deal, the weighted average of the rival portfolios of their matching deals is calculated using as a weighting factor the market value of the target company of the matching deal. Formally,

$$RCARBENCH_s(t_1, t_2) = \frac{1}{M_s}\sum_{i=1}^{M_s} TMVE_i \; x \; RCARP_i \qquad\qquad s = 1 \dots\dots 18$$

(5)

Where $RCARBENCH_s$ is the benchmark for abnormal returns for rivals of the intervened deal s, $TMVE_i$ is market value of equity of the target firm of the i non-intervened deal, and M_s is the number of matching non-intervened deals for the intervened deal s.

The difference between the abnormal return obtained by each rival company of the target of each intervened deal s and its corresponding benchmark is interpreted as the

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[9] The number of matching deals per intervened deal varies between 1 and 8.

part of abnormal return to this rival firm that is differential with respect to what rival companies obtain from "similar" (on the basis of time and industry) non-intervened deals. Taking the sign of the difference, we construct the dependent variable RCARDIF$_j$ that takes a value of 1 if the difference is positive. That is, if the abnormal performance of the rival company j is greater than that of the corresponding benchmark, and 0 otherwise.

If investors anticipate government will oppose the deal, this should reduce rival abnormal returns given the uncertainty about the final outcome of the merger. In this way, we expect that variables positively related with the probability of government intervention should be negatively related to our dependent variable.

To explain our dependent variable (RCARDIF) we estimate by maximum likelihood a logistic regression. Formally, the model takes the following form (firm notation (j) dropped for convenience):

$$
\begin{aligned}
\ln(\frac{p}{1-p}) = {} & \alpha + \beta_1 STUNEMPLOY + \beta_2 STGDPGROWTH + \beta_3 SUCCESS \\
& + \ \beta_4 LESSFREE + \beta_5 FREE + \beta_5 RLNASS + \beta_6 RLEVER \\
& + \beta_7 RMTB + \ \beta_8 DOMESTICRIVAL + \ \beta_9 HOSTILE \\
& + \beta_{10} LNTRANSVALUE + \beta_{10} RELATED + \gamma \\
& + \epsilon \qquad\qquad\qquad\qquad\qquad\qquad (6)
\end{aligned}
$$

Where p is the probability of a rival firm of the target of an intervened deal to obtain abnormal returns at announcement above the benchmark (RCARDIF = 1).

As explanatory variables, we use, among others, those variables that according to the literature influence the probability of intervention. We include the variable HOSTILE given that according to previous research on the probability of nationalistic

government intervention, this event is more likely in case of a foreign hostile bidder (Dinc and Erel, 2013; Rowoldt and Starke, 2016). Bertrand et al. (2016) indicate that large and visible deals should be more likely to gain the attention of governments, and therefore, to be subject to government interventions. Consistent with this hypothesis, Rowoldt and Starke (2016) find that the likelihood of government intervention is positively correlated with transaction size. To capture this effect, we include the natural logarithm of the value of transaction (LNTRANSVALUE).

Dinc and Erel (2013) and Rowoldt and Starke (2016) also test if government interventions are more likely in countries with economic difficulties in order to gain votes from citizens who are frustrated about the current economic situation. Although Dinc and Erel (2013) do not find macroeconomic factors to be important, Rowoldt and Starke (2016) show that governments of countries with high unemployment rates are more likely to intervene in mergers. To proxy macroeconomic conditions, we include information on GDP growth and unemployment rates in the target's country in the previous year to the transaction. The information is obtained from the World Bank. The variable STUNEMPLOY is calculated as the Unemployment rate in the target's country at the previous year-end divided by the mean Unemployment rate in the EU 15 in the same year. STGDPGROWTH is calculated in an inverse way, as the mean GDP growth rate in the EU 15 divided by the GDP growth rate in the target's country (both calculated at the previous year-end to the announcement date).

We also control for country-level regulatory restrictions using data from the Investment Freedom Index of the target's country. This index provided by Heritage Foundation ranges from 0-100, where 0 is minimum freedom and 100 implies maximum freedom. The Index evaluates a variety of regulatory restrictions that governments imposed on the flow of investment capital. Using the mean value of the

index in each country-year, we classify the countries in three groups (LESSFREE, MOSTLYFREE and FREE) using the cut points proposed by the Heritage Foundation. MOSTLYFREE are considered those countries which record scores between 70 and 80 (Italy, Spain, Austria, Finland and Denmark). FREE are those countries that record scores above 80 (Belgium, United Kingdom, Sweden, Germany, Netherlands, Ireland and Luxembourg), and LESSFREE are countries with scores bellow 70 (Greece, Portugal and France).[10]

We would expect that the anticipation of government intervention is more likely for LESSFREE countries, hostile and big transactions and unfavourable macroeconomic conditions in the target country. If investors anticipate government intervention, this should reduce rival abnormal returns and so the variables positively related with government intervention should be negatively related to the dependent variable, the difference in rival CARs (RCARDIF).

The relatedness of the deal (RELATED) and the characteristics of the rival company are also incorporated as control variables since their size (RLNASS), financial position (RLEVER) or valuation (RMTB), as well as their belonging to the same country as the target company (DOMESTICRIVAL) are, according to the literature, variables that influence abnormal returns. We obtain complete data for 747 rivals firms of intervened deals.

Table 9 reports two specifications of the logistic regression. In Model 1, all the above mentioned variables are included as explanatory variables. In Model 2, we add the dummy variable SUCCES that takes the value 1 for deals that were finally completed, and 0 otherwise. Since there are multiple rivals in each deal, standard errors

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[10] Heritage Foundation classifies the countries with scores below 70 in three categories: Moderately free, mostly unfree and repressed. Nevertheless, as there are no very low scores in the EU15, we use the broad category of LESSFREE for scores below 70.

are clustered at the deal level. We also include target's industry dummies because the industry in which the target firm operates also influences the likelihood of intervention. Infrastructure, utilities, defence, banking, energy or steel are considered strategic areas linked to national interest, so relinquishing control to foreign investors is frequently considered dangerous to the national economy (Kim, 2007; Heinemann, 2012).

The results obtained are consistent with the hypothesis that the anticipation of future intervention is related to lower abnormal returns for rival companies of intervened deals. As reported in Table 9, several variables positively related to the probability of intervention, such as the hostile nature of the deal, its transaction value, low economic growth rate and low score in investment freedom in the host country, negatively influence our dependent variable. This evidence indicates that the variables positively correlated with the likelihood of intervention, negatively influence the probability that abnormal returns to rival companies of intervened deals are higher than those obtained by rival companies of non-intervened deals. In other words, the greater the probability of intervention, the greater the probability that rival firms will obtain abnormal returns at the time of the announcement that are below its benchmark. Nevertheless, the variable SUCCESS does not have a significant coefficient, so the investors do not anticipate the success or the failure of the transaction.

As for the rest of the variables included in the model, only the variable DOMESTICRIVAL is statistically significant. Since its value is positive, this indicates that the probability that the abnormal return to a rival company of an intervened deal is more favourable than that of the corresponding benchmark is greater for domestic rivals. This result again contradicts the hypothesis that the subsequent intervention is motivated because the deal causes damage to domestic competitors.

Table 9: Logit analysis

	Model 1	Model 2
STUNEMPLOY	-0.353	-0.221
	(0.385)	(0.707)
STGDPGROWTH	-0.542*	-0.506*
	(0.061)	(0.081)
SUCCESS		0.595
		(0.508)
LESSFREE	-3.590***	-4.110***
	(0.001)	(0.000)
FREE	-0.025	-0.177
	(0.953)	(0.753)
RLNASS	0.017	0.016
	(0.844)	(0.845)
RLEVER	0.238	0.245
	(0.663)	(0.655)
RMTB	-0.027	-0.026
	(0.506)	(0.519)
DOMESTICRIVAL	0.507**	0.498**
	(0.037)	(0.040)
HOSTILE	-1.514***	-1.616***
	(0.009)	(0.001)
LNTRANSVALUE	-0.897**	-0.890**
	(0.021)	(0.022)
RELATED	-1.109	-0.996
	(0.344)	(0.390)
Constant	12.824**	13.227***
	(0.018)	(0.008)
Industry dummies	Yes	Yes
Observations	747	747
Pseudo R^2	0.084	0.084

This table reports the estimates of the following logit regression $\ln(\frac{p}{1-p}) = \alpha + \beta_1 STUNEMPLOY + \beta_2 STGDPGROWTH + \beta_3 SUCCESS + \beta_4 LESSFREE + \beta_5 FREE + \beta_5 RLNASS + \beta_6 RLEVER + \beta_7 RMTB + \beta_8 DOMESTICRIVAL + \beta_9 HOSTILE + \beta_{10} LNTRANSVALUE + \beta_{10} RELATED + \gamma + \epsilon$

Where p is the probability of a rival firm of the target of an intervened deal to obtain abnormal returns at announcement above the benchmark (returns of rivals of targets of similar non-intervened deals). We measure returns by the 5-day CAR window. STUNEMPLOY is calculated as the unemployment rate in the target's country at the previous year-end divided by the mean unemployment rate in the EU 15 in the same year. STGDPGROWTH is calculated as the mean GDP growth rate in the EU 15 divided by the GDP growth rate in the target's country (both calculated at the previous year-end to the announcement date). SUCCESS is a dummy variable that takes the value 1 for deals that were finally completed, and 0 otherwise LESSFREE is a dummy variable that takes on the value 1 for countries with scores bellow 70 (Greece, Portugal and France) in the Investment Freedom Index. FREE is a dummy variable that takes on the value 1 for countries that record scores above 80 (Belgium, United Kingdom, Sweden, Germany, Netherlands, Ireland and Luxembourg) in the Investment Freedom Index. RLNASS is the natural logarithm of total assets of the rival firm. RLEVER represents the level of leverage of the rival firm. RMTB is the market to book ratio for the rival firm. DOMESTICRIVAL is a dummy variable that takes on the value 1 if the rival firm belongs to the same country as the target, and 0 otherwise. HOSTILE, a

dummy variable that is equal to 1 if the transaction is considered hostile, and 0 otherwise. LNTRANSVALUE is the natural logarithm of the value of transaction. RELATED, is a dummy variable coded as 1 if the target and acquirer firms operate in the same industry, and 0 otherwise. Standard errors are cluster robust (by rival firm), and p-values are reported in parentheses ***, ** and * denote significance at the 0.01, 0.05 and 0.10 level, respectively.

6. CONCLUSIONS

Empirical evidence on direct government interventions on mergers and acquisitions is scarce and, as indicated by Bertrand et al. (2016), we know very little about what drives government intervention and what are the implications. The evidence most directly related to this topic and to our work is presented by Dinc and Erel (2013), who study economic nationalism in M&A in the European Union during the period 1997-2006. Their main findings are that government's attitude determines the success or failure of the deal, as well as that government intervention deters foreign companies from bidding for other companies in that country in the future.

Our paper focuses on a different aspect, by analyzing the rivals' returns to deals intervened by governments on the grounds of economic nationalism. We use a matching sample of non-intervened deals as our counterfactual, and we focus specifically on the announcement of the deals to determine whether, ex ante, the subsequent intervened deals are perceived as harmful events for the industry.

Several well recognized papers (e.g., Eckbo, 1983; Song and Walkling, 2000; Fee and Thomas, 2004; Aktas, 2007; Bernile and Lyandres, 2019) have examined the returns to rival companies around the announcement of a takeover to infer the effect that the deal will have on companies in the industry. Negative abnormal returns to rival companies around the announcement of the deal are interpreted as evidence that the merger has a strong competitive effect on the sector. In other words, the creation of a larger company as a result of the merger, which achieves greater market power or economic efficiencies that cannot be imitated by the rest, hurts its rivals. On the other hand, positive abnormal returns to rival companies at the time of the announcement imply profits derived from the merger for the industry, which can be explained by different theories, including signaling, collusion or increased future takeover likelihood.

We show that rival companies of the targets of intervened deals obtain positive, but largely insignificant abnormal returns around the date of the announcement. That is, investors view these deals as having no significant negative or harmful effects for the industry. However, compared to our counterfactual sample, the returns are significantly lower than those obtained by rivals of non-intervened deals. This result is robust to the inclusion of a variety of firm, industry, deal characteristics and time-invariant year-industry and country fixed effects. The result also persists after the two subsamples, i.e., rivals of targets intervened and non-intervened deals, are entropy balanced.

The findings could be indicative that subsequent intervened deals are perceived to favor the industry less than non-intervened deals, so motivating government intervention. This is similar to Aktas et al. (2007) who examine M&A intervention by the European regulatory authorities. However, the analyses carried out indicate that the lower abnormal returns obtained by rival companies of intervened deals around the announcement seem to be justified by the anticipation of future problems in the deal that will hinder its completion. We show that variables that capture future concerns are positively related to the probability of nationalist intervention, and this leads to lower abnormal returns to rival companies than those observed in non-intervened deals.

Overall, we do not find strong evidence that target companies of intervened deals and their domestic competitors perceive these deals as detrimental to them. Our results are more consistent with the idea that investors anticipate government intervention, which puts downward pressure on abnormal returns to both the target companies and their rivals.

Our findings also have some implications for policy makers. We find that when investors anticipate government intervention, the stock prices of target and rival firms do not increase as much relative to non-intervened deals. The negative impact could be

attributed to different reasons, such as complications in the takeover process (i.e., higher probability of withdrawn or longer time to complete the deal) as well as a decrease in the probability of achieving the real gains associated with the takeover. In addition, discretionary political actions may negatively influence future merger or acquisition movements in the sector (Bonaime et al., 2018) or in the country (Dinc and Erel, 2013; Clougherty and Zang, 2021), hampering economic integration and free competition. Clearly, the role of formal institutions should be to reduce uncertainty in interactions (North, 1990), but contrary to this supposed function, sometimes the rules and procedures imposed by formal institutions seem to be evolving for the purpose of arbitrarily restricting cross-border acquisitions (Dikova et al., 2010). Although we cannot rule out that the target governments are responding to the preferences of their citizens, we find that government intervention against foreign bidders seem to have an economic cost in the sector that should be considered. Furthermore, these political actions collide with the goal of European capital markets integration and the creation of a European level playing field for takeovers. European policy should create the conditions for effective market integration, harmonising regulation and avoiding possible strategic behaviours on the part of some countries.

Our paper is not absent of limitations. In what follows we highlight some of them. A first limitation of this study is the availability of information. Although representative of the rare phenomenon investigated, our sample of intervened deals is relatively small. Second, despite the creation of a common institutional framework for M&A in Europe, considerable differences remain in the characteristics of acquisition activity across EU countries (e.g., see Moschieri and Campa, 2014). In our research design we attempt to mitigate some of this heterogeneity by including a large number of firm, industry, deal, and country-based variables. We also attempt to address the country-level omitted

variable problem by including country fixed effects. Nevertheless, EU wide studies such as ours are likely to suffer from this form of endogeneity. Third, governance variables related to the ownership structure of the target-rivals and board composition could be considered as they may influence cross border bids and the returns earned by targets and rival firms. All these limitations constitute avenues for future research.

Appendix: Sample of intervened deals

Target	Target Country	Industry	Bidder	Bidder Country	Announcement Date	Deal completed
AGF	France	Insurance	Assicurazioni Generali SpA	Italy	13/10/1997	No
Telecom Italia SpA	Italy	Telecoms	Deutsche Telekom AG	Germany	18/04/1999	No
Banco Totta e Acores SA	Portugal	Bank	Banco Santander Central Hispano (BSCH)	Spain	12/11/1999	Yes
Mannesmann AG	Germany	Telecoms	Vodafone AirTouch PLC	UK	15/11/1999	Yes
CIMPOR Cimentos de Portugal	Portugal	Construction	Holderbank	Switzerland	15/06/2000	No
KPN NV	Netherlands	Telecoms	Belgacom SA	Belgium	21/06/2001	No
Iberdrola SA	Spain	Utilities (Gas)	Gas Natural SDG SA	Spain	10/03/2003	No
Banca Nazionale del Lavoro	Italy	Bank	BBVA	Spain	18/03/2005	No
Banca Antonveneta SpA	Italy	Bank	ABN AMRO Bank NV	Netherlands	30/03/2005	No
Bayerische Hypo- und Vereins	Germany	Bank	Unicredito Italiano SpA	Italy	30/05/2005	No
BAA PLC	UK	Transport	Ferrovial	Spain	08/02/2006	Yes
Endesa SA	Spain	Energy	E ON AG	Germany	21/02/2006	No
Autostrade SpA	Italy	Motorway Operator	Abertis Infraestructuras SA	Spain	23/04/2006	No
Scania AB	Sweden	Motor	MAN SE	Germany	13/09/2006	No
CIMPOR Cimentos de Portugal	Portugal	Construction	Camargo&Votorantim Group/CSN	Brazil	18/12/2009	No
Parmalat SpA	Italy	Food processing	Groupe Lactalis SA	France	26/04/2011	Yes
Telecom Italia	Italy	Telecoms	Vivendi	France	11/03/2016	No
Abertis Infraestructuras SA	Spain	Motorway Operator	Atlantia	Italy	13/04/2017	No

The table provides more detail on the deals opposed or intervened by targets' national governments

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