

# WHEN GENDER MATTERS: THE ROLE OF WOMEN IN MERGERS AND ACQUISITIONS

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## Abstract

**How to cite this paper:** Tiveron, B., Mantovani, G. M., & Moro, A. (2023). When gender matters: The role of women in mergers and acquisitions. *Risk Governance and Control: Financial Markets & Institutions*, 13(2), 37–51.  
<https://doi.org/10.22495/rgcv13i2p4>

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**ISSN Online:** 2077-4303  
**ISSN Print:** 2077-429X

**Received:** 26.03.2023  
**Accepted:** 23.06.2023

**JEL Classification:** G34, M14, J16  
**DOI:** 10.22495/rgcv13i2p4

The paper investigates the impact that female directors have on mergers and acquisitions (M&A) deals' initiation with a negative binomial regression analysis on 250 companies in Europe in the decade 2009–2018. Results show that the addition of a female director increases the number of bid initiations by 12.86 percent, an outcome in contrast with the extant literature, according to which female presence would decrease the number of acquisitions to mitigate male CEO overconfidence (Levi et al., 2014). Moreover, after introducing an interaction term between female share on boards and the single countries, it was found that the magnitude and sign of female impact on firms' acquisitive behavior vary according to the nation in which the firm is located. Results indicate that female directors bring relevant changes in boardroom's dynamics, which are then reflected in the company's M&A activity.

**Keywords:** Board of Directors, Female Directors, Gender Equality

**Authors' individual contribution:** Conceptualization — B.T.; Methodology — B.T.; Formal Analysis — B.T.; Investigation — B.T.; Resources — B.T.; Data Curation — B.T.; Writing — Original Draft — B.T.; Writing — Review & Editing — B.T., G.M.M., and A.M.; Visualization — B.T.; Supervision — G.M.M. and A.M.

**Declaration of conflicting interests:** The Authors declare that there is no conflict of interest.

## 1. INTRODUCTION

Gender equality is a matter of great importance not only for moral and ethical reasons, but also for its significant impact on society, politics, and, last but not least, economics. In fact, many directives and policies aim at reducing the gender imbalance between men and women in every sphere of life: the United Nations (UN) has recognized the achievement of gender equality and the empowerment of all women and girls as one of the 17 Sustainable Development Goals in their 2030 agenda (UN, 2015) and the European Commission has set up a gender equality strategy for the 2020–2025 period.

However, female shares in leading positions in politics, government agencies, and corporate boards are still below the natural composition of

the population. Specifically, in the European Union (EU) women are only 8.6%<sup>1</sup> of board presidents and 8.3% of chief executive officers (CEOs) in the largest listed companies and represent only 32.8% of members of national parliaments. In fact, despite the legislative efforts to reduce gender imbalance with the introduction of gender quotas on boards, women are still under-represented in upper-echelon positions. To address and improve the situation, the European Parliament has recently formally adopted a new EU law on gender balance on corporate boards asking companies to have 40% of the underrepresented sex among non-executive directors or 33% among all directors by 2026<sup>2</sup>.

<sup>1</sup> <https://eige.europa.eu>

<sup>2</sup> The Directive's objective is to ensure that gender balance in corporate boards of large listed EU companies is guaranteed across the EU without compromising the transparency of board's appointments and the objectivity in candidate's selection.

Our research aims to shed light on the relevance of female contribution in the business field, especially in the top managerial decision-making process. In doing so, we observed the relationship between the presence of women on the board of directors and the number of bid initiations through the following hypothesis:

*H1: The female share on the board of directors has a significant influence on corporate acquisitive behaviour.*

Moreover, our work expands past research by analyzing how the impact of women in the boardroom on mergers and acquisitions (M&A) choices varies depending on the geographical location of the companies. We are interested in detecting and observing differences that may emerge among nations and in analyzing them in light of the different approaches adopted by the countries to tackle the gender equality issue on boards. Thus, we articulated our second research hypothesis as follows:

*H2: The impact of female directors on bid initiations varies according to the countries in which the firms are located.*

We conducted analyses on European firms to investigate whether the presence of women on the board of directors influences the initiation of M&As and, if so, to analyze the results in light of the extant literature and the introduction of gender quota regulations. In so doing, we expand past research mainly focused on US companies (Levi et al., 2014).

Our work contributes to the body of knowledge regarding M&A in two key aspects: firstly, it augments the extant literature in this domain, which has been limited thus far, thus effectively bridging a crucial knowledge gap and propelling the advancements in the current state of research within this specific field; secondly, it offers novel perspectives on the sign and magnitude of the influence exerted by female directors on bid initiation, thereby enriching the existing understanding of this phenomenon.

At variance to extant literature that indicates that women in the boardroom tend to decrease the number of M&A (Levi et al., 2014; Chen et al., 2014) in an attempt to contrast male CEO overconfidence or hubris, which may lead to an increase in the number of deals, often resulting in a loss of value for the company (Malmendier & Tate, 2008; Kolasinski & Li, 2013), our evidence shows that women on boards tend to increase the number of bid initiations made. This holds true also taking into consideration additional boardroom features (e.g., percentage of independent members, CEO duality) that have a relevant influence on the acquisitive behavior of firms (Grinstein & Hribar, 2004; Kolasinski & Li, 2013; Paul, 2007).

The paper is organized as follows. Section 2 presents an overview of the extant literature concerning the influence that board of directors' features (e.g., percentage of independent directors, CEO's psychological traits, CEO duality, female share on board) have on the choice of initiating mergers or acquisitions, with a particular focus on the impact of female directors. Section 3 illustrates the process for the creation of the sample, the selection of the most suitable variables for the analysis, and the descriptive statistics of the dataset. In Section 4, the empirical

research is presented, from the explanation of the methodology to the description of the analyses conducted and the related results. Finally, Section 5 recaps the results of the research, highlighting the most interesting and original aspects in light of the extent of the economic, sociological, and legislative differences across the countries.

## 2. LITERATURE REVIEW

Past research investigated the CEO duality (i.e., the CEO being also the chair of the board, COB), arguing that concentration of power may be detrimental to board independence and may result in lower board oversight. This in turn can generate agency costs by affecting the objectivity in the evaluation and assessment of the merger so that the firm can end up pursuing a merger that is not worthwhile pursuing. In presence of CEO duality, directors may have difficulties in challenging executive proposals while equity owners can struggle in monitoring managerial investment activities and decisions. This may encourage self-interest behaviors that would benefit the CEO at the expense of shareholders' value. Bidder firms where the CEO and COB are different people have higher abnormal announcement returns (Masulis et al., 2007). In fact, CEO duality has a negative impact on bidder returns, since the decisions made by the executive officer may be driven by their personal self-interest or overconfidence and not by actual value creation for the company. All in all, the separation of the two roles appears to be the best choice to protect and enhance shareholders' wealth. Thus, an increasing number of firms have chosen to separate the role of the chairperson from the one of the CEO, especially if M&A are part of companies' strategic plans. However, no implementations of these decisions considered gender opportunity.

Moreover, past research finds that there is a positive relationship between CEO power and bonus compensation, but not between the same bonus compensation and merger and acquisition performance (Grinstein & Hribar, 2004). Accordingly, it is not a surprise that previous research finds that CEOs with greater power are more likely to initiate larger deals relative to their firm size (Grinstein & Hribar, 2004). In fact, this strategy is not simply consistent with CEO hubris theory, but also with the fact that CEO bonus compensation increases along with the effort required by the acquisition deal. Therefore, CEOs engaging in larger deals will be more likely to receive higher compensation, since more effort and skills are required to complete them.

Past research also suggests that management's decision to acquire a firm may be the result of overconfidence about the ability to assess the value of the target firm as well as the estimation of the benefits that can be obtained by the merged entity (Malmendier & Tate, 2008; Asaoka, 2019). Overconfidence can adversely affect the deal in different ways: it can take the bidding firm to pay too much for the targets; propose a bid premium that is not adequate. Moreover, it has been found that there is an association between overconfidence and bid premiums paid, especially when the CEO is also the COB and there is a large proportion of inside directors, which weakens board vigilance. This association may lead to a loss of acquiring

shareholders' wealth (Hayward & Hambrick, 1997) so it is not a surprise that past research points out the fact that when it turns to capital gains, mergers tend to benefit more the shareholders of the target firms than those of the bidding one and this irrespective of the mode of payment. Moreover, overconfidence can affect post-deal performance by compromising the long-term value of the shares of the merged entity. All in all, overconfident CEOs may overestimate their ability to generate returns and engage in value-destroying mergers by paying high bid premiums, especially if they have access to internal financing (Malmendier & Tate, 2008). In such a context, the board of directors may play a significant role in limiting overconfidence by increasing the level of monitoring, especially with the presence of independent members.

Overconfidence is an excess of confidence that may generally take two forms. First, an overconfident individual may perceive predictions about the future as more precise without any solid ground. This trait seems to be a male characteristic, rather than a female one, especially when it comes to investment choices (Barber & Odean, 2001). Secondly, overconfidence may also concern the level of expectations of future outcomes, such as overestimating future returns on corporate investments (Malmendier & Tate, 2005). Interestingly, there is a large body of work that studies overconfidence in relation to gender, since men appear to be more overconfident than women. Past works suggest that men have a greater propensity to take high-risk decisions. Literature shows that male executives (CEO or chief financial officer, CFO) issue debt more often and initiate more mergers or acquisitions compared to their female counterparts due to higher risk propensity and overconfidence. Intriguingly, more intense activity is not necessarily beneficial for the firm since announcement returns for both events are lower for companies with male executives (Huang & Kisgen, 2013). This happens because overconfidence means that overconfident managers tend to overestimate the net present values of future projects so that they will be more likely to initiate a larger number of transactions including deals that, if more properly assessed, would have shown a poor net present value. On the contrary, firms with at least one female director on board have significantly less investment inefficiency than firms without one, especially in companies with the tendency to overinvest ex-ante (Yu, 2023). Women are expected to undertake fewer yet more valuable transactions since they are less overconfident than men are, and the decision of undertaking a merger or an acquisition will likely be made after a more accurate assessment of the possible implications. In fact, there is a relationship between male overconfidence and acquirer shareholders' value loss: acquisitions made by male executives are significantly more likely to have negative announcement returns if compared to the ones initiated by companies with female executives (Huang & Kisgen, 2013). Further support to this argument is provided by the same authors, who analyzed the likelihood of replacement of male and female executives, starting from the assumption that since overconfident executives may lead to shareholders' value-destroying decisions, they are more likely to be replaced. They found that the likelihood of replacement is higher for male

executives, a result consistent with men being more overconfident than women. In fact, male overconfidence research builds on a more general stream of analysis that reveals significant behavioral differences between male and female executives. Moreover, recent research has found that an increased number of female directors in acquiring companies is associated with enhanced merger performance and a reduced bid premium (Ravaonrohanta, 2020). Needless to say, these aspects suggest that it is worth considering the role of gender when evaluating models of capital structure and acquisitions.

The above discussion suggests that the addition of female directors on boards may be beneficial for the company, even more in critical decisions such as M&A transactions. Past research suggests that the benefit of having female quotas on a board is not only linked to the difference in risk appetite between women and men, with the former being more risk-averse than the latter (Moro et al., 2017). Previous research has also found that diverse teams outperform homogenous ones (Kahane et al., 2013) and the addition of female directors diversifies the set of boards' expertise, which may be an advantage for the firm (Kim & Starke, 2016). Women, along with ethnic minorities and greater heterogeneity in the board, can contribute to the complex decision-making process by reducing groupthink and bringing new fresh perspectives, and correcting informational biases in strategy formulation and problem-solving (Dewatripont et al., 1999; Westphal & Milton, 2000). There is a large body of literature investigating the female impact in the boardroom. It suggests that female directors are more likely to prepare well and conscientiously for meetings (Huse & Solberg, 2006). Such behaviour may signal commitment and attention to detail that may be very helpful in making investment decisions. Moreover, women tend to ask more questions than men, so decisions are less likely to be nodded through (Huse & Solberg, 2006). Given their different management style and a greater propensity to collaboration and cooperation, female members of the board promote collaboration, social support, and win-win problem-solving. However, these aspects do not prevent women from facing controversial issues by asking direct questions and bringing new perspectives in order to broaden the contents of the discussion (Konrad et al., 2008). In fact, the different management styles may potentially adversely affect women's ability to contribute to the board decisions because of isolation. In cases when there is only one woman on the board she seems to be excluded from socializing and from the decision-making process, while a higher number of women (3 or more) increases the likelihood that female voices and ideas will be heard and have an impact since the other members stop seeing them as outsiders and start focusing on their contribution. Reassuringly, it is becoming a boardroom norm to listen more actively to different members so that distinct personalities can contribute by stimulating discussion through questions and detailed answers. All in all, knowledge, perspective, creativity, and judgment brought forward by heterogeneous groups may enhance the quality of the decision-making process, which can be particularly important in a complex and rapidly changing business

environment. This contribution may be superior to the smoother communication and coordination associated with less diverse sets of people (Dallas, 2002).

Turning to M&As, past research suggests that, when there is a female CEO in the bidding company, the bid premium over the pre-announcement target share price is smaller, which represents an advantage for the bidder. The presence of female CEO in the acquiring company is also related to smaller cumulative abnormal returns for the target's shareholders in the announcement period, a result consistent with the smaller premium paid (Levi et al., 2008), suggesting that when women are involved there is greater attention to not overpaying the target firm. Moreover, female directors may influence the firm's tendency to initiate M&A and the bid premium paid: an additional female director is associated with a reduction of launching an acquisition bid by 7.6% (Levi et al., 2014). However, despite the relevance of the female presence on board, the main drivers of acquisitions are mostly linked to economic factors (e.g., book leverage, cash holdings, and firm size). Moreover, literature attributes the negative relation between the number of bids initiated and the percentage of women on boards to the fact that women show a tendency to be less overconfident than men since they are less motivated by empire-building motives (Levi et al., 2014).

Further research (Chen et al., 2014) confirmed the negative relation between the proportion of women on boards and the number of acquisitions initiated, taking also into consideration social identity theory<sup>3</sup>. Even if people can self-categorize and be categorized by others along an infinite number of dimensions, research proves that individuals tend to identify with a certain category when it reflects their most important valued aspects. Intriguingly, gender is cognitively considered a salient category, thus enhancing intra-group similarities and inter-categories differences. A different set of categories may be present in a board of directors and their interactions may stimulate discussion, leading to exhaustive, comprehensive decision-making processes. Therefore, the presence of women, especially when considering strategic choices, may bring new perspectives and different sources of information, reducing acquiescence and agency costs, thus resulting in more pondered evaluations. All in all, past research tends to suggest that the presence of women may increase intra-board discussion, oversight, and evaluation of management proposals. When facing the decision to initiate a merger or an acquisition, boards may take a long time to come to a conclusion, since there will be a more comprehensive evaluation of the possible outcomes, leading to fewer yet more informed choices.

This work shed light on a new perspective since our empirical results show that the addition of female directors to the boardroom leads to an increase in bid initiations, a result in contrast with the literature's findings. One of the possible reasons for this is the evolution of the board composition in the last decade, encouraged also by regulations on gender quotas (Arzu & Mantovani, 2019). This may have been a mitigating

factor for CEO overconfidence, at least in some countries. In fact, we found that the magnitude and sign of the impact that the female share on boards has on the number of bid initiations vary across countries, possibly due to sociological, economic, and legislative differences. This distinguishes our contribution to literacy on similar topics.

### 3. RESEARCH METHODOLOGY

We built up our sample of firms from Bloomberg, according to the following criteria:

- 1) listed company;
- 2) active company status;
- 3) European location;
- 4) the firm issued at least one bid initiation offer in the period 2009-2018.

Specifically, the bid initiation offer regards one of the following types of M&A:

- 1) mergers;
- 2) acquisitions;
- 3) acquisitions of assets;
- 4) acquisition of majority interests where the bidder starts with less than 50% of the target firm's share outstanding and concludes the deal having more than 50% of those shares.

The first round of extraction led to a large sample, consisting of financial and corporate boards' data of firms operating in the following countries: France, Spain, Italy, Belgium, Germany, and the United Kingdom (UK). However, after refining the sampling through data "cleaning" for sound econometric investigation, the sample size dropped significantly, because for many companies a full set of information about the board of directors is missing for the period of interest. Therefore, our final sample consists of 250 firms with complete data of financial and board observations composed as follows: 69 for France, 30 for Spain, 31 for Italy, 33 for Germany, 18 for Belgium, and 69 for the UK.

The following variables were considered:

- *number of bid initiations*: indicates the number of acquisition bids made within a fiscal year, considering the announcement date;
- *percentage of women on board*: explanatory critical variable for the investigation;
- *board size*: total number of directors on a board;
- *percentage of independent directors*: share of independent directors on the board;
- *CEO duality*: dummy variable whose value is 1 if the CEO is also the COB and 0 if the roles are held by different people;
- *male CEO*: dummy variable whose value is 1 if the CEO is male and 0 if the CEO is female;
- *male chairperson*: dummy variable whose value is 1 if the COB is a man and 0 if the role is held by a woman;
- *sales growth*: ratio of sales in the current fiscal year and sales in the previous fiscal year minus one, expressed as a percentage;
- *Tobin's Q ratio*: ratio indicating the relationship between market valuation and intrinsic value, it contributes to estimating whether a given business or market is overvalued or undervalued;
- *ROA*: return on assets;
- *book leverage*: indicator obtained by the sum of current liabilities and long-term liabilities divided by the book value of total assets;

<sup>3</sup> Incorporates socio-cognitive sub-theories describing how people's behaviors and interactions are affected by categories to which they belong.

- *cash holdings*: obtained by dividing the value of cash and short-term investments by the book value of total assets, it indicates the portion of a company's assets held in cash or marketable securities;

- *firm size*: the proxy chosen to indicate firm size is the logarithm of *market capitalization*, obtained by multiplying the number of shares outstanding by the stock price.

Our empirical investigation moves from the paper by Levi et al. (2014). In fact, they analyzed the impact of female directors on corporate boards on acquisition intensity finding that one additional female director reduces acquisition bids by 7.6%, a result consistent with the extant literature, yet interpreted in light of the sociological and behavioral dynamics involved. In a slightly distinctive methodological way from such a paper and in order to catch the above discussion of the literature, we investigate whether the female proportion on board has an impact on the *number of bid initiations* (i.e., acquisition intensity or acquisitive behavior of a company) through a negative binomial regression analysis since the *number of bid initiations* made in a fiscal-year is a count variable. Negative binomial regression with a log link is a good choice to estimate the model since the dependent variable's possible values are non-negative integers (0, 1, 2, 3, ...) and they are overdispersed (overdispersion is the presence of greater variability, or statistical dispersion, in a data set than would be expected on a given statistical model). Negative binomial regression is a generalization of Poisson regression which loosens the restrictive assumption that the variance is equal to the mean made by the Poisson model. Therefore,

in the negative binomial distribution,  $\text{mean} = \mu$  and  $\text{variance} = \mu * (1 + \tau * \mu)$ , where  $\tau$  is the parameter added to consider the presence of overdispersion. The variance of the dependent variable *number of bid initiations* is 3.348, significantly greater than its mean (1.039) reassuring the correctness of the use of the negative binomial, which is also visually confirmed when observing the absolute frequency of the *number of bid initiations* (see Figure 1). On average, firms make approximately 1 bid initiation per year (see Table 1), but the variable is overdispersed: in fact, only 23% of the firm-years observations have 1 acquisition bid, while 54% have no acquisition bids and 23% have more than one bid. As regards the single countries, the average number of bid initiation is 0.5 for Italy, 0.8 for Belgium, 1.9 for France, 1.3 for Germany, 0.5 for Spain, and 0.6 for the UK.

Figure 1. Absolute frequency of the *number of bid initiations* in our sample

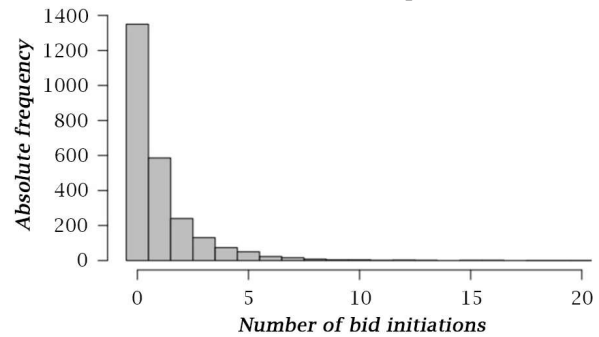


Table 1. Descriptive statistics of the variables

Variables	Number of observations	Mean	Std. dev.	Min	1st quartile	Median	3rd quartile	Max
<i>Number of bid initiations</i>	2500	1.039	1.830	0.000	0.000	0.000	1.000	20.000
<i>Percentage of women on board</i>	2500	17.328	13.105	0.000	7.692	15.385	25.000	63.639
<i>Board size</i>	2500	11.874	3.691	4.000	9.000	12.000	14.000	25.000
<i>Percentage of independent directors</i>	2500	53.450	20.231	0.000	38.890	52.940	66.670	100.000
<i>CEO duality</i>	2500	0.224	0.417	0.000	0.000	0.000	0.000	1.000
<i>Male CEO</i>	2500	0.960	0.196	0.000	1.000	1.000	1.000	1.000
<i>Male chairperson</i>	2500	0.975	0.159	0.000	1.000	1.000	1.000	1.000
<i>Sales growth</i>	2500	8.322	90.442	-96.126	-2.790	3.686	10.786	3300.000
<i>Tobin's Q</i>	2500	1.483	0.814	0.548	1.030	1.240	1.618	8.297
<i>ROA (%)</i>	2500	4.026	6.554	-57.489	1.439	3.741	6.333	67.108
<i>Book leverage</i>	2500	0.529	0.240	0.005	0.395	0.513	0.642	3.658
<i>Cash holdings</i>	2500	0.099	0.086	0.000	0.045	0.080	0.127	0.898
<i>Market capitalization (€ B)</i>	2500	11.824	21.527	0,013	1.332	3.867	11.688	216.000

Moreover, the average number of directors on a board is 12, of which 17.33% are women and 53.45% are independent members. As per the female share, this percentage is different from the one found by Levi et al. (2014): in their sample female proportion was, on average, 9.50%, 7.83 percentage points below our findings. Although their research was focused on American companies, it is still significant to notice how much the number increased over time. European regulations on women on boards have had for sure an impact on the obtained figures, but the progressive awareness of the positive contribution brought by female directors may have had an influence as well.

It is worth noting that there are differences across the analyzed countries (see Table 2). For instance, in France, the average proportion of

women on boards is 24.17%, which is almost twice the one in Spain (12.52%). For other countries, the *percentage of women on boards* appears to be more aligned, with percentages varying from 14.19% to 16.28%. This depends on the fact that France introduced a more stringent regulation for gender balance in the boardroom, according to the EU regulations path. In fact, in 2011 France introduced the Copé-Zimmermann Law (Law No. 2011-103 of January 27, 2011, regulation stating that boards of listed companies should reach a 40% minimum quota of members of each biological sex by 2017), along with a self-regulation mechanism (French Association of Private Enterprises [AFEP] & Movement of the Enterprises of France [MEDEF], 2018) to reach the 20% female quota on board by the end of 2013. This legislative intervention has yielded

tangible results, with France consistently surpassing the targeted quota. Therefore, the year 2014 appears to be an intermediate stage that created a sort of step, dividing the sample into two phases:

- 1) one in which companies aimed at reaching the 20% quota;
- 2) one in which firms attempted to achieve the 40% target.

**Table 2.** Percentage of women on boards, overview of the countries

Countries	Number of observations	Mean	Std. dev.	Min	1st quartile	Median	3rd quartile	Max
Italy	310	14.190	13.289	0.000	0.000	11.050	25.000	55.560
Belgium	180	16.279	12.769	0.000	7.143	13.333	26.819	50.000
France	690	24.170	14.177	0.000	12.500	23.080	35.710	63.640
Germany	330	15.970	11.140	0.000	8.330	16.670	25.000	50.000
Spain	300	12.522	10.551	0.000	5.882	10.000	18.182	50.000
United Kingdom	690	14.901	11.127	0.000	7.143	14.286	22.222	60.000

The average percentage of independent directors is 53.45% (see Table 3), which may be considered an overall good result since board independence may increase the quality of the decision-making process. Similarly to what is already underlined for the percentage of women on boards, the proportion of independent directors on a board varies across countries, sometimes quite significantly. The average proportion of independent directors in Germany is 64.75%, 27.60 percentage points higher than in Belgium (37.15%). Moreover, in

two countries (Belgium and Spain) the percentage of independent members on board is significantly below 50%. Furthermore, as regards *CEO duality* (see Table 4), it is found that, in 78% of the firm-years observations, the CEO and *board chairperson* are not the same person, while in the analysis by Levi et al. (2014) *CEO duality* represented 62% of the cases. Nevertheless, it is relevant to point out that while in most countries the presence of *CEO duality* is quite low, France is an exception.

**Table 3.** Percentage of independent directors, overview of the countries

Countries	Number of observations	Mean	Std. dev.	Min	1st quartile	Median	3rd quartile	Max
Italy	310	51.660	19.265	10.050	33.820	53.330	66.670	100.000
Belgium	180	37.150	15.372	10.000	24.630	33.330	50.000	75.000
France	690	52.760	18.892	10.530	40.000	50.000	66.180	100.000
Germany	330	64.750	26.896	16.670	50.000	64.750	100.000	100.000
Spain	300	38.660	16.049	0.000	27.120	35.290	50.000	87.510
United Kingdom	690	60.240	12.990	20.000	50.000	62.500	70.000	92.860

Note: Data in the table are in percentages, except for the number of observations.

**Table 4.** Percentage of *CEO duality*, overview of the countries

Countries	Yes	No
Italy	12.580	87.420
Belgium	11.670	88.330
France	54.930	45.070
Germany	0.610	99.390
Spain	38.000	62.000
United Kingdom	0.720	99.280

The presence of *CEO duality* is reported in the majority of the firm-year observations (54.93%) in France. On the contrary, in Germany and the UK CEO and chairperson are roles held by different people in almost all the firm-year observations. Furthermore, men are CEO and chairperson in respectively 96.0% and 97.5% of firm-year observations in the sample, and these percentages do not vary significantly across countries.

When considering variables related to firm performance, *sales growth* stands out for the great difference among the values of the firm-year observations, as is evident from Table 1. While the mean is 8.32%, there is a discrepancy between the minimum (-96.13%) and the maximum (3300%). After observing the range of the variable, we noticed that the interquartile range is not so large, thus 50% of data lies between -2.790% (first interquartile) and 10.786% (third interquartile), with a 13.576 percentage points variation. In order not to reduce the size of the sample and to keep track of

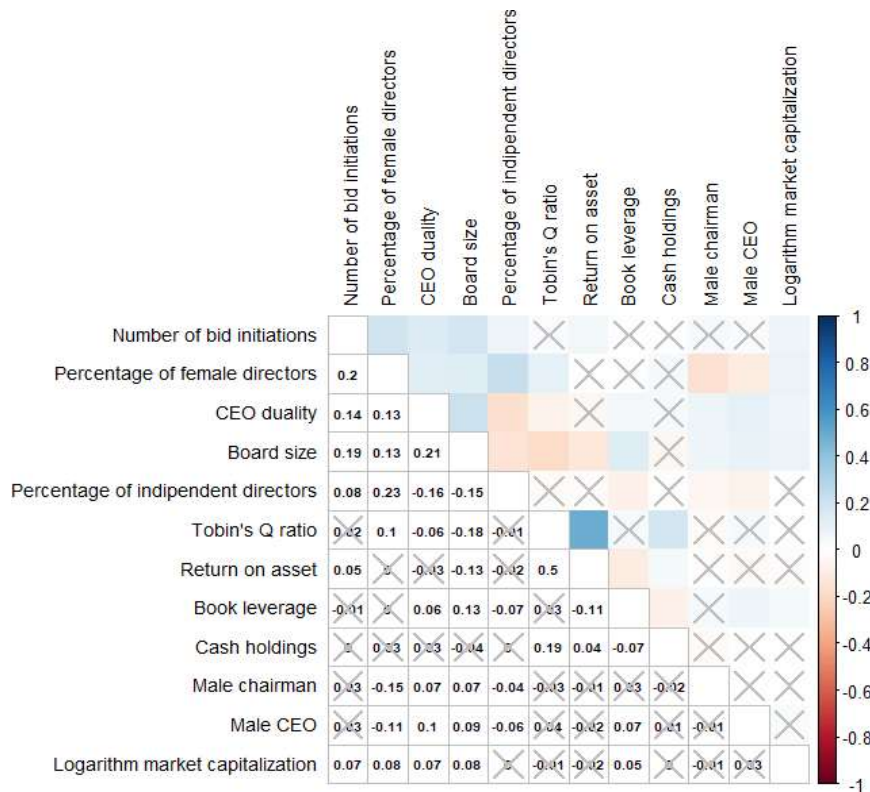
the outliers' presence, we divided the observations into three main groups for the regression analysis:

- *negative sales growth group* if sales have negative growth rates;
- *positive sales growth group* if sales have a growth rate lying between 0% and 10.786% (third quartile);
- *very positive sales growth group* if sales have a growth rate above 10.786%.

As far as the other firm performance variables are concerned, the average *Tobin's Q ratio* is 1.48. Moreover, in the sample, *ROA* is 4.03% on average, a result almost identical to the one reported in the work by Levi et al. (2014) (4.00%). As far as the *book leverage* is concerned, the mean is 0.53. Furthermore, the *cash holdings* variable has an average value of 0.099, meaning that, on average, 9.90% of firms' assets in the sample are held in the form of cash or short-term investment. Finally, firms have an average *market capitalization* of €11.8 billion, which indicates the average company's value on the market. The logarithm of *market capitalization* is used as a proxy for *firm size*.

Looking at the correlation matrix we can see that there is not a strong significant relationship between the variables (see Figure 2). Most of the relations are either non-significant (as indicated by the grey X) or weakly significant (as signaled by the lighter colors, since the darker ones indicate a stronger positive relation, if blue, or a negative relation, if red).

Figure 2. Correlation matrix among the indicators



The only strong significant relation is the one between *Tobin's Q ratio* and *ROA*, which was quite predictable considering that they are both computed considering firms' assets. Given this positive relation, it is probable that only one of them will be statistically significant in the model. As regards female presence on the board of directors, there is a positive yet non-significant relation between the *number of bid initiations* and the *percentage of women on board*, which will be either confirmed or contradicted by the empirical analysis.

We estimate the regression considering year-fixed effects, country-fixed effects, and industry-fixed effects. We divided the firms into 23 main

groups: electricity, oil and gas, hotel and similar facilities, public administration and defense, transports, chemical products, food and beverage, engineering, technology and research and development (R&D), other services, healthcare and medicine, financial and consulting services, electronic devices and IT services, media and entertainment, building construction and materials, retail, natural resources extraction, telecommunication, automotive, clothing, large scale distribution, water supply and treatment, product manufacturing, public service, and real estate.

The analysis was conducted by using the following negative binomial regression:

$$\begin{aligned}
 \text{Log}(\text{Bid initiation})_{it} = & \alpha_0 + \beta_1 \text{Percentage of women on board}_{it} + \beta_2 \text{Board size}_{it} + \\
 & \beta_3 \text{Percentage of independent directors}_{it} + \beta_4 \text{CEO duality}_{it} + \beta_5 \text{Male CEO}_{it} + \beta_6 \text{Male chairperson}_{it} + \\
 & \beta_7 \text{Sales growth}_{it} + \beta_8 \text{Tobin's Q}_{it} + \beta_9 \text{ROA}_{it} + \beta_{10} \text{Book leverage}_{it} + \beta_{11} \text{Cash holdings}_{it} + \beta_{12} \text{Firm size}_{it} + \\
 & \beta_{13} \text{CountryITALY}_i + \beta_{14} \text{CountryFRANCE}_i + \beta_{15} \text{CountrySPAIN}_i + \beta_{16} \text{CountryBELGIUM}_i + \\
 & \beta_{17} \text{CountryGERMANY}_i + \beta_{18} \text{CountryUK}_i + \beta_{19} \text{IndustryRETAIL}_i + \beta_{20} \text{IndustryFOOD AND BEVERAGE}_i + \\
 & \dots + \beta_{41} \text{IndustryTELECOMMUNICATION}_i
 \end{aligned} \tag{1}$$

The independent and control variables refer to the fiscal-year end before the bid announcement date and *years*, *industry*, and *country* fixed effects are considered dummy variables in the model.

#### 4. ANALYSIS AND DISCUSSION OF THE RESULTS

The results of the first empirical analysis showed that the coefficient of the proportion of female directors on board is strongly statistically significant (at 5% level, i.e., p-value = 0.0002) and positive. In fact, for each increase of 10 percentage points in the fraction of women on boards (corresponding to approximately one additional female director),

the *number of bid initiations* will increase by 13.43%. However, when analyzing the impact of the variables on the *number of bid initiations*, we noticed that approximately 62% of the independent variables considered (i.e., 8 out of 13) were not statistically significant. Moreover, we observed that the McFadden R-squared was quite small (i.e., 0.0851). Therefore, we conducted another negative binomial regression analysis by using a stepwise method, which consists of adding and removing some of the independent variables in the model to identify the ideal combination of statistically significant variables and obtain a better model; the results of Model A are reported in Table 5.



**Table 5.** Model A: Negative binomial regression analysis with stepwise method

Variables	Estimated coefficient	Std. error	p-value
Intercept	-3.3590	0.2959	< 0.001***
Percentage of women on board	0.0121	0.0033	0.0003***
Board size	0.0726	0.0101	< 0.001***
Percentage of independent directors	0.0046	0.0017	0.0083**
CEO duality	0.1715	0.0833	0.0395*
ROA	0.0246	0.0052	< 0.001***
Negative sales growth group	-0.1593	0.0715	0.0259*
McFadden R-squared: 0.0849			
AIC: 6485.2			
$\tau = 0.8551$			
$\tau$ interval confidence, 5% significance level (0.7303, 0.9799)			

Note: Significance levels codes: \*\*\* 1%, \*\* 1%, \* 5%, · 10%.

The first important aspect of this model is the sole presence of statistically significant variables and their impact on the *number of bid initiations* is reported in the column "Estimated coefficient". Nevertheless, since the negative binomial regression analysis has a logarithmic link, the estimated coefficients were the object of calculations (see Appendix) made with the exponential function to facilitate their interpretation. Hence, from this point forward, while commenting on the results of the research, we will refer to the final results of the abovementioned calculations, which indicate the impact that each independent variable has on the *number of bid initiations*. This analysis shows that the *percentage of women on boards* has a positive significant impact on the *number of bid initiations*. In fact, an additional woman on the board of directors leads to an increase in the *number of bid initiations* of 12.86%. As regards *board size*, an additional member on the board of directors would increase the *number of bid initiations* by 7.53%. *Board size* is considered an important element for the decision-making process: although the appropriate number of directors on boards may change according to the features of firms or industry, the extant literature shows that its impact on M&A is related to the number of independent directors (Kolasinski & Li, 2013).

The analysis shows that each 10 percentage points increase in the *percentage of independent directors* (corresponding on average to one additional independent director on board) will lead to an increase of 4.71% in the *number of bid initiations*.

Moreover, *ROA* has a positive impact on acquisitive behavior. As far as the groups of sales growth are concerned, we decided to evaluate the impact of this variable on the acquisition intensity by dividing it into three main groups:

- 1) negative sales growth group;
- 2) positive sales growth group;
- 3) very positive sales growth group.

We considered the *positive sales growth group* as a benchmark to measure the effect that either negative or positive change in the sign of the variable would have on the acquisition intensity. The logic behind this choice will become clear when considering the empirical results. The *negative sales growth group* is statistically significant and its estimated coefficient should be considered in comparison with the *positive sales growth group*. Specifically, it indicates that companies having

a negative growth rate will make fewer acquisitions in comparison to a company belonging to the *positive sales growth group*. If compared with the *positive sales growth group*, the *negative sales growth group* reduces the number of acquisition bids by approximately 14.73%. This result is in line with expectations, because *negative sales growth group* may indicate that the firm is facing difficulties and may be less prone to initiate a merger or an acquisition. Moving on to *CEO duality*, the variable is significant at a 5% confidence level, meaning that, when the CEO and chair of the board are the same person, the *number of bid initiations* will likely increase by approximately 18.71%. This result is consistent with the findings of the extant literature since *CEO duality* represents a concentration of power that may threaten and weaken board independence and monitoring. When CEO and board chairperson are roles held by the same person, it is more likely that self-interest behaviors will take place, at the expense of shareholders' value. For instance, CEOs with greater power are more likely to initiate (larger) deals to increase their bonus compensation (Grinstein & Hribar, 2004).

The other independent variables originally considered for the model are not statistically significant: *male CEO*, *male chairperson*, *Tobin's Q*, *book leverage*, *cash holdings*, and the logarithm of *market capitalization* (a proxy for *firm size*). As far as *male CEO* and *male chairperson* are concerned, their statistical non-significance was quite predictable. They have the same value (i.e., 1, meaning that CEO and chairperson are men) in the majority of the firm-year observations, so it appears unlikely that they may have an impact on the dependent variable since the changes in the value are minimal. All the other non-significant variables belong to the company's performance sphere: on the one hand, this may seem quite contradictory, since it is unlikely that the performance and capital structure of a firm will not have an impact on the number of acquisitions made. Although *ROA* is strongly significant, it is surprising to notice that the size of the firm does not have a significant impact on the number of acquisitions made. On the other hand, these findings may indicate that a significant impact on the decision of initiating a merger or an acquisition may be also attributable to the board of directors. This is a notable result, because it may encourage further research on this topic.

Legislative, sociological, economic, and demographic differences among the countries where firms (and, thus, boardrooms) are located may have an impact on the acquisitive behavior of firms. Therefore, we introduced in the initial negative binomial regression analysis an interaction term between the *percentage of women on boards* and the single countries in which the companies are located. When there is an interaction term, the effect of one variable that forms the interaction depends on the level of the other variable in the interaction. In this specific case, the effect of the female share on the board of directors on acquisition intensity will depend on the country where the firm is located. Interaction terms indicate that a third variable (i.e., the country) influences the relationship between an independent variable (i.e., *percentage of women on board*) and the dependent variable (i.e., *number of bid initiations* made). We randomly chose an interaction



term (i.e., the one between the *percentage of women on boards* and Italy) to serve as a benchmark to see if the effects of the other interaction terms were significantly different. Therefore, the results of the analysis for the other interaction terms should be considered in comparison to the findings obtained for the benchmark interaction term between the *percentage of women on boards* and Italy. We started the analysis by introducing the interaction term in the initial negative binomial regression and found that the interaction term between the *percentage of women on boards* and Italy has a positive and statistically significant estimated coefficient.

However, while looking at the results, we noticed that there were many not statistically significant variables, a situation similar to the one concerning the initial analysis on the impact of women on boards. Therefore, mirroring what we previously did for the models without interaction, we conducted another negative binomial regression analysis using a stepwise method to identify the ideal combination of statistically significant variables and obtain a better model. The results of Model B are reported in Table 6.

The interaction between the *percentage of women on board* and Italy (i.e., the benchmark to

show the effects of the other interactions) is statistically significant and has a positive estimated coefficient.

As regards the other countries, the estimated coefficients reported in Table 6 should be considered in relation to the interaction chosen as a benchmark. For instance, the negative estimated coefficient for the interaction between female share on boards and Belgium indicates that women on boards of directors of Belgian companies would make fewer bid initiations in comparison to women on boards in Italy. It is worth noting that all the interactions are statistically significant, except for France. The significance of the other interactions implies that the female proportion on board of directors has a different impact on firms' acquisitive behavior depending on the nations where those firms are located. In order to facilitate the interpretation of the effects that the interaction terms have on the *number of bid initiations*, we computed the net effect of each interaction by adding the estimated coefficients reported in Table 6 to the estimated coefficient of the benchmark. The impacts of the interaction terms (i.e., the net coefficients) are reported in Table 7.

**Table 6.** Model B: Regression analysis with interaction between the *percentage of women on board* and the countries, stepwise method

Variables	Estimated coefficient	Std. error	p-value
Intercept	-3.7149	0.3238	< 0.001***
Percentage of women on board: interaction with Italy	0.0282	0.0074	0.0001***
Board size	0.0752	0.0101	< 0.001***
Percentage of independent directors	0.0053	0.0017	0.0020**
CEO duality	0.1780	0.0832	0.0324*
ROA	0.0259	0.0052	< 0.001***
Negative sales growth group	-0.1559	0.0712	0.0286*
Percentage of women on board: interaction with Belgium	-0.0341	0.0114	0.0030**
Percentage of women on board: interaction with France	-0.0102	0.0078	0.1908
Percentage of women on board: interaction with Germany	-0.0292	0.0099	0.0032**
Percentage of women on board: interaction with Spain	-0.0284	0.0120	0.0179*
Percentage of women on board: interaction with the UK	-0.0260	0.0091	0.0040**
McFadden R-squared: 0.0878			
AIC: 6474.6			
$\tau = 0.8325$			
$\tau$ interval confidence, 5% significance level (0.7097, 0.9553)			

Note: Significance levels codes: \*\*\* 1%, \*\* 1%, \* 5%, · 10%.

**Table 7.** Estimated coefficients of the interaction terms for each country (except for France): net effects on the *number of bid initiations*

Variables	Estimated coefficient
Percentage of women on board: interaction with Italy	0.0282
Percentage of women on board: interaction with Belgium	-0.0059
Percentage of women on board: interaction with Germany	-0.0010
Percentage of women on board: interaction with Spain	-0.0002
Percentage of women on board: interaction with the UK	0.0022

As concerns the impacts of the interaction terms on acquisition intensity, it is evident that their sign varies across countries. As already outlined, the estimated coefficient for the interaction term in Italy is positive and statistically significant at 1% significance level, signaling that an increase in female proportion will lead to an increase in the *number of bid initiations* made by Italian firms. Specifically, an increase of 10 percentage points in the *percentage of women on boards* in Italy (corresponding on average to one female director) will now lead to an increase of 32.58% (see

Appendix) in the *number of bid initiations*. In the UK the addition of a female director on the corporate board will increase the *number of bid initiations* by 2.22%. On the contrary, one additional female director on the corporate board will decrease the *number of bid initiations* by 5.73% in Belgium, 1% in Germany, and 0.20% in Spain. The presence of different impacts on acquisitive behavior across countries comes as no surprise, since, despite being in Europe, the nations have diverse social, legislative, and demographic backgrounds. Specifically, when focusing on female share on corporate boards, each

nation chose a different approach to tackle gender imbalance, so this likely contributed to the different results obtained from the analysis.

The other significant variables in the model are *board size*, *percentage of independent directors*, *CEO duality*, *ROA*, and *negative sales growth group* and the results reflect those obtained before. As regards *firm size*, an additional member on the board would increase the *number of bid initiations* by 7.81% and an increase of 10 percentage points in the fraction of independent directors (corresponding to one additional independent member) would lead to an augmentation of acquisition intensity of 5.44%. The presence of *CEO duality* would increase the acquisition intensity of 19.48% and an increase of 1 percentage point in *ROA* would lead to an augmentation of 2.62% in the *number of bid initiations*. Moreover, in the presence of *negative sales growth*, the *number of bid initiations* made by a firm would decrease by 14.44% in comparison to companies with *positive sales growth*.

Once we proved that the proportion of female members on the board of directors has a relevant impact on corporate decisions concerning M&A, we found that this impact varied across countries. Interestingly, results showed that France is the only country for which the interaction term between female share on board and the country itself is not statistically significant, even though it is also the nation with the highest *percentage of women on board* (24.17%) in the sample. This may be due to the fact that France is in a different phase than the other countries analyzed when considering gender presence on the board of directors, as already discussed above. In fact, while various European countries have adopted different strategies to promote gender parity, with gender quotas being one notable approach, France has been at the forefront of this movement, implementing pioneering measures to increase female representation on corporate boards.

As regards the other countries, results show that in Italy and the UK, there is a positive relation between the *percentage of women on board* and corporate acquisition intensity. For these countries, the considerations previously made about the positive coefficient still hold true. According to the extant literature, women are less overconfident than men are and this generally leads to the initiation of fewer (and better) deals. On the other hand, men are reported to be overconfident and often driven by empire-building desires. However, an increase in heterogeneity on board of directors may limit overconfident behaviors significantly, especially if there is not a concentration of power in the hands of one person so that it is more likely that the board will be able to monitor the situation more effectively. In both Italy and the UK, the presence of *male CEOs* is high in the sample, but chief executive officers are hardly ever serving also as chairs of the boards, signaling the absence of a concentration of power. Therefore, given the reduced presence of CEO hubris threat, it is reasonable to assume that the positive relationship between the percentage of women on Italian and British boards and acquisition intensity is the result of a thorough and meditated decision-making process based on the needs of the company. Moreover, these considerations appear even more valid when observing the positive

relationship between independent directors on both Italian and British boards and the *number of bid initiations*. As already mentioned, it is reasonable to assume that the positive impact on acquisition intensity generated by both female directors and independent members will be the result of careful, motivated, and thorough consideration. Furthermore, it is worth noting that the impact of female proportion in the boardroom on acquisition intensity has a different magnitude in the two countries: an additional woman on board increases the *number of bid initiations* by 32.58% in Italy, while in the UK the augmentation is only of 2.22%, a surprising result if considering that the average *percentage of women on boards* in the sample is approximately the same in Italy (14.19%) and in the UK (14.90%). The reason behind this phenomenon may be the fact that the two nations chose diametrically different approaches to promote gender balance on corporate boards: on the one hand, the UK has never introduced a regulation to increase female presence on corporate boards with gender quotas, on the other hand, in 2011 Italy introduced the *Legge Golfo Mosca*, a regulation for gender quotas on board of directors, stating that women should be at least one-third of the members. Therefore, the difference in the magnitude of the impact of female proportion on acquisition intensity in the two countries is a different approach.

In Belgium, Germany, and Spain the *percentage of women on boards* is negatively related to the *number of bid initiations*: the addition of a female director on corporate boards would decrease the *number of bid initiations* by 5.73% in Belgium, 0.20% in Spain and 1% in Germany. The negative relation between female proportion on boards and acquisition intensity may be explained in light of the extant literature about hubris and overconfidence, considered a male attribute, leading to an increase in the *number of bid initiations* made. On the contrary, women are reported to be less overconfident than men and to initiate fewer deals, resulting in female presence contrasting the male empire-building motive. CEO overconfidence is exacerbated in situations with a high concentration of power (i.e., *CEO duality*), especially when independent members are a minority on boards. This applies to Belgium and Spain. In the case of Germany, an additional female director on board leads to a 1% decrease in the *number of bid initiations*. It is quite unlikely that the reasons behind this result are related to CEO overconfidence. Although almost all the firms in the sample have a *male CEO*, Germany is the country with the lowest level of presence of *CEO duality* in the sample (0.61% of firm-year observations) and independent directors are the majority of board members, so their presence will likely improve the decision-making process in the boardroom. Furthermore, despite the late introduction of a regulation for gender quotas on boards, women were 33.8% of directors on boards of the German largest publicly listed companies in 2018. This result is a good signal for women's representation. Therefore, it appears reasonable to believe that the negative sign of the estimated coefficient may be caused by specific contingent economic factors.

## 5. CONCLUSION

Our research shows the results of an empirical analysis conducted on 250 firms in Europe (including France, Italy, Spain, Belgium, Germany, and the UK) in the decade 2009–2018. It confirms not only the existence of a strong and positive relationship between the percentage of women on boards and acquisition intensity but also that this relationship varies depending on the country where the company is located.

The research takes into consideration independent variables concerning two main spheres: 1) the boardroom's characteristics (e.g., the board size, percentage of female directors, percentage of independent directors); 2) the firm's performance indicators (e.g., sales growth, ROA, firm size). Unlike previous research, results show that the statistically significant factors are mostly boardrooms' attributes and features, except for ROA. While it is reasonable to believe that the members of the board will carefully evaluate the performance indicators during the decision-making process, it emerges clearly from the analysis that board characteristics such as the size of the board itself, the presence of independent members, and the percentage of female directors are relevant factors affecting corporate acquisitive behavior.

Therefore, this result suggests that the magnitude of the impact of the board's features may be even stronger than expected when considering corporate strategic choices such as M&A. This may be related to the fact that we analyzed the M&A deals in the decade 2009–2018 in Europe, while much of the previous research has been conducted for at least the decade before, with a focus on the US. Macroeconomic, sociological, technological, and political changes surely had an impact on the M&A context. Moreover, the 2009–2018 decade was particularly significant for female presence on the board of directors after an increased awareness of the gender equality issue so that several European countries introduced laws establishing gender quotas on boards of directors.

Our findings indicate that an additional woman on a board of directors increases the number of bid initiations by 12.86%, a result in contrast with the extant literature, according to which there is a negative relation between the percentage of women on boards and acquisition intensity. Previous research proved that the reason behind this negative relationship lies in the fact that women seem to be less overconfident than men. It is reported that CEO hubris or excessive overconfidence, generally attributed to the male gender, increases the number of deals made, especially in the presence of a concentration of power (i.e., when the CEO is also the COB). On the other hand, there is a large body of literature attesting that boards with more female directors experience thorough decision-making processes, resulting in the initiation of fewer and better deals, also in the attempt to contrast CEO's empire-building motives. In our analysis, although CEOs are men in 96% of the observations in the sample, chief executive officer and chair of the board are roles held by different people in 78% of the cases, suggesting not only the absence of a concentration of power in the hands of one person

but also that perhaps CEO overconfidence is not a threat anymore. The increased heterogeneity on the board of directors may have contributed to limiting CEO's overconfident behaviors. Therefore, it may be possible that, given the reduced presence of CEO hubris threat, the positive female influence on the number of bid initiations is the result of a thorough and meditated decision-making process based on the necessities of the firm. This consideration appears reasonable also when observing board independence, which, according to the literature, restrains acquisitions driven by CEO overconfidence, improves the strategic decision-making process (Kolasinski & Li, 2013), and increases the chances of taking corrective actions in case of a bad deal (Paul, 2007).

All in all, our work shows that there is a positive statistically significant relationship between the percentage of independent directors on the board and the number of bid initiations. Since independent directors improve the decision-making process of boardrooms, it is reasonable to assume that the deals initiated will be the result of careful, motivated, and thorough consideration. Therefore, it is quite plausible that women and independent directors will both have a positive impact on acquisition intensity.

In the end, the research proved that women on the board of directors have a relevant impact on corporate strategic decisions, providing an additional valid reason for an increase in women's inclusion, especially in the business field. Specifically, the proportion of female members on the board of directors is positively related to corporate acquisition intensity, a result in contrast with the extant literature and indicating that the increased presence of women on boards has contributed to an evolution in boardroom dynamics. Furthermore, the magnitude and sign of the impact that females share on boards have on the number of bid initiations varies across countries due to sociological, economic, and legislative differences. Therefore, our study contributes to the literature on M&As in meaningful ways. First, it offers new insights into the impact that female directors have on bid initiation. M&As are among the key strategic decisions that firms make, given also the fact that 70 to 90 percent of them fail to create value for the acquirer (Christensen et al., 2011), so a deep understanding of the factors influencing the decision-making process of the board of directors may contribute to a positive outcome. Secondly, to the best of our knowledge, this is one of the first studies that not only focuses on female directors' impact on M&As in Europe but also analyzes how this impact varies depending on the geographical location of the companies.

Hence, it is crucial for future research to continue examining the relationship between the presence of women on corporate boards and the firms' inclination to initiate mergers and acquisitions (M&A), in order to ascertain possible alterations arising from the prospective increase in female board representation and the potential legislative, sociological and economic transformations within individual nations.

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## APPENDIX

In order to investigate the effects of the independent variables on the number of bid initiations, some calculations should be made. Since the negative binomial regression analyses have a logarithmic link, the estimated coefficients, reported for each variable in the tables, were the object of calculations made with the exponential function. The computations of each variable's effects in all the models are reported below.

By way of illustration, we will explain all the passages made to compute the effect of the variable Percentage of women on boards on the number of bid initiations in Model A. First, we chose the type of effect we wanted to analyze: in this specific case, we chose to see the effect of a 10 percentage points increase in the proportion of women on boards on the number of bid initiations.

The coefficient 0.0121 indicates that for each increase of 10 percentage points in the fraction of women on boards, the number of bid initiations will be multiplied by the multiplication factor 1.1286 [= exp (0.0121 \* 10)]. The multiplication factor was obtained by computing the exponential of the estimated coefficient times ten (representing the 10 percentage points increase). Therefore, an augmentation of 10 percentage points in the proportion of women on board will correspond to a 12.86% increase in the number of bid initiations.

Table A.1. Model A: Calculation of the variables' effects

<i>Variables</i>	<i>Estimated coefficient</i>	<i>Type of effect</i>	<i>Calculation</i>	<i>Multiplication factor</i>	<i>Final effect</i>
<i>Percentage of women on board</i>	0.0121	10 percentage points increase	= exp (0.0121 * 10)	1.1286	+12.86%
<i>Board size</i>	0.0726	1 additional member	= exp (0.0726)	1.0753	+7.53%
<i>Percentage of independent directors</i>	0.0046	10 percentage points increase	= exp (0.0046 * 10)	1.0471	+4.71%
<i>CEO duality</i>	0.1715	If present	= exp (0.1715)	1.1871	+18.71%
<i>ROA</i>	0.0246	1 percentage point increase	= exp (0.0246)	1.0249	+2.49%
<i>Negative sales growth group</i>	-0.1593	If the firm belongs to this group	= exp (-0.1593)	0.8527	-14.73%

Table A.2. Model B: Calculation of the variables' effects

<i>Variables</i>	<i>Estimated coefficient</i>	<i>Type of effect</i>	<i>Calculation</i>	<i>Multiplication factor</i>	<i>Final effect</i>
<i>Percentage of women on board: interaction with Italy</i>	0.0282	10 percentage points increase	= exp (0.0282 * 10)	1.3258	+32.58%
<i>Percentage of women on board: interaction with Belgium</i>	-0.0059	10 percentage points increase	= exp (-0.0059 * 10)	0.9427	-5.73%
<i>Percentage of women on board: interaction with Germany</i>	-0.001	10 percentage points increase	= exp (-0.001 * 10)	0.9901	-1.00%
<i>Percentage of women on board: interaction with Spain</i>	-0.0002	10 percentage points increase	= exp (-0.0002 * 10)	0.998	-0.2%
<i>Percentage of women on board: interaction with the UK</i>	0.0022	10 percentage points increase	= exp (0.0022 * 10)	1.0222	+2.22%
<i>Board size</i>	0.0752	1 additional member	= exp (0.0752)	1.0781	+7.81%
<i>Percentage of independent directors</i>	0.0053	10 percentage points increase	= exp (0.0053 * 10)	1.0544	+5.44%
<i>CEO duality</i>	0.178	If present	= exp (0.178)	1.1948	+19.48%
<i>ROA</i>	0.0259	1 percentage point increase	= exp (0.0259)	1.0262	+2.62%
<i>Negative sales growth group</i>	-0.1559	If the firm belongs to this group	= exp (-0.1559)	0.8556	-14.44%