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**Gender and corporate strategic choices:
women in the boardroom and their
impact on acquisitive behavior**

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Introduction

The gender equality issue is a matter of great importance not only for moral and ethical reasons, but also for its significant impact on society, politics and economy.

In fact, it has become the object of many directives and policies aimed at reaching an equal treatment of men and women in every sphere of life.

The United Nations have 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* and the European Commission has set up a *Gender Equality strategy* for the 2020-2025 period. Both the institutions are acting in order to eradicate structural issues at the root of gender inequality, such as legal discrimination, unfair social norms and attitudes and low levels of political participation.

Although 14 of the top 20 countries worldwide for gender equality are EU Member States, none of them has achieved full gender equality yet and progress is still too slow.

In fact, female shares in leading positions in politics, government agencies and corporate boards are still not significant. Women are only 7.8% of board chairs and 7.9% of CEOs in the EU's largest listed companies and represent only 32.2% of members of national parliaments in the EU.

The aim of this dissertation is to shed light on the importance of women's inclusion in the business field, especially in top decision-making positions in an organization, where they are still under-represented.

However, I would like to point out the fact that highlighting the significant role of women in business does not imply the discrimination of male contribution. On the contrary, I hope that this dissertation will represent a little step forward in the recognition of the importance of gender equality.

I investigated whether the presence of female members on board of directors has an influence on corporate strategic choices, such as the propensity to initiate mergers and acquisitions.

I took inspiration from the paper *Director gender and mergers and acquisitions* by Maurice Levi, Kai Li and Feng Zhang and conducted a research on 250 European companies,

located in France, Italy, Spain, Belgium, Germany and the United Kingdom¹ in the decade 2009-2018.

Specifically, I conducted a regression analysis to see if female proportion on board of directors has an impact on the number of bid initiations made. I found not only that women on boards *do* have an influence on corporate acquisitive behaviors, but also that the magnitude and sign of this impact is different from what previous literature has attested.

In fact, according to my research, an additional woman on board of directors increases the number of bid initiations by 12.86%, while in the extant literature it is reported that women in the boardroom tend to decrease the number of mergers and acquisitions.

Moreover, after proving that women on boards have an influence on acquisitive choices, I decided to investigate whether this impact changes according to the country in which the company is located. The findings of the research show that the magnitude and sign of the impact of the proportion of women on boards on acquisition intensity change significantly according to the countries considered.

The structure of the thesis is designed to gradually introduce the gender equality issue, starting from its roots in the labor market, exploring its relationship with corporate performance and finally examining it in the context of mergers and acquisitions.

The chapters of the dissertation are organized as follows.

In Chapter 1, I presented an overview of the gender equality issue, highlighting the main reasons for women under-representation in the labor market, especially in the business field. Moreover, I analyzed the evolution of the percentage of women on board of directors in Europe and the actions taken by the European Commission to tackle gender imbalance. I also focused on the different approaches chosen by the countries in the sample to encourage a fair representation of both biological sexes in the boardroom.

Furthermore, I reported the main findings of the extant literature concerning the impact that the female share on board of directors has on corporate performance. In fact, before investigating whether women on boards have an influence on corporate strategic decisions, it may be relevant and interesting to have an overview of their influence on firm's performance.

¹ Although United Kingdom is no longer a European Member State, British firms were included in the sample. This is due to their economic relevance and their higher proportion of women on boards, despite the lack of a law for gender quotas, if compared to other European countries.

In Chapter 2, I introduced the notions of mergers and acquisitions and I pointed out their strategic relevance through an overview of their evolution. Moreover, I introduced the drivers of acquisitions and I focused on the pre-deal phase, the period that precedes the final closure of the deal. In fact, this phase is particularly relevant for the decision-making process of the board of directors. Furthermore, I discussed the influence that board of directors' features (e.g. board size, percentage of independent directors, CEO's psychological traits, proportion of female members, CEO duality) have on the choice of initiating mergers or acquisitions through a review of the main literature on this topic.

Specifically, I gave special attention to the paper *Director gender and mergers and acquisitions* by Maurice Levi, Kai Li and Feng Zhang, which was both an inspiration for this thesis and a relevant benchmark for the explanations of the results of my analysis.

In Chapter 3, I presented the empirical research, starting from the creation of the sample and the explanation of the methodology. Moreover, after reporting and describing all the analyses conducted, in the last paragraph I analyzed the results of the research, making considerations and comparisons in light of the extant literature and of the economic, sociological and legislative differences across the countries considered in the sample.

In the Conclusions of the thesis, I realized a final summary, focusing on the most interesting aspects emerged during the development of the dissertation and on the explanation of the results of the research.

1. The gender equality issue

The low percentage of female members on boards of directors mirrors not only the struggle that women face in accessing the upper echelons positions of companies, but also the gender gap that is still present in the labor market.

The current global female employment rate² is 47.13%, 27.08 percentage points lower than the male one (74.21%). This is an overall result, affected by differences across countries' cultures, regulations and demography.

In fact, although women are 49.58%³ of the world population, in some countries (Qatar, United Arab Emirates, Oman, Bahrain, Maldives, Kuwait, Saudi Arabia, Equatorial Guinea, Bhuta, Djibouti, Singapore) the female share of population is surprisingly much lower than the male one⁴.

Numbers change significantly when focusing on Europe, where female employment rate was 67.3% in 2019, approximately 20 percentage points higher than the global average, but still lower than the male employment rate (79%). There have been several improvements over the years and the gender employment gap has decreased in the last decade, but this process is still too slow and affected by prejudice.

In fact, the division of labor between men and women appears to have its roots in the pre-industrial period agricultural practices. Alesina et al. (2013) investigated the female role in society and the reasons why countries have divergent opinions about rights of freedom and equality when considering women in the labor market.

Drawing from the hypothesis that the forms of agriculture practiced in the pre-industrial period have shaped present gender role differences (Boserup, 1970), the authors combined pre-industrial ethnographic data with contemporary measures of people's attitudes towards gender roles and female contribution in activities outside the home.

Boserup found relevant differences between shifting cultivation and plough cultivation, since the former is labor intensive and requires the use of handheld tools, while the latter

² The World Bank, International Labour Organization, ILOSTAT database. Data retrieved in June 21, 2020.

³ World Bank staff estimates based on age/sex distributions of United Nations Population Division's World Population Prospects: 2019 Revision

(Source: <https://data.worldbank.org/indicator/SP.POP.TOTL.FE.ZS?end=2019&start=1960&view=chart>)

⁴ Statistics Times, List of countries by Sex ratio

(Source: <http://statisticstimes.com/demographics/countries-by-sex-ratio.php>)

is capital intensive and involves the use of plough. This tool favors men employment in agriculture, because using the plough requires upper body strength and bursts of power either to pull it or to control the animal that pulls it.

Therefore, as soil preparation is essential for agriculture and necessitates a great amount of time to be completed, men started spending more time in the fields while women took care of household and housework.

This division of labor influenced norms and conceptions about gender division of labor: societies with plough agriculture developed the belief that women should take care of the house and the family instead of working like their male counterparts.

The results of the analysis conducted by Alesina et al. are consistent with this hypothesis, showing that the use of plough is positively related to contemporary gender inequality and negatively linked to female participation in labor market, entrepreneurship and politics.

The root of these beliefs appears so deep that, even after a significant development of the economy, norms about gender roles in society are still present, alive and nursing gender gaps.

Although significant results have been achieved, there is still much to accomplish to reach equality, a relevant goal not only for social progress, but also from an economic point of view.

In 1957 Gary Becker wrote *The Economics of Discrimination*, analyzing the economic effects of discrimination in the marketplace due to non-pecuniary considerations (e.g. race, religion, sex, color, social class...). The author proved that this mechanism reduces real incomes of all the parties involved, resulting in a loss of value.

He conducted a research by comparing the wage rates of two groups, one of which being a minority, in different situations: as they are observed and as they would be observed in absence of discrimination. In the latter case, the groups would be perfect substitutes in production. Becker introduced the first economic model of discrimination by examining the employment relations and found that minority workers may have to “compensate” employers by being more productive at a given wage or, equivalently, by accepting a lower compensation for the same level of productivity.

The difference between the wage rates of the groups examined may be detrimental for both people being discriminated against and those engaged in it.

In fact, on the one hand, discrimination leads to minority workers having a lower wage than that of their peers.

On the other hand, employers who discriminate may have to pay more to hire non-minority workers because their wage is higher, and this will increase costs.

From that point, much more research has been conducted on discrimination, especially if considering the role of women in the workplace.

The same author developed the *Human capital theory* (Becker, 1964), which shows how individual set of education, skills and experience can lead to benefits for the cognitive and productive capabilities of a firm. Traditionally, men have invested more in their education and work experience if compared to women and this may be one of the reasons why females have been under-represented in an organization, especially in leadership roles like senior management positions and board of directors' appointments.

Moreover, thriving at work while managing caring responsibilities at home is a challenge, especially for women. For instance, women in the EU spend 22 hours per week on care and household work, which is a great deal of time if compared with the 9 hours contribution brought by the male counterpart.

These numbers are sadly disappointing if considering that back in 1985 Becker had already underlined how housework has a huge impact on work-life balance, earnings and occupational differences between men and women. It was found that given the energy required for childcare and housework, women spent less effort on each hour of market work if compared to men working the same number of hours. Consequently, women had lower hourly earnings than men with the same market human capital, and economized on the effort expended on market work by seeking less demanding jobs.

The author began his analysis by considering the increase of married women in the labor force in Western countries since 1920s. While, at first, female labor force was mostly composed by older women, it subsequently spread to younger women with children.

The reasons behind this phenomenon were the increased earning power of married women due to the development of Western economies and the expansion of the service sector. The author found that the augmentation of earning power of married women led to a substitution of parental and household time with working time. At the same time, the increase in earnings and the possibility to access the labor market reduced the attractiveness of marriage for women, leading to an increase in divorce rates and challenging the credibility of gender division of labor within households.

However, although divorce rates and labor force participation of married women continued to increase at a significant pace, economic progress and growth in female earning power did not accelerate after 1950.

Becker stated that one of the main reasons for men and women inequality is the responsibility for childcare and household. In fact, taking care of the family and the house may prevent women from choosing jobs that require traveling and odd hours.

The author developed a model where he took into consideration how individuals allocate their energy among activities.

The energy required by housework and childcare is higher than the one used for leisure activities and if women are the ones responsible for household work, they will have less energy available for the market, if compared to men. Consequently, this may lead to lower female hourly earnings, lower investment in human market capital and reduced possibilities of career advancements.

Therefore, responsibility for childcare and housework had (and still has) a major impact on earning and occupational differences between men and women.

Hence, gender discrimination appears to be economically suboptimal rather than unethical.

In fact, if the firm does not select valuable employees due to a discriminatory gender division of labor, it may preclude access to relevant resources for the company. In fact, Burke (2000) highlighted how board selectors have (or at least used to have) the tendency to assume that women lack adequate human capital for board positions.

However, Singh et al. (2008) dispelled this myth in their study of multiple human capital dimensions of new directors of the FTSE 100 firms in the UK, finding that women are more likely to have MBA degrees and international experience.

Discrimination towards women in the workplace can take many other forms, one of which is the gender pay gap.

Although almost every industrialized country has passed laws mandating equal treatment of women in the labor market, the gender pay gap still persists and the extent to which men earn more than women varies across countries.

For instance, in Europe, on average, men earn a salary 16% higher than that of women, as reported in the *2019 Report on equality between women and men in the EU*.

As it is evident from *Figure 1*, there has not been a huge change from 2010 to 2017 and, specifically, in the last three years the change has been only of 0.6 percentage points, from 16.6% in 2014 to 16% in 2017.

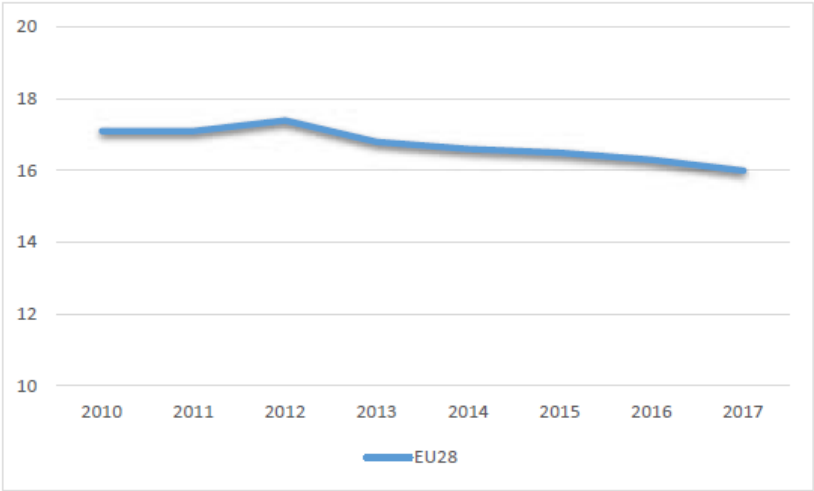


Figure 1: EU-28 trends in the gender pay gap in unadjusted form (in %), 2010-2017

Source: Eurostat, Structure of Earnings Survey

Moreover, the gender pay gap seems to widen towards the top of the wage distribution, mirroring the *glass ceiling effect*, the phenomenon for which women and minorities face artificial impediments and invisible barriers that prevent them from being promoted to managerial and executive-level positions within an organization.

Nevertheless, there are also cases in which the gender wage gap widens at the bottom of the hierarchy, representing the *sticky floor effect*, a discriminatory employment pattern that keeps workers, mainly women, in the lower ranks of the job scale, with low mobility and invisible barriers to career advancement.

The gender equality issue has received increasing attention in the academic literature. For the purpose of the dissertation, before proceeding with the research analysis, it is relevant to highlight some aspects concerning female representation on corporate boards. First, I will analyze the evolution of the percentage of women on board of directors in Europe, with a specific focus on Italy, France, Germany, Spain, Belgium and the United Kingdom.

Then, I will provide a brief literature review of the impact that the female share on board of directors has on corporate performance. In fact, before investigating whether women on boards have an impact on corporate strategic decisions, it may be relevant and interesting to have an overview of their influence on corporate performance.

1.1 Gender on European corporate boards

Reaching equality between men and women in education, earning potential, economic decision-making and political power is fundamental for the progress of society, as reflected in many laws aimed at reducing gender imbalance across the world.

Since the empirical analysis will involve firms located in Belgium, France, Germany, Italy, Spain and the United Kingdom, I will present an overview of the European regulatory framework.

It is undeniable that there have been progresses in recent years, but, as previously highlighted, women are still facing numerous obstacles on their way to decision-making positions, especially on corporate boards.

European Treaties and the *Charter of Fundamental Rights* recognize equality as one of the fundamental values on which European Union is founded. In fact, EU introduced laws against discrimination for several protected grounds such as religion, belief, age, disability, sexual orientation, ethnicity and gender.

In order to reduce gender imbalance, the European Commission adopted the *Strategy for Equality between women and men 2010-2015*, a five-year plan to increase awareness and improve gender equality. The main priorities of the strategy were equal economic independence, labor market opportunities, access to decision-making positions, women's dignity and gender-based violence. Meanwhile, the institution started monitoring the main achievements through an annual report on gender equality. In fact, the European Institute for Gender Equality started providing an annual overview of the gender situation in Europe while highlighting the issues to address.

Furthermore, in November 2012 the European Commission submitted a *Women on boards* proposal for a directive on gender balance among non-executive directors of companies listed on stock exchanges. The aim was to address the considerable imbalance between women and men in economic decision-making positions at the highest level. The proposal set the goal of a minimum 40% quota of non-executive female members on company boards. The result was supposed to be achieved by 2020 in the private-sector firms and by 2018 in public-sector companies.

In November 2013 the European Parliament adopted the proposal by a substantial majority and introduced additional measures to support the cause. In the event that companies did not reach the 40% target, they were required to provide plans in order to

achieve the goal. Moreover, for Member States that decided to apply the directive to both executive and non-executive directors on boards, the target lowered at 33%.

It is important to point out that the new appointments made by the companies should respect pre-established, clear and neutral criteria, giving advantage to the under-represented sex only in situations where the candidates are equally qualified.

Since the adoption of the Directive, there have been considerable yet too slow improvements.

In 2015, the European Commission defined a *Strategic engagement for gender equality* for the period 2016-2019, where equality in decision making was one of the main priorities. The actions planned by the European Commission were increasing awareness, encouraging political dialogue, promoting mutual learning and exchanging good practices, funding projects to develop and support strategies for positive change.

As mentioned above, each year the European Commission issues a report on equality between men and women in order to show the progress made and the areas that need more attention thus specific actions.

In the *2019 Report on equality between women and men in the EU* the main areas of focus were female labor market participation, equal economic independence of men and women, gender pay, earnings and pension gaps, equality in decision making, gender-based violence, women’s rights across the world and gender mainstreaming.

As regards the presence of women in the highest management positions and in the boardrooms, there have been some improvements, but they are still too slow.

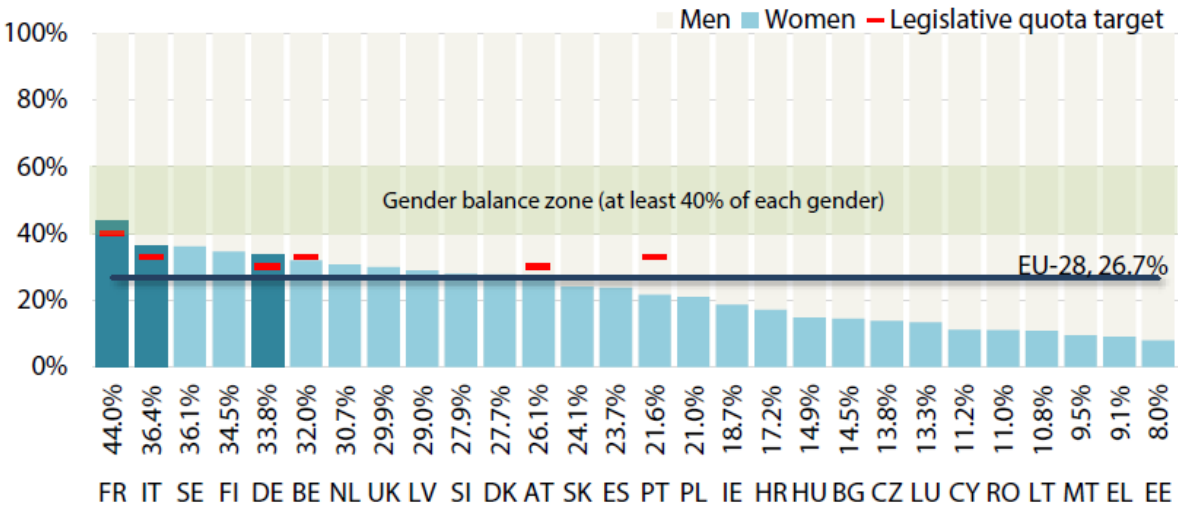


Figure 2: Proportion of women and men on the boards of the largest publicly listed companies in the EU, October 2018. Legislative gender quota targets: FR (40%), BE, IT, PT (33%), DE, AT (30%)

Source: European Institute for Gender Equality, Gender Statistics Database.

In October 2018 only 26.7% of directors on the boards of the largest publicly listed companies in EU were women. In fact, despite the increase in the number of females on boards after the introduction of gender quotas in many countries, male presence was still largely predominant.

Looking at *Figure 2*, it is possible to see that France was the only EU Member State reaching the Gender balance zone, where at least 40% of each gender is represented in the boardroom.

Moreover, women were at least one third of board members only in other four countries: Italy, Sweden, Finland and Germany.

As already highlighted, the average percentage of women in EU-28 (UK was still considered in the statistics since the official exit from EU is in 2020) was 26.7%. However, only 11 countries (France, Italy, Sweden, Finland, Germany, Belgium, Netherlands, United Kingdom, Latvia, Slovenia and Denmark) were above this threshold.

It is worth noting that in Malta, Greece and Estonia the percentage of women on boards was respectively 9.5%, 9.1% and 8.0%, far below the European average.

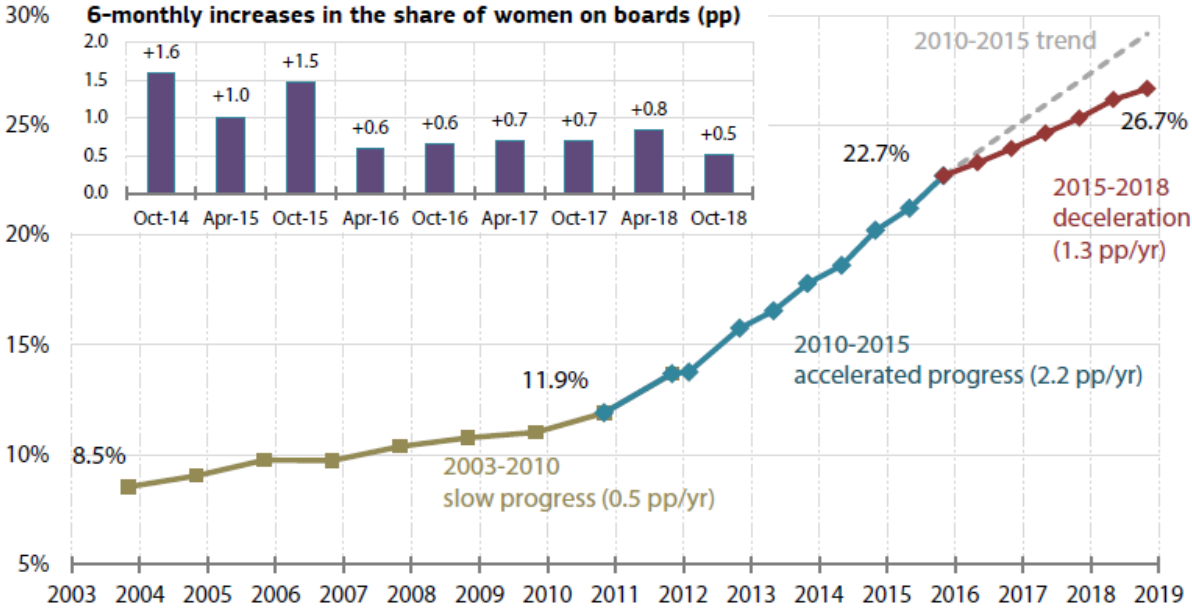


Figure 3: Proportion of women on the boards of the largest publicly listed companies in the EU, 2003-October 2018 (%)

Source: European Institute for Gender Equality, Gender Statistics Database.

In *Figure 3*, it is possible to see the evolution of the percentage of women on boards from 2003 to 2018. First, from 2003 to 2010, there was a slow progress, with an increase of only 0.5 percentage points per year.

In 2010 the European Commission adopted the first plan to tackle gender inequality, so the increase of 2.2 percentage points per year from October 2010 to October 2015 came as no surprise. This acceleration was also linked to the introduction, in 2012, of the first European Directive for the gender quotas and the subsequent actions taken by the countries.

However, the situation has changed since 2015, with a considerable deceleration (1.3 percentage points per year) in the annual increase of female representation on boards. This slowdown may be signaling the need for more key driver of progress to encourage change.

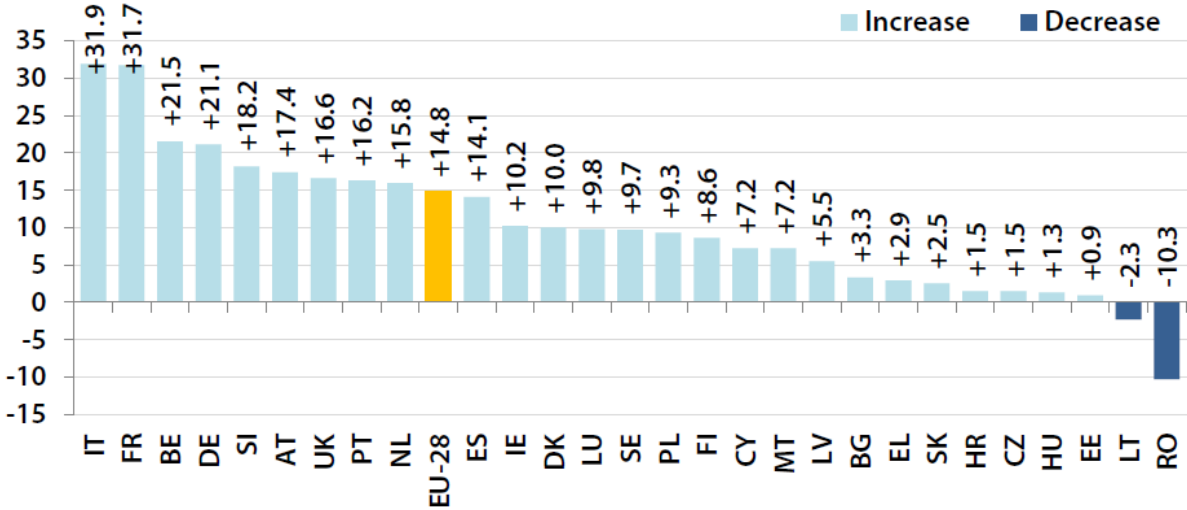


Figure 4: Change in the proportion of women on the boards of the largest publicly listed companies in the EU, October 2010-October 2018 (percentage points)

Source: European Institute for Gender Equality, Gender Statistics Database

When observing the change in female representation on boards in the UE Member States from 2010 to 2018, Italy and France stand out with the highest percentage points increase (+31.9 and +31.7 respectively), more than doubling the EU-28 average (+14.8).

The most significant results were in those countries, such as France, Italy, Belgium and Germany, that introduced binding gender quotas or other concrete measures.

However, despite the lack of gender proportion regulations, the United Kingdom had an increase of +16.6 percentage points, well above the EU-28 average, an interesting result that suggests that gender quotas may be beneficial yet not essential to reach gender equality.

Nevertheless, most of the Member States were still below the average, with two countries (Lithuania and Romania) reporting a decrease of respectively 2.3 and 10.3 percentage points.

These are quite disappointing results, reflecting the need for more actions to increase awareness on the importance of gender balance, especially in corporate rooms.

Another relevant aspect linked to female presence on board of directors is the role held by women *within* the boardroom. In this respect, regulations for binding quotas do not have any impact. In fact, women are still under-represented in executive positions, as it is evident from Figure 5, which shows the proportion of women among executive and non-executive members of the two highest decision-making bodies of companies in Europe in 2018.

On average, women held 29.3% of non-executive positions in the top two decision-making bodies of large companies in Europe, but just 16.6 % of executive positions. The percentage was higher for executive positions only in 8 Member States, where there was a particularly low female representation among non-executives.

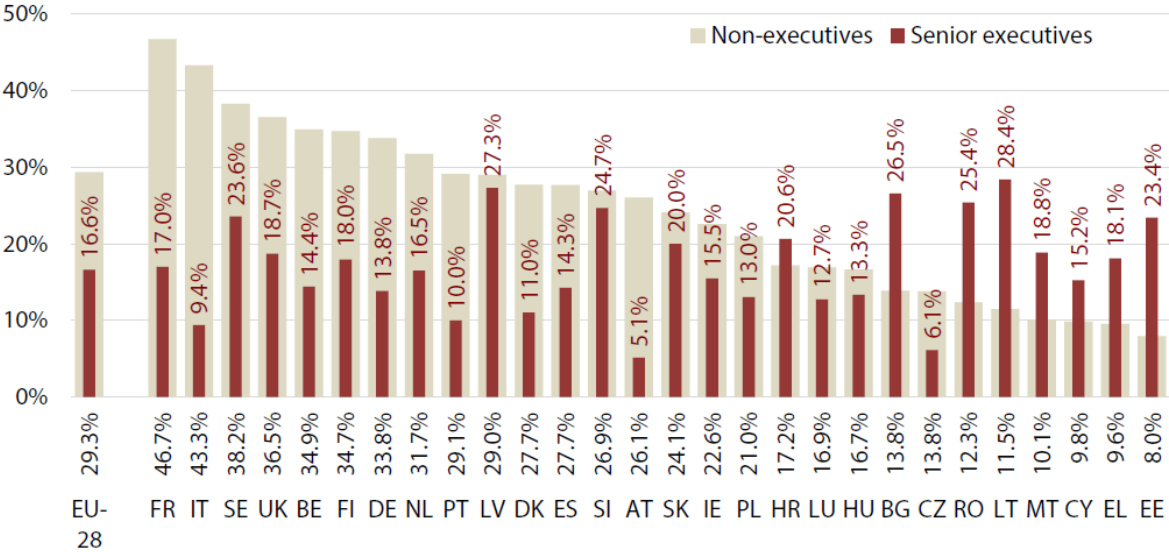


Figure 5: Proportion of women among executive and non-executive members of the two highest decision-making bodies of large companies in the EU-28, October 2018

Source: European Institute for Gender Equality, Gender Statistics Database

Furthermore, women rarely reach the highest management positions, with only 7.9% of CEO positions in major publicly listed companies in the EU being held by women. Attitudes and behaviors are changing very slowly, with less than 1 out of 10 companies having a female CEO, which suggests a need for a continuous commitment towards gender equality.

Figure 6 shows the evolution of the proportion of female board chairs and CEOs and, although these percentages more than doubled from 2012 to 2018 (from 3.3% to 6.7% for female board chairs and from 2.5% to 6.5% for female CEOs), these numbers are still small.

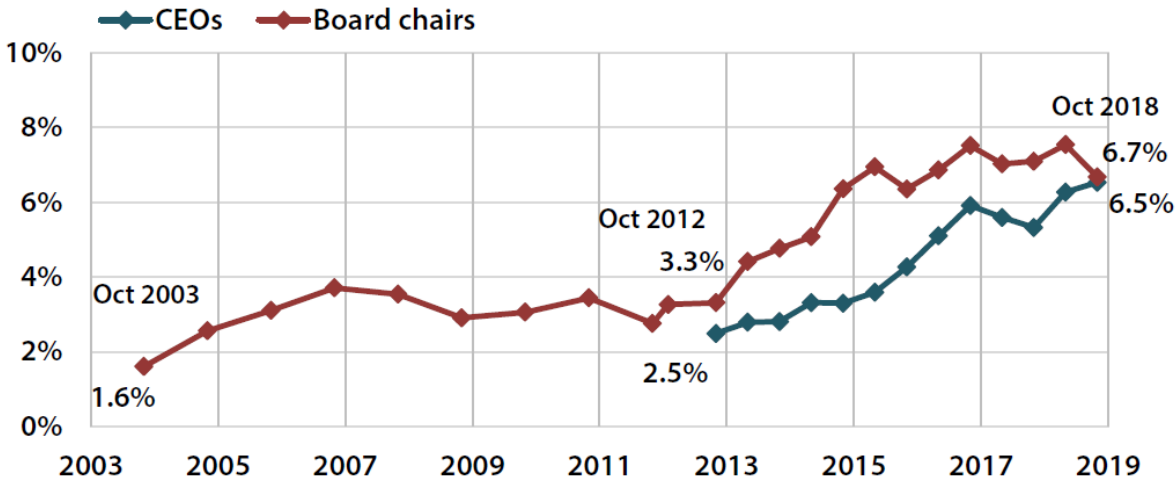


Figure 6: Proportion of women among board chairs and CEOs in largest publicly listed companies in the EU, 2003-2018

Source: European Institute for Gender Equality, Gender Statistics Database

Women currently account for the 7.9% of CEOs in the largest listed companies in Europe, a result 1.4 percentage points higher than the 2018 one. Similarly, the proportion of female board chairs has increased of 1.1 percentage points since 2018, reaching the 7.8%. These results are undoubtedly positive and may indicate a continuous yet too slow progress in female representation.

The 2019 Report on equality between women and men in the EU shows that there is still the need for more specific actions in the pursuit of gender equality.

Therefore, the European Commission set the strategy *A Union of Equality: Gender Equality Strategy 2020-2025* for the 2020-2025 period in order to achieve gender balance through

a dual approach of targeted measures and strengthening of *gender mainstreaming*⁵. In fact, a gender perspective will be included in all stages of policy design for all the areas to tackle discrimination.

The plan symbolically started in 2020, the year that marks the 25th anniversary of the adoption of the *Beijing Declaration and Platform for Action*, which is the first universal commitment and action plan to reach equality between women and men.

In fact, the strategy's main priorities are ending gender-based violence, challenging gender stereotypes, closing gender gaps in the labor market, achieving equal participation across different sectors of the economy, addressing the gender pay and pension gap, closing the gender care gap, achieving gender balance in decision-making and politics and addressing gender equality and women's empowerment across the world.

After providing a general European overview, it is evident that there are significant differences among the Member States, which mirror how each of them has chosen to deal with the gender equality issue.

In 2003 Norway pioneered the introduction of mandatory gender quotas on corporate boards. The Norwegian Parliament adopted a quota law that stipulated a minimum of 40% representation of each gender on a wide range of corporate boards. The main emphasis was on public limited companies, but the requirements applied also to boards of state, municipally owned and cooperative companies.

Several countries in Europe followed the Norwegian example and I will now focus on Spain, France, Italy, Belgium, Germany and the United Kingdom.

In fact, observing these countries' approaches towards the gender equality issue may be relevant for understanding the results of the empirical analysis.

In 2007, Spain was the first European country to introduce quotas to secure the presence of women on corporate boards for large public and private companies.

The country enacted the *Spanish Gender Equality Act*, a law about equal opportunities between men and women. Specifically, Article 75 and Article 78 stated that each biological sex should account for no less than 40% and no more than 60% of board members.

Nevertheless, the Spanish gender quota is an example of *soft law*, meaning that there are no sanctions for firms that do not comply with the law.

⁵ Gender mainstreaming involves the integration of a gender perspective into the preparation, design, implementation, monitoring and evaluation of policies, regulatory measures and spending programs, with a view to promoting equality between women and men, and combating discrimination.

Moreover, the sole economic incentive given to firms is that the public administration will positively evaluate companies with a high female share when awarding public contracts. The companies affected by the regulation were those fulfilling two of the following criteria: (i) total assets exceeding €11.4 million; (ii) annual revenues exceeding €22.8 million; (iii) number of employees exceeding 250.

Firms were supposed to achieve the 40% target by 2015. However, not only the figure was not reached, but the female share on boards of listed companies was only around 20% in 2016. Perhaps, the combination of a weak positive incentive and the lack of sanctions for non-compliers may have been determinant for the low number of women on boards.

In 2011, France, Italy and Belgium introduced regulations to encourage gender balance on boards.

As regards France, in 2008 the French Constitution was revised to include “social and professional responsibilities” to the clause of parity, in order to allow a positive discrimination for the benefit of women. This facilitated the process for the creation of a law on gender quotas. In fact, in 2011 France approved the so called *Copé-Zimmermann Law*, namely the *Act of 2011*⁶. It was a law on female board representation, reserving at least 40% of the seats for each gender on boards of (i) all listed companies; (ii) companies with more than 500⁷ employees and net turnover or total assets of at least € 50 million over the three previous consecutive years; (iii) some state-owned companies.

The firms were supposed to achieve this result by 2017.

The reason behind the choice of the 40% target was the will to reach a balanced representation of both biological sexes on boards. Moreover, as regards boards with a maximum of 8 members, the *Act of 2011* stated that there should not be a difference of more than two directors between the members of each sex.

In order to enable companies to reach the 40% target in a gradual process, some self-regulation mechanisms were introduced for private sector companies. The most relevant example is the *AFEP/MEDEF Code* (then revised in 2015), which introduced an

⁶ *LOI n° 2011-103 du 27 janvier 2011 relative à la représentation équilibrée des femmes et des hommes au sein des conseils d'administration et de surveillance et à l'égalité professionnelle*

⁷ The *Act of 4 August 2014 on substantive equality between women and men* extended the application of this 40% female share to companies employing 250 to 499 employees which meet the other criteria. These firms are supposed to comply with the quota by the end of 2020.

intermediate stage on the path towards the 40% female share. According to the *Code*, companies were supposed to have a 20% female share on boards of directors either by the end of 2013 (if already listed) or within 3 years from the admission to a regulated market.

Specifically, as regards listed companies, the relevant steps to be followed were: (i) appointment of a member of the other sex on unisex boards no later than at the first ordinary general meeting after the introduction of the law; (ii) achievement of the 20% female quota in 2014; (iii) realization of the balanced representation of both sexes on boards with the achievement of the 40% female quota by 2017.

In case of non-compliance with the law, the appointment of board members in violation of the regulation may be declared invalid and there may be a suspension of payment of attendance fees to board members.

Nevertheless, not all the companies managed to reach the 40% gender quota. In January 2017 only 65% of French largest companies by market capitalization (CAC 40) had at least 40% of women on boards.

As regards Italy, in 2011 the *Law 120/2011, Legge Golfo-Mosca*, was introduced to promote gender balance on corporate boards. Before 2011, numbers about women on boards in Italy were rather low.

Although Italian Constitution states that women and men are equal on every level and declares that any form of discrimination or obstacle to reach equality should be removed, reality seemed very different.

Therefore in 2010, after many laws to provide women with the same opportunities as men, the *Code of Equal Opportunities (Codice delle pari opportunità, D. Lgs. 5/2010)* was issued in order to encourage equal opportunities for men and women in society, labor market and politics.

However, these provisions were not so effective in resolving the situation of imbalance between men and women, especially in the business sector.

Therefore, Italy implemented the *Directive 2010/41/EU*, whose aim was to encourage equal treatment between self-employed men and women, by issuing the *Law 120/2011, Legge Golfo-Mosca*. According to the regulation, in listed and state companies the under-represented gender should account for at least one third of the directors and auditors for three consecutive offices. However, due to the low initial share of women on boards, the law set a one fifth share target to be met in the first board renewal.

Moreover, Italy introduced penalties for non-compliers: they first receive an admonishment by National Securities and Exchange Commission, then (if after 4 months they are still non-compliant) they receive a fine up to 1 Million € and (if after further 3 months the situation is not changed) there is the dissolution of the corporate board.

Data about women on Italian corporate boards have changed dramatically since 2010 and the effects of the law have been extended.

In 2011, when the law was issued, the share of women on boards in the largest listed companies was 5.9% and, after the official regulation implementation in 2012, it increased up to 10.8%.

In 2020 the share of women in corporate boards was 36.8%, more than 6 times the initial 2011 number. This is not a surprising result if considering that Italy is the number one country for increase in female shares on boards of largest listed companies for the period 2010-2018 (see *Figure 4*).

However, the positive improvements should not be considered sufficient to solve the gender equality issue, but rather an optimal starting point to develop additional strategies to tackle other issues, such as the under-representation of women in senior executive positions. In fact, Italy has one of the lowest shares (9.4%) of female representation in senior executive positions in the largest listed companies.

Therefore, in 2019 two additional norms were introduced⁸. The first regulation established that the under-represented gender should be at least 30% of the members on boards for three additional years. The second norm stated that companies should have a 40% gender quota on boards for six mandates (starting from the entry into force of the law), with the exception of newly listed companies, for which the quota would be 20% for the first mandate. This regulation will prevail on the previous one, since it was issued more recently.

In 2011 Belgium introduced a law⁹ for gender quotas on board, reserving at least one third of the seats to women on boards of the largest publicly traded companies and certain

⁸ The regulations were introduced in *Decreto fiscale* and in *Legge di bilancio*

⁹ *Act to amend the Act of 21 March 1991 for reform of certain public economic enterprises, public companies and the law of 19 April 2002 on the rationalization of the operation and management of the National Lottery* in order to ensure the presence of women on the board of directors of publicly listed companies and the National Lottery

state-owned or controlled entities. The regulation stated also that each biological sex should not account for more than two thirds of the board members.

There was a transition period (from 5 to 8 years) to comply with the law, depending on size and status of the firm. For instance, companies listed in a regulated market had to be compliant by 2017, while companies with less than 250 employees had to meet the target by 2019.

Nevertheless, state-owned companies had to comply with the law immediately in order to set a good example.

According to the regulation, legislative chambers will evaluate the effectiveness of the law in 2023 (the twelfth fiscal year after publication).

If the quota is not met, in state-owned companies and controlled entities any appointment made in violation of the law is considered void.

Measures for non-compliance become stricter for the other companies. In fact, in the event that listed firms do not comply with the law, serving board of directors may be deprived of their financial rewards and other advantages resulting from their mandate.

If the gender quota is not reached within a year from the application date, a new board will be appointed in the general meeting.

Moreover, in 2009 the Belgian Institute for Equality of Women and Men founded *Women on Board*, a non-profit association with the aim to promote the increase in female shares on boards of directors by providing mentoring and training opportunities to qualified women.

Belgium has one of the most stringent quota-based laws. This is a strong financial incentive to ensure the target is reached, since it imposes monetary penalties directly to the board members. Therefore, the sharp increase in the female percentage on boards after the enactment of the law comes as no surprise. In fact, in 2017 female proportion on board was 30.7%, 5.4 percentage points higher than the European average (25.3%) and 20% higher than the female proportion on Belgian boards in 2010.

In the United Kingdom the approach towards female inclusion is quite different from the other countries. In 2012 the UK chose not to impose any mandatory gender quota and opted for self-regulation.

In 2011 Lord Davies published a government-commissioned report to encourage the appointment of women on boards with voluntary measures.

The UK government favored a change in culture by requiring the inclusion of the biological sex of directors on boards in the strategy report of listed companies.

However, the increase in the female proportion on boards is mostly attributable to the commitment of executive search firms and voluntary initiatives of the business community.

For instance, in 2011 executive search firms redacted the *Standard Voluntary Code of Practice for Executive Search Firms*, representing 20 leading companies in the sector (the so called *Committee*) who committed to follow the code for future boardroom appointments. The aim of the initiative was to address gender diversity in the boardroom while preserving the best practice when searching for the most suitable members.

Moreover, in 2014 the Committee introduced an enhanced code of conduct stating that executive search firms would be awarded a FTSE 350 Index¹⁰ accreditation if they were able to demonstrate certain achievements in increasing the female share on FTSE 350 boards. This incentive led to an augmentation of firms signing up to the code and, as reported also by Lord Davies's later report, was determinant for the progress in female inclusion.

As regards business-led initiatives, the *30% Club* was one of the most relevant ones. Founded in 2010 by some FTSE 100 Index¹¹ chairmen, it supported and promoted the appointment of women on board of directors. Among the founders, Helena Morrissey, CEO of Newton Investment Management, stood out for the specific focus on corporate board diversity and for the engagement of board chairs with the power to shape the composition of the boardroom.

Since then, an increased number of high profile individuals joined the 30% Club, coming from professional, financial, corporate, higher education, media, recruitment and public sectors.

It is difficult to estimate the absolute impact of the Club on women's inclusion, but it surely had a significant role in affecting the change at board level.

¹⁰ The FTSE 350 Index includes the 350 largest companies listed at the London Stock Exchange and having the highest market capitalization

¹¹ The FTSE 100 Index includes the 100 largest companies listed at the London Stock Exchange and having the highest market capitalization

Most of the measures adopted resulted in an augmentation of female directors of companies belonging to the FTSE 100 Index and to the FTSE 250 Index¹². In fact, while in 2010 women accounted for 12.5% of board members in the FTSE 100 (7.8% in the FTSE 250), in 2015 the number had more than doubled (26.1% in the FTSE 100 and 19.6% in the FTSE 250).

Nevertheless, as already pointed out for the other countries examined, the number of women serving as CEO, CFO or Chairperson was still very low.

In 2015 Lord Davies published a final report stating that the voluntary approach was working for the UK and in 2016 the government launched a *Women in Finance Charter*, a commitment by the UK's HM Treasury and signatory firms to work together to build a more balanced and fair industry. Specifically, the Charter would link financial services firms' bonuses to the appointment of senior women.

Furthermore, in 2016 the government supported the *Hampton-Alexander Review*, an independent, business-led framework setting recommendations for FTSE 350 companies. Specifically, FTSE 350 firms should reach 33% female share on corporate boards by the end of 2020.

Although the United Kingdom is still far from reaching the women's inclusion's results of some European countries that introduced the quotas, it provides a valid alternative method to promote gender equality: economic incentives.

However, the United Kingdom (UK) formally left the European Union (EU) on 31 January 2020 and became a third country. A transition period began on 1 February 2020, which is due to end on 31 December 2020.

Finally, in 2015 Germany introduced *The Act on Equal Participation of Women and Men in Leadership Positions in the Private and Public Sector* for the largest publicly listed companies.

The law required (i) a 30% female representation target on supervisory boards or administrative boards and (ii) *women quotas* individually determined by the firm for the members on the executive board.

Companies are free to choose the individual women quotas, but, in the event that the actual quota is lower than 30%, the chosen target should not fall below the actual share.

¹² The FTSE 250 Index includes the 250 largest companies listed at the London Stock Exchange and having the highest market capitalization

It is disputable whether companies with all-male boards could set a 0% women quota. However, it is worth noting that several large German companies chose a 0% female share.

Moreover, firms are supposed to publish their choices in their annual reports, including whether the quota was met and, in case of failure, the reasons for that.

Furthermore, sanctions for non-compliers are foreseen: non-compliant supervisory board election may be declared void or companies may be required to pay fines.

The need for a tightening regulation has led to the draft bill of the second law on executive positions, whose aim is to replace the flexible female quota with a fixed one.

1.2 Gender and corporate performance

A board of directors monitors the activities of an organization or company. It sets the corporate strategy, appoints and supervises senior management and functions as the main corporate governance mechanism.

Therefore, decisions taken by the board while determining the corporate strategy will influence firm performance significantly.

When considering female representation on corporate boards, there are two main lines of argument. First, the ethical reasons, for which women should be appointed to leadership positions to reach equality, which is a positive result in itself if considering that women represent half of the world population.

The other line of argument is the business case for diversity. If a board comprises heterogeneous directors, diversity leverages financial growth and success, indicating that a higher proportion of females could be related to better firm performance by introducing broader knowledge bases and experiences. Therefore, the presence of different perspectives may contribute to a more thorough search for alternative solutions to problems, new strategic choices, critical analysis of complex issues, informed decisions and creative and innovative solutions.

As concerns women on boards of directors, there is much literature highlighting the positive contribute brought by female representation.

Huse and Solberg (2006) conducted a survey by making in-depth interviews with high-profile female directors in order to understand boardroom dynamics and identify the contribution made by women. Starting from directors' background, the authors mostly focused on their experience in the boardroom.

When dealing with the decision-making process, one of the most important matters is preparation for board meetings. The authors found that female directors were more likely to prepare well and conscientiously for meetings, a behavior signaling commitment.

Moreover, according to the research, women seemed to be more diligent and wiser than male directors and they had the tendency to ask more questions than men, so that decisions would be less likely to be nodded through.

These aspects, along with the detected female tendency to create a good atmosphere of inclusion, may affect the quality of the board meeting by increasing general involvement and promoting diversity. Moreover, during the interviews, female directors stated that it was particularly important for women to be prepared, be present in the most important decision-making arenas and take leadership roles so that they could be given the chance to contribute effectively by bringing their value.

Furthermore, Konrad et al. (2008) studied the impact that the presence of three or more women directors has not only on boardroom decision-making, but also on corporate governance.

This research was based on interviews and discussions with CEOs, directors and corporate secretaries in order to study real-life episodes that could be useful to understand the different dynamics on boards.

The authors found that female proportion had an impact on boardroom, since it promoted collaboration, social support and win-win problem solving. However, these aspects did not prevent women from facing controversial issues by asking direct questions and bringing new perspective in order to broaden contents of discussion.

It is important to highlight that the research showed differences in experiences of female directors depending on the number of women on boards. In fact, directors being the sole women on boards seemed to be excluded from socializing and from the decision-making process, as if their views were not as relevant as the ones of the other members.

On the other hand, a higher number of women (3 or more) increased the likelihood that female voices and ideas would be heard and impactful. In fact, the other members seemed to stop seeing them as outsiders and started focusing on their contribution.

Therefore, it gradually became boardroom norm to listen more actively, evaluate different personalities and stimulate discussion through questions and detailed answers.

This process may lead to substantial changes in board discussions, which could have a positive impact on corporate governance. In fact, broadening the content of decision-

making process may allow to take into consideration the perspectives of different stakeholders, solve difficult issues and improve collaboration.

However, when analyzing the link between women on corporate boards and various measures of financial performance, the results found by researchers are equivocal.

For instance, using a sample of US firms, Adams and Ferreira (2009) discovered a negative relationship between women on board of directors and firm performance, despite the presence of better attendance records and more effective monitoring in firms with more gender-balanced boards. When focusing on the UK, Gregory-Smith et al. (2014) found no evidence that the gender composition of the board affected firm performance.

Moreover, Green and Homroy (2017) found that whilst female representation on corporate boards did not have a huge impact on performance, the effect of female representation on board committees was economically more meaningful. In fact, ROA increased by 0.4% for each increase in the proportion of female directors on committees and the economic effect of female representation was even larger on the market to book value (MTBV). The reason for this phenomenon may be the fact that investors perceive the expected profitability of the company to increase after the appointment of female directors.

In comparison, ROA increased only by 0.1% for an increase in female board representation.

Although the authors found a positive and statistically significant association of female representation and firm performance, the effect was still modest. Thus, the authors identified two main ways in which female representation would have an impact on performance.

First, reduction in discrimination. If existing low level of female presence among directors were caused by a discriminatory gender bias, firms would probably experience a competitive disadvantage due to efficiency losses, as already pointed out by Becker (1957). Therefore, replacing less competent male directors with relatively more able and productive female directors should have a positive impact on firm performance.

Secondly, the relevance of diversity. Kahane et al. (2013) found that diverse teams outperform homogenous ones, so the increasing presence of women in a manly dominated environment may increase firm performance, irrespective of discriminations. In fact, Kim and Starke (2017) showed that the addition of female directors diversify the set of boards' expertise, which may be considered an advantage for the firm.

Furthermore, Francoeur et al. (2008) conducted a research based on agency theory and stakeholder theory, taking risk levels into account when comparing firm performances, according to the Fama and French (1992, 1993) valuation framework. They found that having a high proportion of women officers generated positive and significant abnormal returns in firms operating in complex environments. However, they highlighted the fact that participation of women as directors did not seem to make a difference in this regard. They also noticed that companies with a high proportion of women in both their management and governance systems generated enough value to keep up with normal stock-market returns.

Once again, it is relevant to consider that women, along with external stakeholders and ethnic minorities, can contribute to complex decision-making process by bringing new fresh perspectives and correcting informational biases in strategy formulation and problem solving (Dewatripont et al., 1999; Westphal and Milton, 2000).

In fact, Dallas (2002) surveyed some psychology research considering the effect of group member characteristics, such as gender diversity, on group decision-making. It confirmed once again that knowledge, perspective, creativity, and judgment brought forward by heterogeneous groups enhance the quality of decision making in a complex and rapidly changing business environment, and this contribution may be even superior to the smoother communication and coordination associated with less diverse sets of people. Therefore, gender diversity would still be relevant, even if it did not necessarily lead to empirically demonstrated improved financial performance.

On the other hand, while these considerations are well grounded in cognitive psychology and decision theory, a corporate board's well-functioning is also dependent on the leadership style adopted by the CEO, which varies according to the challenges that the company is facing. Therefore, it is important to remember that the presence of women on board of directors is strictly interconnected with many other factors and elements that can interfere with the impact that they have on strategic processes.

Furthermore, Shrader et al. (1997) analyzed a sample of 200 large US firms and did not find any significant relationship between the percentage of women in the upper echelons of management and firm performance. Moreover, when considering the participation of women on boards, they found a negative impact on performance, measured using accounting data such as return on assets (ROA), return on sales (ROS), return on investments (ROI), and return on equity (ROE). Nevertheless, the authors underlined that

the validity of their findings could be impaired by the low percentages of women among top managers or board directors – 4.5% and 8%, respectively.

However, in 1997 a study conducted by Catalyst, a well-known organization often cited for its research on the place of women in business, revealed an association between presence of multiple female directors and higher revenues, and Burke (2000) found a similar correlation in top Canadian companies.

Carter et al. (2003) also encountered a positive relationship between board diversity (measured by the presence of women and minorities) and firm value. Using a sample of 638 Fortune 1000 firms, the results of this study suggested that a higher percentage of women and minorities on board of directors could increase firm value, computed using Tobin's Q. Although the research also stated that the proportion of women on boards is a significant determinant of the fraction of minority directors on boards, these findings did not yield a clear-cut conclusion on the effect of a greater participation of women alone on firm value.

Nevertheless, when analyzing Danish boards, Rose (2007) found no relationship between Tobin's Q and gender diversity, suggesting that women directors were so few and the culture was so closed at the top (only 4% of supervisory directorships held by women) that assimilation of the attitudes and behaviors of existing male directors had become inevitable for the female share, leading to a negation of women's diversity advantages.

Furthermore, while studying the relationship between board appointments and firm performance, Ryan and Haslam (2005) discovered the *glass cliff* phenomenon. They analyzed the websites of all UK FTSE100 companies to identify those firms that had appointed a woman to their board during 2003. In total, they found 19 female board appointments which they matched for the time of appointment and business sector with 19 FTSE 100 companies that had appointed a man to their board. They compared their annual stock market performance as well as the fluctuations in their monthly performance six months before and after the appointment of a board member.

Taking into account situational factors such as stock market fluctuations, they concluded from their archival study that women are more likely to be placed on a *glass cliff*, in the sense that they are often appointed to leadership positions under problematic organizational circumstances associated with greater risk of failure and criticism.

In 2004, Catalyst examined the presumed connection between gender diversity and financial performance. Using a sample of 353 Fortune 500 companies taken from 1996 to

2000, it was found that firms belonging to the top quartile in terms of diversity achieved better financial performance than their low-quartile counterparts. Financial performance was measured by ROE and raw stock returns, while gender diversity was based solely on the participation of women as corporate officers.

Terjesen et al. (2009) explored the relationship between women representation on corporate boards and corporate governance and its impact on performance by reviewing and organizing the extant literature. First, they found that a higher presence of women on corporate boards generally corresponded to a higher share of women in senior management positions, while a shorter tradition of women's political representation seemed to be connected to a lower proportion of women on boards.

Moreover, the authors highlighted a relevant aspect, worth to be mentioned due to its future implications and connections to the EU mandatory quotas: the recycling of the same group of women candidates for several board positions. In fact, it appears to be present a mechanism for which only a small group of women candidates is appointed to many different boards of directors. On the one hand, women who belong to the group become extremely experienced as directors, thus enhancing the firm performance. On the other hand, this mechanism prevents other qualified women from entering the boardroom.

Farrell and Hersch (2005) suggested that the overrepresentation of women with multiple directorships was an argument for a shortage of supply, indicative of a limited number of qualified candidates. In fact, Burke (2000) found that a commonly held assumption of board selectors was that women lack adequate human capital for board positions. However, evidence seems to disprove this thesis, since many studies confirm and underline how women are not only qualified, but sometimes even more educated than their male counterpart. For instance, Hillman et al. (2002) found that women directors are significantly more likely to have an advanced degree than their male counterparts and Singh et al. (2008) confirmed this result by analyzing directors' MBA degrees and international experience.

Nevertheless, the presence of the *glass cliff* phenomenon may make it harder for women to perform and be perceived to perform effectively, thus providing a distorted image of reality.

Moreover, Byron and Post (2015) conducted a meta-analysis examining the relationship between women on boards and firm financial performance and found that female board

representation was positively related to accounting returns and that this relationship was more positive in countries with stronger shareholder protections (probably because this motivated boards to use the different knowledge, experience, and values that each member brings).

However, they also found that the relationship between female board representation and market performance was positive in countries with greater gender parity and negative in countries with low gender parity, leading to believe that societal gender differences in human capital may influence investors' evaluations of the future earning potential of firms that have more female directors.

The authors considered the link between female board members and firm performance, focusing on the fact that women on boards bring differences in terms of knowledge, experience, and values and shape the content and process of both board decision making and board activities that ultimately affect firm performance.

Lastly, their results suggested that female board representation is positively related to boards' monitoring and strategy involvement. Moreover, firms with more female directors were more likely to have higher accounting returns but not necessarily stronger market performance and this held true particularly for counties with stronger stakeholders' protection and gender parity.

Furthermore, Mantovani and Arzu (2019) investigated whether gender can be considered part of the corporate governance structure and its real impact on corporate performance. They conducted an analysis on both European and British companies, focusing on the impact of *pink quotas*, the mandatory female percentages based on the proposed EU-Directive. They found that gender does have an impact on corporate governance, regardless of whether regulations for *pink quotas* are present in the country analyzed.

In fact, the country culture plays an important role in shaping governance choices, which may still be very different if made by a woman instead of a man.

The results suggest that the EU directives are not able to reduce the gaps between the schemes of governance adopted across the EU due to a lack of economic incentive. Moreover, the authors found that gender and governance contribute to capital intensity and funding of EU-Companies, but do not have any impact on corporate ROI (except for the unregulated UK market) or its persistence. On the contrary, female gender appears to attract more equity capital, regardless of the operating risk level.

These results are linked with the fact that the external environment and cultural framework influence the role of women in the socio-economic sphere and, consequently, their decision-making process, even if working in international companies. The study confirmed that governance and ownership characteristics differ according to the gender of those holding the leading roles inside a firm, especially when considering capital intensity. Moreover, the authors found that governance influences the firms' performance more in women-led firms than in male-led ones, even if the performance is adjusted by operating risk.

An increasing number of stakeholders is feeling the urge to increase the presence of women on corporate boards: the European Commission, national governments, politicians, employer lobby groups, shareholders, employees, Fortune and FTSE firms, companies in the *best places for women to work* lists.

The rationales usually draw on the business case, but the moral justice case is just as important, in order to have a fairer gender representation in every context.

As already said, the results found by researchers are equivocal as concerns the link between women on corporate boards and various measures of financial performance. However, the relevance of the female presence in the boardroom still holds. In fact, female participation can increase the value of the company in many qualitative ways, since women play direct roles as leaders, mentors, and network members as well as indirect roles as symbols of opportunity for other women, inspiring them to achieve their goals.

It is complicated to recognize the effects of these elements directly in the balance sheet in the short term.

2. Mergers and Acquisitions

The aim of this dissertation is to study whether the presence of female directors on boards can influence strategic decisions concerning mergers and acquisitions.

Before proceeding with the empirical analysis, it is relevant to highlight the most important aspects concerning these specific strategic operations in order to fully understand the results of the research.

The chapter is organized as follows.

First, I will introduce the notions of mergers and acquisitions and I will highlight their strategic relevance through an overview of their historical evolution.

Then, I will introduce the drivers that may influence the choice of initiating a merger or an acquisition. I will also focus on the pre-deal phase, which is the period of a transaction that precedes the final closure of the deal and is the most relevant moment for the purpose of the dissertation. In fact, this phase is determinant for the decision-making process of the board of directors.

Lastly, the relationship between boards of directors' features (e.g. board size, percentage of independent directors, proportion of female members...) and the choice of initiating mergers or acquisitions will be discussed through a review of the main literature.

Special attention will be given to the paper *Director gender and mergers and acquisitions* by Levi, Li and Zhang, since it was a source of inspiration for this thesis.

2.1 Mergers and Acquisitions: historical evolution

Mergers and acquisitions (M&As) are consolidation of companies. Specifically, a merger indicates the combination of two companies to constitute a new one, while an acquisition means that one company is taken over by another firm.

Although the terms indicate two different operations, they are often used interchangeably. Therefore, from now on, even when citing only *acquisitions* or *mergers*, I will be referring to M&As.

Mergers and acquisitions represent a strategic opportunity for companies, which started understanding deeply the potential of these operations in the latter part of the Nineteenth century, with the globalization of the business landscape and the significant increase of competition among firms.

The extant literature has analyzed the evolution of M&A since then by identifying six periods, i.e. *waves*.

The First Wave (1893-1904) was particularly significant for US markets, since it marked the rise of American manufacturing and transportation giants, especially in steel, oil and mining industry. This wave was primarily characterized by horizontal mergers, namely mergers between companies in the same industry, which led to the creation of economies of scale and to the increase in market dominance. Nevertheless, mergers often resulted in monopolies, which were prohibited by the government in the following decade, since they represented anticompetitive behavior.

Therefore, companies that had created monopolies through horizontal mergers switched to vertical integration, marking the beginning of the Second Wave (1919-1929). This wave was characterized by companies aiming at increasing efficiency through vertical mergers and acquisitions. Specifically, firms reached integration with other companies along their supply chain so that they could expand their operations and reduce costs. However, these operations resulted in substituting monopolies with oligopolies, especially in the automotive, oil and gas industries.

1929 Crash marked the beginning of Great Depression and the end of the Second Wave, reducing the spread of M&As.

A Third Wave of mergers and acquisitions (1955-1970) began due to companies' desire of diversification and expansion in new markets. This wave was characterized by conglomerate mergers, namely mergers involving companies belonging to different (often unrelated) business fields. However, few firms managed to achieve the expected benefits of diversification and the rise of difficulties in the integration, accentuated by the 1970 oil crisis, led to the end of the Third Wave.

With the Fourth Wave (1974-1989) there was a spread of hostile takeovers, a form of merger or acquisition made without the wishes of the target firm's management and shareholders. Therefore, while corporate raiders tried to acquire large controlling interests and shareholdings in other companies in an often aggressive manner, investment banks started playing a significant role by doling out cash for the hostile takeover bid.

The Fourth Wave saw also the rise of congeneric mergers, i.e. aggregation of two companies operating in the same industry but offering different kinds of products or

services. However, in 1989 banks were unable to sustain their capital structure due to the excessive lending and the crash of the stock market stopped the spread of the wave.

The Fifth Wave (1993-2000) led to the creation of multinational companies through the rise of *mega deals* among the most important business players, seeking to reach bigger economies of scale. There was the common belief that the bigger the firm size, the greater the market domination. Therefore, it comes as no surprise the rise of cross-border mergers, i.e. deals involving foreign investors acquiring part of the companies in order to expand market dominance on an international or global scale. There were massive deals in telecommunication, oil, gas, automotive and pharmaceutical industries, resulting in the creation of some of the largest companies in the world. Nevertheless, the Fifth Wave came to an end with some major bankruptcy scandals involving huge names and the bursting of the dot-com bubble, caused by excessive speculation in internet-related companies.

Only three year after the burst of the dot-com bubble, key drivers such as globalization, shareholder activism and private equity marked the beginning of the Sixth Wave (2003-2008). Shareholders became more involved and started exercising more influence on corporate choices by expressing their opinion on how board of directors and management were running the company.

Moreover, private equity funds played a significant role in supporting cross-border mergers, which enabled large corporations to expand in new international markets with greater profits than the ones made during the Fifth Wave. Furthermore, Leveraged Buyouts (LBOs) became the prevalent form of mergers and acquisitions, since they allowed the acquiring companies to borrow money to pay for the acquiring cost without committing a large amount of capital. They appear familiar to the deals made during the Fourth Wave, but the difference lies in the lower interest rates and the positive contribution brought by private equity firms.

In 2007 the subprime mortgage crisis put an end to the Sixth Wave, determining the recession of global economy.

The extant literature has not identified a Seventh Wave, but M&As activity seemed to spread again after 2011, especially in emerging economies. However, this period is mostly characterized by forms of mergers and acquisitions already present in the previous waves, such as cross-border mergers, hostile takeovers and leveraged buyouts.

The evolution of mergers and acquisitions (M&As) throughout the years is proof of their significant strategic relevance, since they may have a huge impact on the future of the companies involved.

On the one hand, firms initiating an acquisition may enter new markets, gain complementary strengths and competencies, such as access to resources or R&D development, become more competitive and expand their product portfolios. These are only some of the most frequent positive acquisition outcomes, which, overall, indicate the main purpose of M&As: to enhance shareholders' value over and above the sum of the single firms' values.

However, this result is not always achieved. In fact, failure rate of mergers and acquisitions is approximately between 70% and 90%¹³, a percentage that may seem surprisingly high at first, but becomes a quite reasonable number when considering that M&As are some of the most challenging and risky endeavors in which board members engage.

In fact, there is a large body of literature attesting that mergers and acquisitions may often erode acquiring firm's value.

King et al. (2004) conducted a meta-analysis in order to empirically investigate the effects of M&As on acquiring firms' performance, taking into consideration both stock (abnormal results) and accounting (ROA, ROE, ROS) measures. The meta-analysis technique employed by the authors allowed them to establish an estimate for true population relationship based on multiple previous studies on the topic of M&As.

The authors investigated the impact of the four most researched antecedent variables on post-acquisition performance. As regards the first variable, they analyzed whether the bidders were conglomerate firms: companies willing to acquire other firms who are not direct competitors, operate in different geographic markets and are unrelated to the acquirer. The extant literature provides contradictory results about the impact of this choice of diversification on post-acquisition performance.

The second variable indicated whether the target was somehow related to the bidder, e.g. they shared similarities in terms of resources and products. The presence of familiarity

¹³ Kenny, G., 2020. *Don't Make This Common M&A Mistake*

Source: <https://hbr.org/2020/03/dont-make-this-common-ma-mistake>

with the target and the industry in which it operates may facilitate the post-acquisition integration, leading to positive effects on post-acquisition performance.

The third variable considered was the method of payment, i.e. cash or equity. The reason why this variable is so important is that the choice of payment provides a hint of the expectations of the acquiring firm. In fact, managers who believe that their firms' shares are undervalued will finance the acquisition with cash, while equity will be used as a form of payment in case shares are considered overvalued. Consequently, the use of cash may signal management expectations of a strong post-acquisition performance.

The fourth variable considered was acquisition experience. Although there is no empirical evidence linking this variable to post-acquisition performance, it is quite reasonable to believe that experience from previous acquisitions may facilitate the process of resource integration and the solvency of organizational issues derived from an acquisition.

The authors selected 93 empirical studies dealing with the topic of interest and used the meta-analysis technique to do a statistical research synthesis while correcting for statistical artifacts. With this methodology, results across separate studies are aggregated in order to reveal the true relationships among the variables in the population.

First, it was found that both the bidding firm and the target experienced positive abnormal returns on the day of the announcement of the acquisition, a result consistent with the expectation that the newly created synergy will enhance the overall value of the firms.

However, as regards the bidder returns (i.e. stock and accounting performance) in the period after the announcement, the authors found them to be insignificant if not negative. This result indicated not only that there is no empirical evidence that acquisition *per se* will improve financial performance of the acquiring firm, but also that it may lead to a loss of value.

Therefore, undertaking a merger or acquisition constitutes a strategic choice that may affect the future of a company irreversibly and the board of directors has a primary role in the decision-making process.

2.2 Mergers and Acquisitions: the drivers and the pre-deal phase

Mergers and acquisitions are relevant strategic choices for a company not only for their economic value, but also for the investment in terms of time that they require.

In fact, it can take a long time to complete an acquisition and, consequently, a great outflow of resources, so it is important to previously evaluate various factors carefully.

This evaluation process generally takes place in the pre-deal phase, the period of a transaction that precedes the final closure of the deal.

This is particularly important for the purpose of the thesis, since the abovementioned evaluation by the board of directors will determine whether a merger or an acquisition will be initiated.

Haleblian et al. (2009) provide a comprehensive theoretical framework to categorize mergers and acquisitions by focusing on three main topics: (i) *antecedents*, the drivers that determined the acquisitions; (ii) *moderators*, internal and external factors moderating the performance and (iii) other acquisition *outcomes*.

Given their relevance for the pre-deal phase, I will focus on *antecedents*, while just presenting briefly *moderators* and other acquisition *outcomes*.

The authors analyzed the extant literature about mergers and acquisitions and found that *antecedents* can be grouped into four categories: (i) value creation, (ii) managerial self-interest (value destruction), (iii) environmental factors, and (iv) firm's characteristics.

First, value creation involves the maximization of shareholders value through market power, efficiency, resource redeployment and market discipline.

Market power refers to the company's attempt to gain more value from customers through horizontal mergers, i.e. mergers between firms that produce and sell similar products. This operation would reduce competition thus enabling an increase in firm-level pricing power in the industry. Although there are only few studies supporting market power as a factor influencing an acquisition attempt, it is still important to consider its possible implications in the decision-making process.

Furthermore, an increase in efficiency may be one of the reasons why a company would undertake an acquisition because it allows to reduce the cost of value creation.

As previously underlined, this was one of the main drivers of the First Wave of M&As involving horizontal mergers.

Moreover, resource redeployment is another factor considered by companies willing to initiate horizontal mergers in order to create economies of scope. In fact, the presence of resource complementarity between the bidder and the target firm may lead to value creation through redistribution of competencies and realignment of resources.

The acquirer has the opportunity to expand the set of resources by both adding to existing areas of strengths and extending resources into new areas.

The concept of market discipline as a way to increase value is linked with the dismissal of poor management after an acquisition, which would increase shareholders protection.

In fact, CEOs and firm managers of the target company are likely to receive a reduced compensation if not to be dismissed once the deal is completed. The underlying assumption is that firms' poor corporate governance will be reflected in low market values and will be taken over by higher value acquirers. This may not always be true, since evidence shows that there is a tendency for firms with similar asset valuation to purchase one another.

The second antecedent presented by the authors, diametrically opposed to the previous one, is managerial self-interest (value destruction) which is the managers' attempt to increase their own self-interests at the expenses of shareholders' value. It may appear a paradox, since the goal of M&As should be the maximization of shareholders' interests, but there is a large body of literature attesting that managerial behavior and ambition play a significant part in the initiation and development of mergers and acquisitions.

Managerial self-interest involves compensation, managerial *hubris* and target defense tactics.

Many studies confirm the relationship between upper echelons' compensation or ownership and tendency to acquire. For instance, although compensation contracts should be made aligning managers' and shareholders' interests, it was found a correlation between high CEO compensation and greater acquisition intensity. This effect may be attenuated by a more vigilant governance and an increase in the monitoring activity of board of directors.

Therefore, according to recent evidence, the will to increase compensation is a strong driver to acquire and it represents a purely self-interested motivation.

Managerial *hubris* is another topic strictly related to the previous one. In fact, managerial confidence and ego gratification may cause an increase in acquisition activity and acquisition premiums, resulting in a worse acquisition performance. This topic is

particularly relevant for the purpose of the dissertation and will be further discussed in the following paragraph, taking into consideration its relationship with the board of directors.

Moreover, target defense tactics may have an influence on the completion of mergers and acquisitions, since they may be created to increase managerial self-interests at the expense of shareholders' value.

The third antecedent highlighted by the authors is environmental factors, which comprise environmental uncertainty and regulation, imitation and resource dependence and network ties.

Environmental uncertainty and regulation concern the influence of external forces on acquisition intensity. Specifically, the context in which a company operates is a relevant factor when deciding whether to initiate a merger or acquisition or to opt for a different cooperative operation.

For instance, research shows that a decrease in environmental uncertainty is positively linked to acquisition bids made by diversified firms and negatively related to bids made by less diversified companies. Moreover, external governance structures have an influence on firms' acquisitive behavior as well. In fact, it is found that the presence of regulatory actions, especially in industries such as tobacco, alcohol or gaming, does not impede acquisition activity of the firms, which initiate diversified acquisition to increase domestic expansion. Therefore, different forms of merger and acquisitions are completed in order to increase the political clout and to influence new policies aimed at mitigating the costs of regulatory actions.

Furthermore, imitation and resource dependence are related to the management of acquisitions between non-linked industries. As concerns imitation, research shows that when fringe actors initiate innovations that enable them to undertake mergers and become successful, other players, subsequently, start imitating their innovations.

Moreover, resource dependency may play a significant part in acquisition intensity, since firms will be more likely to absorb the resources needed through mergers in order to turn mutual dependence into integration.

Network ties are another factor impacting firms' behavior towards M&As. In fact, literature attests that managers tend to imitate acquisition activities of companies to which they are tied through interlocking directorships. Moreover, it was found that there

is a positive relation between the number of acquisitions made by a firm and the mergers completed by interlocking partners.

The fourth antecedent analyzed is firm characteristics, which include acquisition experience and firm strategy and position.

First, previous acquisition experience has been proved to be positively related to subsequent acquisition intensity, especially in cases when post acquisition performance was good. Moreover, having completed an M&A deal of a particular type increases the likelihood that the firm will engage in the same merger type. While on the one hand this may be an advantage in the creation of synergies and the solution of possible issues, it may also encourage repetitive behavior.

Furthermore, firm's strategy and position have a strong influence on acquisition behavior and are decisive for the choice of the type of merger in which to engage.

As previously underlined, while *antecedents* are the drivers of the acquisition, there are other factors influencing the development and conclusion of mergers.

In fact, there are *moderators* affecting the performance of the acquisition, such as the characteristics of the deal (e.g. the payment type and the deal type); the managerial effects (e.g. compensation, managerial experience,...); firms' characteristics (e.g. acquirer experience, performance and size); and environmental factors (e.g. *waves*, temporal episodic effects and presence of regulations). Lastly, some research highlighted the presence of *acquisition outcomes* other than acquisition performance, such as acquisition premium, turnover and customer and bondholder outcomes.

Now that the main drivers of acquisitions have been presented, it is relevant to provide an overview of the main stages of the pre-deal phase of M&A, which is the period of a transaction that precedes the final closure of the deal and is decisive for board of directors' final decision.

Welch et al. (2019) examined the extant literature on mergers and acquisitions with a specific focus on the pre-deal phase. Before reviewing the main stages, it is relevant to remember that considerations made in this period and the related actions involved are strictly connected and intertwined, thus each choice influences the others and vice versa. First, the decision to initiate a deal should be consistent with the strategy of the firm. As mentioned earlier, there may be many motives to acquire a new company, such as increasing market power, creating economies of scale or scope or diversifying risk.

Therefore, the screening and selection of the right target is fundamental. The firm creates an internal list of potential targets, which may be updated after requiring advice of external advisors or checking for the presence of antitrust laws. Once the selection is completed, there is an assessment of the quality of the target and an evaluation regarding the fit with the acquirer in terms of resources, capabilities and influential contextual factors.

Some complications may emerge in this stage due to information asymmetry, since the acquirer has limited information about the potential target. Therefore, firms may try to fill this gap by relying on their previous M&A experience or by observing the characteristics of the deals initiated by their peers in the industry.

If the acquiring firm decides to explore the possibility of the deal more concretely, there may be an initial nonbinding offer, the starting point for a subsequent agreement on deal terms.

The evolution of the procedure depends on the presence of potential competitors among bidders, the tactics chosen to conduct the negotiation and the existence of hostility or trust among the parties involved. However, this procedure varies accordingly to the stock exchange regulations in place if the companies involved are publicly listed.

Furthermore, during negotiations, the acquiring firm carries on other evaluations about the due diligence of the target, the acquisition premium to pay, the magnitude of the stake to be acquired, the method of payment and the consequent deal financing.

Once all these decisions are made, the moment of the announcement comes and marks the beginning of the public transaction period. This is an important moment for the acquiring firm, because public perception of the deal reflects in positive or negative market reactions, with the risk to threaten the successful implementation of the deal.

Lastly, there is closure, which is the last stage of the pre-deal phase and can end with completion or abandonment of the deal. This period usually includes submission of mandatory filings with securities regulators, deal approval by antitrust authorities, completion of negotiations about financing and final shareholder vote in case of public target and acquirers.

2.3 Mergers and Acquisitions: board of directors' attributes influencing acquisitive behavior of firms

It is now evident the great quantity of considerations that precedes the choice of initiating a merger or an acquisition. Therefore, the board of directors should undertake a thorough and exhaustive assessment of the various aspects previously described in order to make an informed decision.

Nevertheless, there is a large body of literature attesting that also board of directors' dynamics and attributes may influence the acquisitive behavior of firms.

Specifically, in this section the relationship between board of directors' features and decisions concerning mergers and acquisitions will be investigated.

The most relevant boards' characteristics influencing acquisitive behavior of firms are:

(i) board size, (ii) percentage of independent directors, (iii) CEO's psychological traits, (iv) proportion of female directors on board, (v) CEO duality (i.e. CEO being also the board chair).

First, it was found that board size, i.e. the number of directors on a board, may influence the decision-making progress.

On the one hand, a high number of directors on a board may improve the decisional process, because of the contribution brought by additional point of views. In fact, Pearce and Zahra (1992) found that this may help monitor management decisions and increase advisory.

On the other hand, an excessive increase in board size may result in communication and coordination problems (Eisenberg et al., 1998), hence boards with a limited number of directors may be able to take decisions more efficiently (Yermack, 1996) and encourage the involvement of all the participants (Judge and Zeithaml, 1992).

Literature's findings may appear quite contradictory, perhaps because the right number of directors on a board depends on the characteristics of the single firm and of the industries where they compete.

Nevertheless, when focusing on acquisitive behavior, research seems to confirm that boards with reduced number of directors contribute positively in helping managers to take better informed decisions, especially if the CEO shows overconfidence. However, it is important to point out that board size appears to be related to the presence of

independent directors, who are members not affiliated with the company in any capacity other than being part of the board.

In this regard, Kolasinski and Li (2013) conducted an analysis to see if the presence of independent directors on a board and board size may have an impact on the strategic decision process. Specifically, they investigated whether boards may prevent overconfident CEOs to initiate poor acquisitions decisions that may result in a loss of value for shareholders.

In order to do so, they developed a new measure of CEO overconfidence (i.e. excessive confidence about the outcomes of future uncertain event; a feature that will be further analyzed when presenting CEO's traits), which was usually associated with an increased number of (value-destroying) acquisitions. This was also important to distinguish more clearly overconfident CEOs from justifiably confident ones.

The results of the research showed that boards with limited number of directors (between 5 and 12) and with a high proportion of independent members restrained acquisitions driven by CEO overconfidence, improving the strategic decision-making process. It is worth noting that the analysis is valid only if investigating CEO overconfidence; in fact, the authors found that boards do not limit acquisitive behavior if CEOs are justifiably confident.

Therefore, board independence, along with a limited number of directors, may be relevant elements not only for board's discussion dynamics, but also for the development of strategies.

In 1994, Beatty and Zajac developed a study to investigate how firms deal with managerial incentives, monitoring practices and risk-bearing decisions when conducting Initial Public Offerings (IPOs), one of the most relevant strategic choices for a company.

They found that a high presence of inside directors, i.e. directors who are employed in the company, generally at top management positions, may lead to a weaker monitoring of the CEO, due to the influence that the latter has on career advancements.

Therefore, the presence of a hierarchical relationship between some board members and the CEO may undermine shareholders' interests, since directors may not feel free to ask the management challenging questions or even disagree with the proposals presented.

Consequently, independent directors may contribute to mitigate shareholders-management agency problems and increase CEO monitoring and advisory while bringing valuable experience acquired in other firms or industries.

In the context of M&As, Ben-Amar et al. (2011) investigated the relationship among CEO attributes, board characteristics, ownership structure and the short-term post acquisition financial performance of the acquirer. They found that the presence of independent directors may increase abnormal returns around the acquisition announcement date.

Moreover, they found that board size is negatively related to short-term post acquisition performance, a result consistent with previous considerations highlighted regarding the number of directors on board.

Moreover, when the acquisition undertaken by a firm turns out to be value-destroying, boards with a high proportion of independent directors are more likely to take corrective actions.

Paul (2007) examined the influence of board composition in the context of mergers and acquisitions, focusing on value-decreasing acquisition bids. In fact, even well-structured boards may take value-reducing decisions, since there is a trade-off between the costs of monitoring management actions and the expected benefits of reducing agency issues and the former usually exceeds the latter.

Specifically, the author studied firms whose share values dropped significantly around the date of the bid acquisition announcement. In fact, this represents the first immediate feedback for the board to evaluate the quality of the strategic decision made.

First, Paul investigated whether the proportion of independent directors had an influence on the likelihood to complete a value-decreasing bid. As already said, a significant negative change in share value may lead to a reevaluation of the merger deal or even to its withdrawal.

By controlling for factors linked to bid completion, the author found that a high presence of independent members on a board may increase the likelihood of bid termination.

This is quite a relevant result, since it shows that higher proportion of independent directors may increase the likelihood to react to negative investor sentiment by influencing managerial responses to shares fluctuations.

Secondly, in the event that the value-decreasing bid was completed, she tested whether the presence of independent directors had an impact on the likelihood to undertake corrective actions. The author compared the frequency of corporate actions undertaken by the sample bidders with corporate events announced by a control sample and found that sample companies tended to divest, sell assets and close plants more frequently than control firms. Moreover, sample firms were less likely to undertake subsequent

acquisitions, indicating that value-decreasing bids may lead to asset downsizing. Furthermore, by conducting a multivariate regression analysis, the author found a positive relationship between the presence of independent directors and the likelihood of asset downsizing. This held true only in the bidder sample, not in the control one, indicating that the proportion of independent directors is relevant for undertaking necessary restructuring actions for the acquisition success.

Therefore, board independence appears to be related with an increase in shareholders' interest protections and this may result in a reduction of the frequency of acquisitions made. In fact, as already pointed out, mergers and acquisitions have long-term often unpredictable impacts on the companies involved and may result in value-destroying corporate actions.

In this respect, while conducting a research on the relationship between board independence and operating performance, Bhagat and Bolton (2013) focused on mergers and acquisitions' context and found that companies with higher proportion of independent directors are less likely to undertake mergers or acquisitions. This result is consistent with the considerations previously exposed and shows once again the impact of independent directors on corporate strategic choices.

It is now clear that board independence is a relevant element of corporate boards, but it is important to highlight once again that the most performing board composition varies according to firm specific features.

In fact, Schmidt (2015) investigated situations where board advice seemed to be more relevant than monitoring management, in order to see if board independence has an impact on firm value. The author considered board friendliness, i.e. social ties between CEO and directors, as a proxy for less independent boards and focused his attention on mergers and acquisitions, since they are a corporate strategic choice that involves both advisory and monitoring needs.

Schmidt studied the impact of board friendliness and found a positive relation with takeover returns when boards of directors were more likely to possess valuable information on acquisitions. Hence, in this case, the advice relevance is higher than the monitoring one.

The amount of information shared by executives and board members may vary significantly and depends on many factors. For instance, CEO may be reluctant to exchange private information about proposals if there is a high proportion of independent

board members, perhaps because she or he may try to protect themselves from monitoring. However, by doing so, executives may not receive proper advice, increasing the risk of diminishing firm value.

On the other hand, if there was greater need to monitor management, the relation between bidder announcement returns and board friendliness was negative, resulting in a potential value loss for shareholders. Therefore, the choice of the degree of board friendliness depends on company's specific features: a lower share of independent directors may be desirable for shareholders when the need for information from directors is greater than the monitoring necessity.

Moreover, it is worth noting that the CEO holds a lot of power in a firm and her or his decisions may significantly affect not only the pre-deal phase of an acquisition, but its whole development and evolution.

In fact, Meyer-Doyle et al. (2019) conducted an analysis to identify the relative contribution of firm's characteristics and management attributes on the acquisition behavior of a company and its post-acquisition performance.

Their results showed that while both CEO-level and firm-level factors contribute to the variance in the number of acquisitions made in a year, CEO-level factors represent a significantly larger proportion of the variance. This is true also when considering acquisition type, quality and size.

In fact, as regards strategic decisions, the CEO is the individual with the final responsibility and has a substantial impact on acquisitions. She or he may select the target company, execute the transaction, oversee post-merger integration and manage the delegation of different tasks such as policies and organizational structures in support of the several phases of the acquisition process.

Therefore, if it is true that people's actions reflect their personality, CEO's psychological traits and human capital play a significant role.

One of the most analyzed features is overconfidence, i.e. an excess of confidence. Specifically, this aspect is commonly studied in relation to gender, since men appear to be more overconfident than women.

Before going deeper into the analysis of the role of overconfidence in mergers and acquisitions, it is relevant to underline that overconfidence differs significantly from confidence, which is the feeling or belief that someone can have faith and rely on its own abilities and skills.

Overconfidence may generally take two forms.

First, an overconfident individual may perceive predictions about the future as more precise without any solid ground. Evidence shows that this trait seems to be a male characteristics, rather than a female one.

In fact, Barber and Odean (2001) studied the relation between overconfidence and stock investment, taking into consideration gender of investors.

The authors drew on the hypothesis that humans are overconfident about their abilities and their future prospects and this leads overconfident investors to trade more than the rational ones and have lower expected utilities, since they believe that the precision of their knowledge about the value of a security is greater than it really is.

Starting from a model developed by Odean in 1998, the authors used data for over 35000 households from a large discount brokerage firm and studied the common stock investment of men and women. In fact, psychological research attests that overconfidence seems to be a trait more common in men rather than in women, especially in finance.

Thus, Barber and Odean tested two hypotheses: (i) men trade more than women; (ii) men have lower performance returns than women because they trade more.

The empirical analysis confirmed their hypothesis, showing that overconfidence plays a significant role in overestimating the precision of expected gains, leading to trading more, even when a rational evaluation of the situation would suggest not to do so.

The results showed that performance of men is hurt more by excessive trading than the performance of women. Consistently with the initial consideration, men were reported to have one and a half times the average turnover rate of common stock of women, trading 45% more than women.

Both biological sexes reduce their net returns when trading, but men have a reduction of 2.65 percentage points per year, while women have a reduction of 1.72 percentage points per year. Overconfidence may thus increase trading and lower expected returns.

Secondly, overconfidence may concern also the level of expectations of the future outcomes.

Malmendier and Tate (2005) analyzed the link between corporate investment policies and overconfidence. Specifically, they studied CEOs who overestimate future returns of their companies, leading to a distortion in corporate investment policies.

In order to do so, they started by considering company cash flows, since overconfident CEOs may invest more freely in presence of additional cash flows and undertake

investment projects whose future returns are perceived as higher than they actually are. This holds true especially if there is not a good corporate governance mechanism that should monitor the situation.

Moreover, overconfidence may lead executives to overestimate the value of the firms' shares, making them more reluctant to issue equity due to the belief that it would be undervalued by the markets.

Starting from a dataset of options and stock held by CEOs of 477 large US companies for 14 years, the authors considered CEOs overconfident when they (i) held their options beyond a theoretically calculated benchmark at which CEOs should have exercised their options, or (ii) held the options until the last year of expiration or (iii) bought company shares during the first five years considered for the sample.

The empirical analysis showed that there was a strong positive connection between CEO overconfidence and cash flow sensitivity of investment, proving that the behavioral trait considered may be detrimental for shareholders' value due to an unjustified expectation of higher investment returns.

Therefore, board of directors may play a significant role in limiting overconfidence by increasing the level of monitoring, especially with the presence of independent members. The extant literature shows that both the forms of overconfidence just exposed are present in mergers and acquisitions context.

In 1986 Roll was the first scholar to propose the *hubris* hypothesis as a motive for M&As. He stated that managers of the acquiring firm may be too overconfident when evaluating the value of a merger or acquisition, which results in paying too much for the targets, increasing the bid premium. As explained earlier, since the CEO is the person in charge for these evaluations, the *hubris* theory is primarily applied to his figure.

In fact, Hayward and Hambrick (1997) conducted a research on CEO's *hubris*, or exaggerated self-confidence, and demonstrated empirically that there is an association between this psychological trait and bid premiums paid, especially when CEO is also the board chair and there is a large proportion of inside directors, which weakens board vigilance. This association, for which CEO *hubris* was linked to higher acquisition premiums, led to a loss of acquiring shareholders' wealth.

The impact of CEO's overconfidence on merger and acquisition decision is once again proved in Malmendier and Tate's research (2008). They found that overconfident CEOs

over-estimate their ability to generate returns and engage in value-destroying mergers by paying high bid premiums, especially if they have access to internal financing.

Overconfidence appears to be mostly a male behavioral trait.

In fact, Levi et al. (2008) investigated whether CEO gender had an impact on pricing and returns on mergers and acquisitions and found that, when there was a female CEO in the bidding company, the bid premium over the pre-announcement target share price was statistically and economically smaller, which represented an advantage for the bidder. Moreover, the presence of female CEO in the acquiring company was also related to smaller cumulative abnormal returns for the target's shareholders in the announcement period, a result consistent with the smaller premium paid. These gender effects remained statistically significant even after the use of an alternative sample.

However, the aim of their research was to highlight economically significant effects of gender, with no intention to investigate the reasons of behavioral differences between men and women serving as CEOs of the bidding company.

In this respect, Huang and Kisgen (2013) contributed to the research by investigating whether firms with female executives (CEO or CFO) make different financing choices or merger and acquisitions decisions compared to companies with male executives. Starting from the considerations highlighted by literature on CEO *hubris*, the authors tested the hypothesis that male executives are more overconfident than female ones by conducting a difference-in-differences empirical analysis.

Once again, overconfidence does not indicate the confidence level about one's own beliefs or skills, but the confidence level of the outcome of future events. Therefore, if men are more overconfident than women, it means that they over-estimate net present values of future projects and are more likely to initiate a larger number of transactions, because their acceptable transactions pool may also include deals with a negative net present value. If this holds true, on the contrary, women will undertake fewer transactions and generally take fewer yet significant decisions. The aim of their research was to shed light on this matter by focusing on acquisition frequency, debt and equity issuance by male and female executives.

The authors found that male executives issue debt more often and initiate more mergers or acquisitions compared to their female counterparts. Moreover, announcement returns for both the events were lower for companies with male executives. Although these findings are consistent with the hypothesis of male executives being more overconfident

than female ones, there may be other valuable explanations for the results. Therefore, Huang and Kigsen made four additional tests to verify if overconfidence may be the correct interpretation for the behavioral differences emerged. First, they examined earnings forecasts and found they had significantly narrower bands in firms with male executives than in firms with female ones. Forecasts with narrow ranges are more precise and may be the result of overconfidence.

Secondly, they 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. Moreover, the authors analyzed decisions regarding stock option exercise and found that male executives are less prone to exercise deep-in-the-money options early, denoting overconfidence. Lastly, researchers focused on acquisitions and investigated whether there is a relationship between male overconfidence and acquirer shareholders' value loss. They found that acquisitions made by male executives are significantly more likely to have negative announcements returns if compared to the ones initiated by companies with female executives.

Finally, regardless of considerations about male overconfidence, empirical analysis revealed significant behavioral differences between male and female executives, a result worth to be taken into consideration when evaluating models of capital structure and acquisitions.

Gender appears to be a significant element not only when considering executives positions, but also when focusing on boards.

In fact, in their work *Director gender and mergers and acquisitions*, Maurice Levi, Kai Li and Feng Zhang (2014) studied the impact of female directors on boards on the strategic behavior of a company by focusing on merger and acquisitions.

This thesis takes inspiration from the authors' work, since it shows empirical evidence on a debated matter without overlooking the sociological and behavioral dynamics involved. Specifically, Levi, Li and Zhang investigated whether female directors have an influence on the firm's tendency to initiate mergers or acquisitions and on the bid premium paid. Moreover, they examined whether their findings could be interpreted in light of the tendency of women to be less overconfident than men.

First, the authors analyzed the impact of female members on boards on acquisitive behavior, specifically on the number of bid initiations. They ran a negative binomial regression where the number of bids initiated in a year was the dependent variable, while proportion of women on boards, board size, percentage of independent directors and CEO duality were the independent ones. They also controlled for firm characteristics, such as sales growth, Tobin's Q, ROA, book leverage, cash holdings and firm size (computed as logarithm of market capitalization).

Their sample was composed by approximately 20000 firm-year observations for S&P 1500 companies in the period 1997-2009. At a descriptive level, the average number of acquisition bids initiated (the dependent variable) was 0.57 per year. However, the variance of the variable was quite high (1.73), indicating the presence of overdispersion. Moreover, on average there were 9.5 members on boards, of which 9.5% were female directors and 67% were independent members. As concerns CEO duality, 62% of CEOs were also chairs of boards. This shows the presence of a concentration of power that may favor the rise of opportunistic behaviors.

As concerns firm's performance variables, on average, sales growth was 13%, Tobin's Q was 1.9, return on assets (ROA) was 4.0% and book leverage was 24%. Moreover, 13% of the firms' assets were held in cash or short-term investments and the average market capitalization of firms was \$ 7.6 billion.

The results of the empirical analysis indicated that one additional female director was associated with a reduction of acquisition bids by 7.6%. The proportion of female members on board was the only statistically significant variable among those concerning boards' features.

In fact, the findings of the analysis showed that book leverage, cash holdings and firm size (i.e. logarithm of market capitalization) were the sole other statistically significant variables in the regression. It is worth noting that they all belong to the corporate performance's sphere, indicating that the main drivers of acquisitions for the period of analysis were mainly linked to economic factors. However, it is surprising to notice that ROA, despite being an important indicator of corporate profitability, did not turn out to be statistically significant in the analysis.

The negative relation between the number of bids initiated and the percentage of women on boards was interpreted in light of the fact that women show a tendency to be less

overconfident than men. In fact, the authors claimed that, given the findings of the research, women appeared to be less motivated by empire building motives.

This result may also indicate that women tend to evaluate more carefully the acquisition proposals and may not initiate mergers or acquisitions without a comprehensive discussion about it. Therefore, the reduced number of bids seems consistent with the hypothesis that women are less overconfident than men.

However, when conducting research on corporate boards, endogeneity concerns may arise, since one or more explanatory variables of the model may be correlated with the error term.

Therefore, the authors conducted three additional analysis: (i) firm fixed effects regression, in order to address the omitted variable problem, (ii) propensity-score matching to address selection based on observable firm characteristics, and (iii) instrumental variable regressions to address reverse causality.

Firm fixed effect regression's results showed that the coefficient of female representation on boards was still negative yet not statistically significant. This may be due to little changes in the number of female directors on boards, which work against finding a significant effect in this case.

On the other hand, propensity-score matching provided negative and significant relation between female on boards and acquisition intensity, confirming the results of the first analysis.

The same results were obtained with the instrumental variable regression, which used as instrumental variable the proportion of male directors on boards who sit in other boards with at least one female member. This variable was positively and significantly related with the fraction of female directors on boards and the estimates obtained with this analysis were used to run another regression where the female proportion on board was still negative and significantly associated to the number of acquisition bids.

Moreover, the authors focused on the impact of female directors on boards on the premium paid for mergers and acquisitions. Bid premium was obtained dividing the final offer price by the target stock price four weeks before the bid, minus one. Needless to say, the lower the bidder premium, the better for the acquiring firm.

For this analysis, after collecting the same variables for both the acquirer and the target, the authors ran an Ordinary Least Squares regression with the size of the bid premium as dependent variable and board and firms' characteristics as independent variables.

They found that the percentage of women on bidder board was negatively and significantly related to the bid premium paid; precisely, an additional female director reduced the bid premium by 15.4%. This result was also confirmed by two additional analyses.

Nevertheless, they did not find any significant relationship between gender diversity on target board and bid premium. This may be explained by the fact that the gender differences concerning overconfidence had no impact in this situation, since it is likely that both female and male directors on target boards will be equally informed about the value of their company, leaving no room for significant gaps in their considerations about the right bid premium.

The authors' research showed that women on boards have a negatively significant impact on acquisition intensity and on the size of the bid premium paid.

Thus, Levi, Li and Zhang claimed that women appear to be less motivated by empire building and to be less likely to destroy shareholders' value. They concluded their analysis by saying that the findings of the favorable effects emerged from their research are consistent with women being less overconfident than men.

Other authors decided to take inspiration from the study by Levi, Li and Zhang and reconsidered it in light of other social theories.

An interesting investigation was made by Chen et al. (2016) who, starting from social identity theory, developed the hypothesis that increasing female presence on board will change intra-board psychological dynamics leading to more thorough and comprehensive deliberations, complete evaluations and active oversight.

The authors analyzed the acquisition intensity of S&P 1500 firms by considering the impact of female representation on board decision-making process. Their theoretical starting point for the research was social identity theory, which incorporates socio-cognitive subtheories describing how people's behaviors and interactions are affected by categories to which they belong. Although people can self-categorize and be categorized by others along an infinite number of dimensions, when talking about *categories* it is impossible to ignore the depersonalizing connotation lying underneath.

However, research proves that individuals tend to identify with a certain category when it reflects their most important valued aspects and gender is cognitively considered a salient category, thus enhancing intra-group similarities and inter-categories differences. 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 resulting in more pondered evaluations.

Therefore, the authors conducted an analysis starting from a 13-year sample of S&P 1500 firms and found a negative association between the proportion of women on boards and both the number of acquisitions initiated and the target acquisition size. Moreover, the robustness of the results was proved also by a difference-in-differences analysis on a subsample of companies where there were exogenous changes in board gender proportion due to director deaths.

These findings are consistent with the theoretical considerations mentioned earlier. In fact, the presence of women appears to 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.

Moreover, following the same logic, the target size will represent a smaller percentage of the bidder size when there is female representation on boards. In fact, although every merger or acquisition has a component of uncertainty, larger deals may have considerable consequences for the long-term wealth of a company due to synergies and integration challenges. In fact, undertaking a larger acquisition may be even triggered by managerial motives, such as *hubris*, which is proved to be mostly associated to male individuals.

Lastly, this research highlights the positive impact that female directors may have on the decision-making process of corporate boards.

Another feature of interest when investigating boards' characteristics, especially in light of what previously highlighted for CEO *hubris*, is the presence of CEO duality, i.e. the CEO being also the board chair. This concentration of power may be detrimental to board independence and may result in lower board oversight. Therefore, an increasing number of firms has chosen to separate the role of chairperson from the one of the chief executive officer, especially if mergers and acquisitions are part of companies' strategic plan.

In fact, Grinstein and Hribar (2004) conducted an analysis in the context of M&As, focusing on CEO compensation in relation to CEO power.

First, they found a positive relationship between CEO power and bonus compensation, but not between the same bonus compensation and deal performance. When the CEO is also the chairperson of the board (CEO duality was present in 73% of sample firms), directors may have difficulties in opposing executive proposals and in monitoring managerial investment activities and decisions. This may encourage self-interest behaviors that would benefit the CEO at the expenses of shareholders' value.

Moreover, the authors found that CEOs with greater power are more likely to initiate larger deals relative to their firm size. This result is consistent not only with CEO *hubris* theory exposed previously, 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 a higher compensation, since more effort and skills are required to complete them.

Similarly, Masulis et al. (2007) found that bidder firms where CEO and chair of the board are not roles held by the same person have higher abnormal announcement returns. In fact, CEO duality has a negative impact on bidder returns, since the decisions made by the executive officer may be driven by her or his personal self-interest or overconfidence and not by an actual value creation for the company. Therefore, the separation of the two roles appears to be the best choice in order to protect and enhance shareholders' wealth.

3. Research

The aim of the dissertation is to investigate whether the proportion of women on boards of directors has an impact on corporate strategic choices, more specifically, on the number of bid initiations made by a firm.

In order to do so, I will analyze if female presence on boards of directors of 250 companies in Europe has an impact on the bid initiation offers made by those companies in the decade 2009-2018.

3.1 Sample and model specification

The sample was formed by extracting firms from Bloomberg database, which contains items of balance sheet and profit and loss account, together with further company information about global firms. The companies were selected according to the following criteria: (i) listed company; (ii) active company status; (iii) European location (iii) 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: (i) mergers; (ii) acquisitions; (iii) acquisitions of assets; (iv) 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.

Initially, the sample extracted was large and consisted of financial and corporate boards' data of firms operating in the following countries: France, Spain, Italy, Belgium, Germany and United Kingdom.

However, after "cleaning" the data, the sample size dropped significantly. In fact, there were a lot of NAs (i.e. not available information) and many companies did not provide board of directors' data for the period of interest.

Therefore, the final sample consists of financial and boards' observations for 250 firms, divided as follows: 69 for France, 30 for Spain, 31 for Italy, 33 for Germany, 18 for Belgium and 69 for United Kingdom.

As regards the research methodology and the variables considered, this dissertation takes inspiration from the paper *Director gender and mergers and acquisitions* by Maurice Levi, Kai Li and Feng Zhang, which was introduced in Chapter 2. The authors analyze the impact of female directors on corporate boards on acquisition intensity and their analysis is considered a starting point for the development of this thesis.

Specifically, items of balance sheet and income statement, along with information about the gender composition of the legal bodies of the companies, were retrieved from Bloomberg database; some of them were combined in order to obtain useful indicators for the econometric analysis.

The following variables were used for the research:

1. *Number of bid initiations*: it is the dependent variable and indicates the number of acquisition bids made within a fiscal year, considering the announcement date.
2. *Percentage of women on board*: it represents the number of women on board of directors divided by the board size, expressed as a percentage. It is the explanatory variable of interest for the dissertation.
3. *Board size*: it indicates the total number of directors on a board.
4. *Percentage of independent directors*: it represents the number of independent directors on board divided by the board size and expressed as a percentage. As explained earlier, board independence is an important feature that affects positively the decision-making process.
5. *CEO duality*: this is a dummy variable whose value is 1 if CEO is also the chairperson of the board and 0 if the roles are held by different people. As mentioned above, CEO duality may be detrimental for the decision-making process of a board due to a concentration of power.
6. *Male CEO*: a dummy variable whose value is 1 if CEO is male and 0 if CEO is female.
7. *Male Chairperson*: a dummy variable whose value is 1 if the chairperson of the board is a man and 0 if the role is held by a woman.
8. *Sales growth*: this is the ratio of sales in the current fiscal year and sales in the previous fiscal year minus one, expressed as a percentage.
9. *Tobin's Q ratio*: this ratio indicates the relationship between market valuation and intrinsic value. It contributes to estimating whether a given business or market is overvalued or undervalued.
10. *ROA*: return on assets, it is a ratio indicating how profitable a company is, relative to its total assets.
11. *Book leverage*: this indicator was obtained by the sum of current liabilities and long-term liabilities divided by book value of total assets. It generally indicates the firm's ability to repay its debt and how risky it may be to invest in that firm.

12. *Cash holdings*: it is obtained by dividing the value of cash and short-term investments by the book value of total assets and it indicates the portion of a company's assets held in cash or marketable securities. Although a high ratio may indicate some degree of safety from a creditor's viewpoint, excess amounts of cash may be viewed as inefficient use of resources.

13. *Firm size*: the proxy chosen to indicate firm size is the logarithm of market capitalization, which measures company's value on the market and is obtained multiplying the number of shares outstanding by the stock price.

As already outlined, the paper *Director gender and mergers and acquisitions* by Maurice Levi, Kai Li and Feng Zhang was a relevant starting point for the development of the empirical analysis. In fact, in my research I considered all the variables reported in the authors' analysis. However, I decided to add two additional dummy variables (Male CEO and Male Chairperson) to the research due to their attested relevance in the literature regarding mergers and acquisitions.

In order to 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), I decided to do a negative binomial regression analysis due to the following reasons.

Since the number of bid initiations made in a fiscal-year is a count variable, it is not possible to define it by using a linear model. Negative binomial regression with a log link appears to be a good choice to estimate the model, since the dependent variable's possible values are nonnegative integers (0, 1, 2, 3, ...) and they seem 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, mean = μ and variance = $\mu * (1 + \tau * \mu)$, where τ is parameter added to consider the presence of overdispersion. In fact, if $\tau = 0$, variance equals mean and a Poisson distribution should be considered instead.

Therefore, in every analysis conducted I verified the overdispersion of the dependent variable by observing if the parameter τ was different from zero at a 5%¹⁴ significance

¹⁴ The 5% significance level is the threshold chosen in order to consider a parameter significant.

level. In fact, if the parameter τ is different from zero, the presence of overdispersion is confirmed and the choice of using a negative binomial regression is proven correct. Since I am considering Levi, Li and Zhang’s work as both an inspiration and a benchmark for my analysis, it is relevant to report that in their paper *Director gender and mergers and acquisitions*, they used another way to verify overdispersion, at a descriptive level. In fact, overdispersion is assumed to be present when the variance is significantly greater than the mean of the variable. As regards this dissertation, the variance of the dependent variable *number of bid initiations* is 3.348, significantly greater than its mean (1.039), as it also possible to see visually the figure below, representing the absolute frequency of the dependent variable.

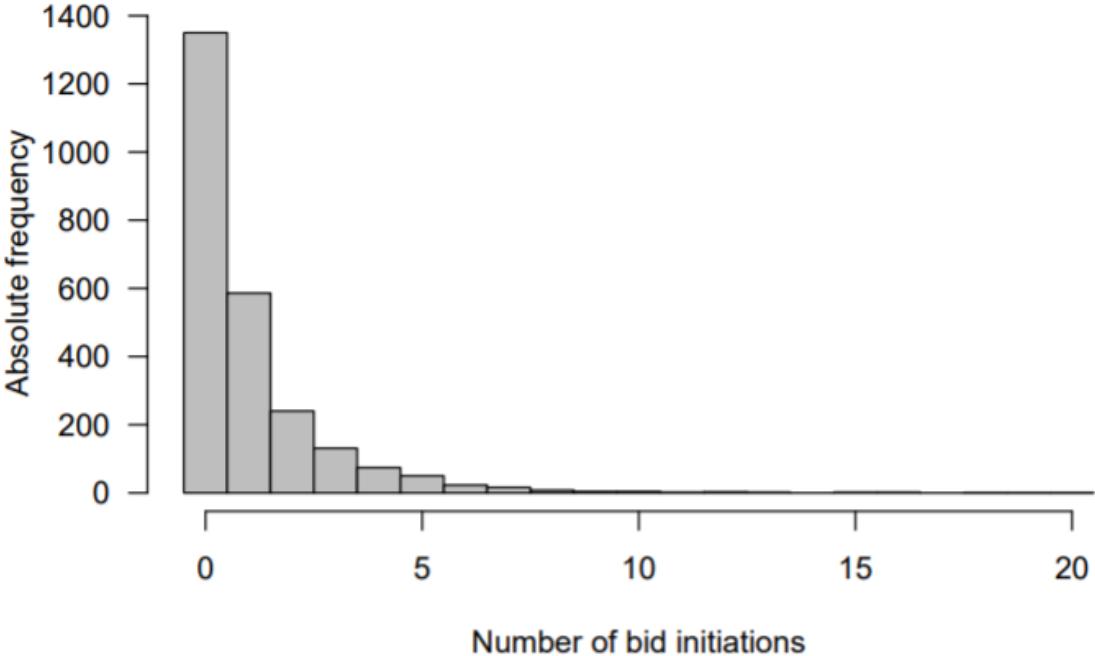


Figure 7: Absolute frequency of the number of bid initiations

Before proceeding with the regression analysis, I summarized the variables in a descriptive statistics panel (see *Table 1*) in order to give an overview of the data collected.

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

Table 1: Descriptive statistics of the variables

On average, firms make approximately 1 bid initiation per year, but, as already pointed out, this variable appears to be 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 UK.

Moreover, the average number of directors on a board is 12, of which 17.33% are women and 53.45% are independent members. As regards the female share, it is worth noting that this percentage is quite different from the one found by Maurice Levi, Kai Li and Feng Zhang in their paper *Director gender and mergers and acquisitions*. 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 instead of European ones, it is still significant to notice how the number increased in time. European regulations on women on boards have surely had an impact on the number obtained, 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 countries analyzed.

Percentage of women on boards								
Countries	Number of observations	Mean	Standard deviation	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

Table 2: Percentage of women on boards, overview of the countries

For instance, in France the average proportion of women on boards is 24.17%, which is almost twice the one in Spain (12.52%). It makes sense since, as pointed out in Chapter 1, France has a much higher proportion of women on boards than Spain due to the introduction of a more stringent regulation for gender balance in the boardroom. As regards the other countries, the percentage of women on boards appears to be more aligned, with percentages varying from 14.19% to 16.28%.

The average percentage of independent directors is 53.45%, which may be considered an overall good result since board independence may increase the quality of the decision-making process. Similarly to what already underlined for the percentage of women on boards, the proportion of independent directors on a board varies across countries, sometimes quite significantly.

Percentage of independent directors								
Countries	Number of observations	Mean	Standard deviation	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

Table 3: Percentage of independent directors, overview of the countries

For instance, the average proportion of independent directors in Germany is 64.75%, 27.60 percentage points higher than the Belgium one (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, it is found that, in 78% of the firm-years observations, CEO and Board chair are not the same person, while, in the analysis *Director gender and mergers and acquisitions* by Levi, Li and Zhang, CEO duality represented 62% of the cases. This is a positive result, since it indicates that there may be more board independence and better governance. Nevertheless, it is relevant to point out that while in most of the countries the percentage of firm-year observations indicating the presence of CEO duality is quite low, France is an exception.

Percentage of the presence of CEO duality

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

Table 4: CEO duality, overview of the countries

In fact, 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 United Kingdom CEO and Chairperson are role held by different people in almost all the firm-year observations. Furthermore, results about the presence of female CEO and female Chairperson are quite disappointing in terms of gender equality. Men are CEO and Chairperson in respectively 96% and 97.5% of firm-year observations in the sample and these percentages do not vary significantly across countries.

When considering the variables related to firm performance, sales growth stands out for the great difference among the values of the firm-year observations, as it 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, I 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, I divided the observations into three main groups for the regression analysis: (i) *negative sales growth group* if sales have negative growth rates, (ii) *positive sales growth group* if sales have a growth rate lying between 0 and 10.786 (third quartile), (iii) *very positive sales growth group* if sales have a growth rate above 10.786.

As regards the other firm performance variables, the average Tobin's Q is 1.48, which indicates that companies' stocks, on average, are more expensive than the replacement cost of the assets, meaning that the stocks are overvalued. A similar result was found also in the research *Director gender and mergers and acquisitions*, where the average value of Tobin's Q was 1.9.

Moreover, in the sample ROA is 4.03% on average, a result almost identical to the one reported in the work by Levi, Li and Zhang (4.00%).

As regards book leverage, the mean is 0.53 in my sample, more than twice the result (0.24) reported in the paper *Director gender and mergers and acquisitions* by Levi, Li and Zhang. 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. Levi, Li and Zhang had found a similar result in their work (13.10%).

Finally, firms have an average market capitalization of €11.8 Billion, which indicates the average companies' value on the market. The logarithm of market capitalization is used as a proxy for firm size.

After concluding the descriptive statistics analysis, I created a correlation matrix to investigate the presence of significant relationships between the variables.

As it is possible to see from *Figure 8*, there is not a strong significant relationship between the variables. In fact, 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).

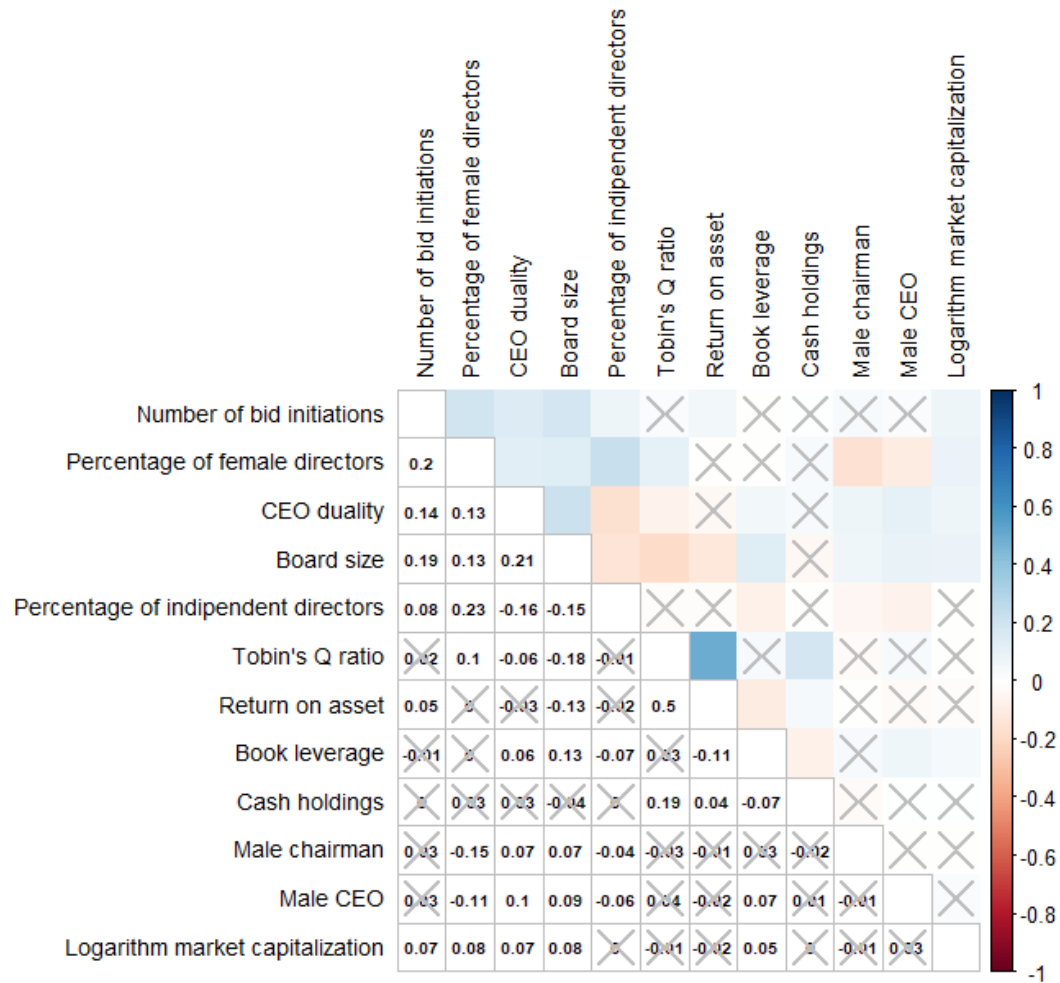


Figure 8: Correlation matrix

The only strong significant relation is the one between Tobin’s Q ratio and return on asset (ROA), which was quite predictable, if considering that they are both computed considering firms’ assets. Therefore, given this positive relation, it is probable that only one of them will be statistically significant in the model, since the informative content of the two variables is very similar.

As regards female presence on board of directors, there is a positive yet non-significant relation between the number of bid initiations and the female proportion on boards, which will be either confirmed or contradicted by the empirical analysis.

3.2 Analysis

As regards empirical research, I did a negative binomial regression analysis with a logarithmic link. Moreover, I considered year fixed effects, country fixed effects and industry fixed effects¹⁵.

While the years and country elements were already part of the dataset, I analyzed the industries of each firm and divided them 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 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 manufacture, public service and real estate.

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

$$\begin{aligned} \text{Log}(\text{Bid initiation})_{it} = & \alpha_0 + \beta_1 \text{Percentage of women on board}_{it} + \beta_2 \text{Board size}_{it} + \\ & \beta_3 \text{Percentage of independent directors}_{it} + \beta_4 \text{CEO duality}_{it} + \beta_5 \text{Male CEO}_{it} + \\ & \beta_6 \text{Male Chairperson}_{it} + \beta_7 \text{Sales growth}_{it} + \beta_8 \text{Tobin's } Q_{it} + \beta_9 \text{ROA}_{it} + \\ & \beta_{10} \text{Book leverage}_{it} + \beta_{11} \text{Cash holdings}_{it} + \beta_{12} \text{Firm size}_{it} + \beta_{13} \text{Country}_{ITALY_i} + \\ & \beta_{14} \text{Country}_{FRANCE_i} + \beta_{15} \text{Country}_{SPAIN_i} + \beta_{16} \text{Country}_{BELGIUM_i} + \\ & + \beta_{17} \text{Country}_{GERMANY_i} + \beta_{18} \text{Country}_{UK_i} + \beta_{19} \text{Industry}_{RETAIL_i} + \\ & \beta_{20} \text{Industry}_{FOOD AND BEVERAGE_i} + \dots + \beta_{41} \text{Industry}_{TELECOMMUNICATION_i} \end{aligned}$$

with log = natural logarithm; $i = 1, \dots, 250$ and $t = 2009, \dots, 2018$

The independent and control variables refer to the fiscal-year end prior to the bid announcement date and years, industry and country fixed effects are considered as dummy variables¹⁶ in the model.

¹⁵ Fixed effects are variables that are constant across the firms and do not change or change at a constant rate over time

¹⁶ Dummy variable take only the value 0 or 1 to indicate respectively the absence or presence of some categorical effect that may be expected to shift the outcome of an analysis. For instance, the dummy variable Country_{ITALY} will be 1 when the observation considered for the analysis belongs to an Italian firm and 0 in all the other cases

Once I organized the dataset and identified the proper regression model, I conducted the first empirical analysis by using the negative binomial regression reported above, in order to analyze the relation between the number of bid initiations and the percentage of women on board of directors.

The results of Model 1 are reported in the table below.

Variables	Estimated coefficient	Standard error	p-value	
Intercept	-3.2911	0.5937	< 0.001	***
Percentage of women on board	0.0126	0.0034	0.0002	***
Board size	0.0720	0.0102	< 0.001	***
Percentage of independent directors	0.0045	0.0017	0.0096	**
CEO duality	0.1635	0.0843	0.0523	•
Male CEO	0.0240	0.1711	0.8885	
Male Chairperson	0.1968	0.2084	0.3449	
Tobin's Q	0.0217	0.0490	0.6587	
ROA	0.0235	0.0059	< 0.001	***
Book leverage	-0.0849	0.1259	0.5000	
Cash holdings	-0.1549	0.3772	0.6814	
Firm size (log market capitalization)	-0.0224	0.0446	0.6154	
Sales growth negative group	-0.1546	0.0721	0.0320	*
Sales growth very positive group	0.0484	0.0763	0.5262	

McFadden R-squared: 0.0851

AIC: 6495.5

$\tau = 0.8513$

τ interval confidence, 5% significance level (0.7267, 0.9758)

Significance levels codes: *** 1% ; ** 5% ; * 10% ; • 10%

Table 5: Model 1: negative binomial regression analysis

First of all, as anticipated while explaining the choice of the model, I verified the overdispersion assumption. Specifically, I checked whether the parameter τ was significantly different from zero. Results confirm this assumption, meaning that overdispersion is present and the model chosen should provide relevant results.

It is now possible to analyze whether the variables considered have an impact on the number of bid initiations made.

Specifically, this information is reported in the column “p-value”, indicating the statistical significance¹⁷ of the variables. Lower p-values are associated with stronger statistical significance, thus I chose the 5% significance level as the threshold to decide whether a parameter is statistically significant.

Therefore, variables with a p-value lower than 5% were considered statistically significant and their impact on the number of bid initiations (the dependent variable) was computed. On the contrary, variables with a p-value higher than 5% were not considered relevant for the analysis. This means that, as concerns these variables, it is likely that the impact on acquisition intensity would not be observed in the population that the sample represents.

Moreover, the impact of the independent variables 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 made with the exponential function in order to facilitate their interpretation. These computations, which were made for the coefficients of all the regression analyses reported in the thesis, are reported in the *Appendix*. Hence, from this point forward, while commenting on the results of the research, I 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.

I will start analyzing the most relevant variable for the purposes of the dissertation: the percentage of women on board of directors. The coefficient of the proportion of female directors on board is strongly statistically significant (p-value = 0.0002) and positive. The analysis indicates that for each increase of 10 percentage points in the fraction of women on boards (corresponding to approximately one additional female director¹⁸), the number of bid initiations will increase by 13.43%¹⁹.

¹⁷ Statistical significance refers to the claim that the relationship between the variables considered (the independent and the dependent ones) is not likely to occur randomly or by chance but is instead likely to be attributable to a specific cause

¹⁸ The average number of directors on board is 12 and the average percentage of women in the boardroom is 17.33%. Therefore, on average, there are approximately 2 women in a boardroom of 12 people (17.33% of 12), and an increase of 10 percentage points in the proportion of females on boards will correspond to approximately one additional woman (computed as the difference between 27.33% of 12 and 17.33% of 12)

¹⁹ See *Table A* in *Appendix* for the explanation of the calculations

The other statistically significant variables are *board size*, *fraction of independent directors*, *ROA* and *negative sales growth group*.

Specifically, the addition of a director on board would increase the number of bid initiations by 7.48%. As explained in Chapter 2, 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 mergers and acquisitions is related to the number of independent directors.

Moreover, the analysis shows that each 10 percentage points increase in the percentage of independent directors (corresponding to approximately one additional independent director on board²⁰) will lead to an increase of 4.60% in the number of bid initiations.

Furthermore, ROA has a positive impact on the dependent variable: if ROA increases of 1 percentage point, then the number of bid initiations increases of 2.38%. This result is consistent with expectations. In fact, it is reasonable to believe that a firm with a growing return on asset will have the means to expand by initiating mergers or acquisitions in order to increase its value and performance. Conversely, it is more likely that a decreasing ROA will reduce the acquisition intensity of a firm.

Some specifications should be made when considering the groups of sales growth. In fact, I decided to evaluate the impact of this variable on the acquisition intensity by dividing it into three main groups: (i) negative sales growth group, (ii) positive sales growth group and (iii) very positive sales growth group. Moreover, I decided to consider the positive sales growth group as a benchmark to measure the effect that an 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.

In fact, the negative sales growth group is statistically significant and its estimated coefficient should be considered in comparison with the positive sales growth group.

²⁰ The average number of directors on board is 12 and the average percentage of independent directors in the boardroom is 53.45%. Therefore, on average, there are approximately 6 independent directors in a boardroom of 12 people (53.45% of 12), and an increase of 10 percentage points in the proportion of independent members on boards will correspond to approximately one additional independent director (computed as the difference between 63.45% of 12 and 53.45% of 12)

Specifically, it indicates that companies having a negative growth rate will make less 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 14.32%. This result is in line with expectations, because a negative sales growth may indicate that the firm is facing difficulties and may be less prone to initiate a merger or an acquisition.

As regards the year, industry and country fixed effects, they result statistically relevant, indicating that these factors have an influence on the number of acquisitions made by a company.

The other independent variables considered in the model are not statistically significant, except for CEO duality, which shows a significance level of 10%. However, since I set the 5% significance level as the threshold for statistical significance, I did not consider this variable relevant in this model.

The variables that lack statistical significance are *Male CEO*, *Male chairperson*, *Tobin's Q*, *book leverage*, *cash holdings* and *logarithm of market capitalization* (proxy for firm size).

As concerns male CEO and male Chairperson, their statistical non-significance was quite predictable. In fact, they have the same value (= 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, because the changes in the value are minimal. It is worth noting that all the other variables which are not significant belong to the company's performance sphere.

On the one hand, this may seem quite a paradox, 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, a measure indicating asset profitability, 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 the real impact on the decision of initiating a merger or an acquisition is mostly attributable to the board of directors. This is a significant result, because it may encourage further research on this topic.

After analyzing the impacts of the variables on the number of bid initiations made, I noticed that the McFadden R-squared²¹ reported in *Table 5* is quite small (0.0851), but very close to the one (0.080) found by Levi, Li and Zhang for their similar analysis in *Director gender and mergers and acquisitions*.

Furthermore, when analyzing the results of the regression analysis, I noticed that approximately 62% of the independent variables considered (8 out of 13) were not statistically significant. Although this finding does not compromise the choice of the methodology, the presence of not statistically significant variables in the model is useless for the purpose of the analysis, which is observing the impact of the percentage of women on boards on acquisition intensity. Moreover, keeping variables that are not significant in the model may be detrimental for the correct calculation of the impact of the statistically significant variables on the dependent one. In fact, maintaining the presence of not statistically significant variables in the model would mean portraying a phenomenon which, in reality, is different.

This is the reason why I chose to conduct another negative binomial regression analysis by using a stepwise method, which consists of adding and removing some of the independent variables in the model in order to identify the ideal combination of statistically significant variables and obtain a better model.

Before presenting the results of the second analysis, it is relevant to clarify the notion of “better model”, which implies a comparison between the analyses. In fact, in order to state that a model is better than another one, it is necessary to find a measure to compare them. It would be incorrect to use the McFadden R-squared, because it is not an adjusted measure, so it does not take into consideration the number of independent variables considered in the model.

In order to make a fair comparison between the models, it is more useful to consider AIC, namely *Akaike Information Criterion*, used for generalized linear models.

This is an estimator that, given a collection of models for the data, estimates the quality of each model, relative to each of the other models.

²¹ It is relevant to point out that negative binomial regression does not have an equivalent to the R-squared measure found in Ordinary Least Squares regression. In that context, R-squared indicates the proportion of the variance in the dependent variable that is explained by the independent variables collectively. However, researches have attempted to create a similar (yet not identical) measure for the negative binomial regression analysis, such as McFadden R-squared, but this statistic should be interpreted with caution

Thus, AIC provides a means for model selection. In fact, statistical models are used to represent the process that generated the data in reality, but they will hardly ever be exact. Consequently, some information will be lost by using the model to represent the process. AIC estimates the relative amount of information lost by a given model: the less information a model loses, the higher the quality of that model. Hence, the lower the AIC, the better.

Therefore, the value of AIC (6495.5) reported in the first regression analysis in *Table 5* does not carry an informative value in itself, but should be considered to make a comparison with the second regression analysis (Model 2), reported in the table below. As already outlined, this regression analysis was conducted in order to identify the sole effects of the significant variables on the number of bid initiations made.

Variables	Estimated coefficient	Standard 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	***
Sales growth negative group	-0.1593	0.0715	0.0259	*

McFadden R-squared: 0.0849

AIC: 6485.2

$\tau = 0.8551$

τ interval confidence, 5% significance level (0.7303, 0.9799)

Significance levels codes: *** 1% ; ** 5% ; * 10% ; • 10%

Table 6: Model 2: Negative binomial regression analysis with stepwise method

First, it is important to outline that the overdispersion assumption is confirmed once again, since τ is significantly different from zero. Therefore, the choice of using a negative binomial regression analysis should be correct and provide relevant results.

The first important aspect of this model is the sole presence of statistically significant variables, most of which were significant also in Model 1, but with a slightly different coefficient value.

This analysis shows that the percentage of women on boards has still a positive significant impact on the number of bid initiations. In fact, an additional woman on board of directors (which mathematically corresponds to an increase of 10 percentage points in the fraction of women on boards) leads to an increase in the number of bid initiations of 12.86%²², a result similar to the one found previously (13.43%).

As regards board size, an additional member on board of directors would increase the number of bid initiations by 7.53%. Moreover, an increase of 10 percentage points in the proportion of independent directors would lead to an augmentation of the number of bids by 4.71%. Similarly to what already found in Model 1, ROA has a positive impact on the acquisitive behavior (for each percentage point increase in this measure, the number of bid initiations increases of 2.49%) and the presence of negative sales growth has a negative impact (-14.73%) on the number of acquisitions made if compared to the sales growth positive group.

It is worth noting that in this model CEO duality is significant at 5% confidence level, meaning that, when CEO and chair of the board are the same person, it is likely that the number of bid initiations will increase of 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. In fact, when CEO and board chair are roles held by the same person, it is more likely that self-interest behaviors will take place, at the expenses of shareholders' value. For instance, CEOs with greater power are more likely to initiate (larger) deals in order to increase their bonus compensation (Grinstein and Hribar, 2004).

Moreover, years, country and industry fixed effects are statistically significant in this model as well.

The McFadden R-squared (0.0849) is once again quite low, but, as already said, this measure should not be used to compare two or more models.

In fact, the proper measure for comparison is AIC, which is 6485.2, 10.3 points lower than the AIC found previously (6495.5). This result indicates that Model 2 is better than Model 1, because it is more similar to the original model that generated the data in reality.

²² See *Table B in Appendix* for the explanation of the calculations

When observing the results in light of the purpose of the dissertation, the findings of both the analyses prove that the presence of women on board of directors has a strong statistically significant impact on the number of bid initiations.

Therefore, the proportion of female directors on corporate boards *does* make a difference when it comes to fundamental corporate strategic decisions such as the initiation of mergers or acquisitions.

Furthermore, once proved the existence of female share's impact on acquisition intensity, I started wondering whether this impact varied across countries.

In fact, the sample used for the analysis is composed by 250 firms located in six different nations: Italy, France, Spain, Belgium, Germany and United Kingdom. I thought that 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, I decided to dig deeper and verify this hypothesis by proceeding as follows.

First, I introduced in the regression analysis an *interaction term* between the percentage of women on board and the single countries in which the companies are located. I added the interaction term to Model 1, the first negative binomial regression analysis I conducted. 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 board of directors on acquisition intensity will depend on the country where the firm is located. In fact, interaction terms indicate that a third variable (the country) influences the relationship between an independent variable (female proportion on board of directors) and the dependent variable (number of bid initiations made).

Secondly, I randomly chose an interaction term to serve as a benchmark to see if the effects of the other interaction terms were significantly different.

The randomly selected benchmark was the interaction term between the percentage of women on boards and Italy. Therefore, the results reported in *Table 7* 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.

Further clarifications will be provided while explaining the results.

The aim of this additional analysis is twofold. First, I was curious to see if the interaction terms were significant, because this would imply that the percentage of women on boards

has a different effect on bid initiations according to the country in which the firm is located. Secondly, if the interactions were significant, I wanted to investigate the magnitude of the impact of female proportion on boards of different countries on the acquisitive behavior of firms.

The results of Model 3 are reported in the table below.

Variables	Estimated coefficient	Standard error	p-value	
Intercept	-3.6184	0.6119	< 0.001	***
Percentage of women on board: interaction with Italy	0.0301	0.0075	< 0.001	***
Board size	0.0748	0.0102	< 0.001	***
Percentage of independent directors	0.0054	0.0017	0.0019	**
CEO duality	0.1732	0.0842	0.0395	*
Male CEO	-0.0767	0.1742	0.6597	
Male Chairperson	0.2515	0.2109	0.2331	
Tobin's Q	0.0397	0.0487	0.4142	
ROA	0.0237	0.0059	< 0.001	***
Book leverage	-0.0872	0.1261	0.4893	
Cash holdings	-0.2530	0.3798	0.5054	
Firm size (log market capitalization)	-0.0234	0.0444	0.5987	
Sales growth negative group	-0.1539	0.0717	0.0319	*
Sales growth very positive group	0.0341	0.0762	0.6541	
Percentage of women on board: interaction with Belgium	-0.0356	0.0115	0.0019	**
Percentage of women on board: interaction with France	-0.0117	0.0078	0.1361	
Percentage of women on board: interaction with Germany	-0.0311	0.0100	0.0018	**
Percentage of women on board: interaction with Spain	-0.0296	0.0120	0.0141	*
Percentage of women on board: interaction with UK	-0.0286	0.0092	0.0019	**

McFadden R-squared: 0.0882

AIC: 6483.6

$\tau = 0.8275$

τ interval confidence, 5% significance level (0.7050, 0.9500)

Significance levels codes: *** 1% ; ** 5% ; * 10% ; • 1%

Table 7: Model 3: Negative binomial regression with interaction between the percentage of women on board and the countries

First, the parameter τ is significantly different from zero, thus the overdispersion assumption is confirmed and the negative binomial regression analysis should provide relevant results.

As regards the interpretation of the interactions between the percentage of women on boards and the countries, it is relevant to reiterate that I randomly chose an interaction term (the interaction between percentage of women on boards and Italy) that would serve as a benchmark to show the effects of the other interactions.

Specifically, the interaction term between the percentage of women on boards and Italy has a positive and statistically significant estimated coefficient.

As regards the other countries, the estimated coefficients reported in *Table 7* 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 less bid initiations in comparison to women on boards in Italy.

It is worth noting that all the interactions are statistically significant, except for France. In fact, results indicate that the interaction term between the percentage of women on board and France is not statistically significant, so the estimated coefficient's value is meaningless and will not be analyzed. The reasons behind this finding will be further investigated in the following paragraph.

The significance of the other interactions implies that 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 coefficients, I computed the net effect²³ of each interaction on the number of bid initiations. The findings are reported in the table below.

Variables	Estimated coefficient
Percentage of women on board: interaction with Italy	0.0301
Percentage of women on board: interaction with Belgium	-0.0055
Percentage of women on board: interaction with Germany	-0.0010
Percentage of women on board: interaction with Spain	0.0005
Percentage of women on board: interaction with UK	0.0015

Table 8: *Estimated coefficients of the interaction terms for each country (except for France): net effects on the number of bid initiations*

²³ The effect of each interaction was computed by adding the estimated coefficients reported in *Table 7* to the estimated coefficient of the benchmark

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 to approximately one female director) will now lead to an increase of 35.12%²⁴ in the number of bid initiations. The possible explanations to this finding will be further investigated in the following paragraph.

As it is evident from the results of the analysis, an increase of one female director on board of directors will have a different impact according to the countries where the firm is located. Once again, results indicate that the interaction term considering female share on French boards is not statistically significant, so the estimated coefficient's value is meaningless and will not be analyzed.

One additional female director on corporate board will increase the number of bid initiations by 35.12% in Italy, 0.50% in Spain and 1.51% in the United Kingdom.

On the contrary, in Belgium and Germany an additional female director will decrease the number of bid initiations by respectively 5.35% and 1%. These two countries have a negative relation between the percentage of women on boards and the acquisition intensity.

The presence of different impacts on acquisitive behavior across countries comes as no surprise, since, despite being in Europe, the nations considered 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 it is likely that this contributed to the different results obtained from the analysis.

Nevertheless, the reasons behind the findings will be further investigated in the following paragraph.

As regards the other independent variables, some of them are not statistically significant, consistently with the findings of the first regression analysis (see Model 1).

Board size, percentage of independent directors, CEO duality, ROA and negative sales growth group are all statistically significant variables, their estimated coefficient values are very close to the ones found in the previous analysis and their interpretation is the same.

²⁴ See *Table C in Appendix* for the explanation of the calculations

In fact, as regards board size, an additional member on board would increase the number of bid initiations by 7.77%.

Moreover, adding an independent director in the boardroom would lead to an augmentations of the bids by 5.55%, while the presence of CEO duality would increase the dependent variable by 18.91%. As regards ROA, an increase of 1 percentage point would lead to an increase in the number of bid initiations by 2.40%.

Negative sales growth group is statistically significant in this model as well and it indicates that in presence of a negative sales growth, the firm will reduce bids initiations by 14.26% if compared to firms with a positive sales growth.

Moreover, year, country and industry fixed effects are still statistically significant hence valuable for the regression analysis.

The McFadden R-squared is still low (0.0882), but, as already outlined, the relevant measure to make comparisons among these models is AIC, which has the lowest value found so far (6483.6). This result implies that this model (Model 3) is better than both the previous ones, meaning that, in the original process that generated the sample analyzed, female proportion on boards had different impacts according to the nation where the firm was located.

Once again, this finding is quite reasonable if considering that there are relevant differences among countries in Europe and they may have an impact on the decisions taken by the companies.

While analyzing the results, I noticed that there are many variables that are not statistically significant and this situation is similar to the one concerning Model 1 (where non statistical significance regarded 8 out of 13 variables). The high presence of not significant variables comes as no surprise, if considering that Model 3 is the result of the addition of the interaction term to Model 1.

As already outlined, the lack of statistical significance for some variables does not compromise the choice of the methodology, but may be detrimental for the correct calculation of the impact of the statistically significant variables on the dependent one.

Therefore, mirroring what I previously did for the models without interaction, I conducted another analysis²⁵ by using a stepwise method, which consists of adding and

²⁵ It is a negative binomial regression analysis with interaction terms between the percentage of women on boards and the countries

removing some of the independent variables in the model in order to identify the ideal combination of statistically significant variables and obtain a better model.

The results of Model 4 are reported in the table below.

Variables	Estimated coefficient	Standard 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	***
Sales growth negative 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 UK	-0.0260	0.0091	0.0040	**

McFadden R-squared: 0.0878

AIC: 6474.6

$\tau = 0.8325$

τ interval confidence, 5% significance level (0.7097, 0.9553)

Significance levels codes: *** 1% ; ** 5% ; * 10% ; • 10%

Table 9: Model 4: Regression analysis with interaction between the percentage of women on board and the countries, stepwise method

First, τ is significantly different from zero, thus overdispersion of the dependent variable is verified and the negative binomial regression analysis should provide relevant results. As regards the interaction terms, the considerations previously made about their interpretation are still valid.

In fact, the interaction between the percentage of women on board and Italy is still the benchmark to show the effects of the other interactions. As with the previous model, this interaction is statistically significant and has a positive estimated coefficient.

As regards the other interaction terms, the estimated coefficients reported in Table 9 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 Germany indicates that women on boards of directors of German companies would make less bid initiations in comparison to women on boards in Italy. As with the previous model, all the interactions are statistically significant, except for France.

Therefore, since results indicate that the interaction term between the percentage of women on board and France is not statistically significant, the estimated coefficient's value will not be analyzed. The reasons behind this finding will be further investigated in the following paragraph.

The significance of the other interaction terms indicates that the impact of the percentage of women on boards on acquisition intensity varies across the nations where the firms are located.

In order to facilitate the interpretation of the coefficients, I computed the net effect²⁶ of each interaction on the number of bid initiations. The findings are reported in the table below.

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 UK	0.0022

Table 10: *Estimated coefficients of the interaction terms for each country (except for France): net effects on the number of bid initiations*

As concerns the impacts of the interaction terms on acquisition intensity, it is evident that their sign varies across countries.

In fact, in Italy and in the United Kingdom the addition of a female director on corporate board will increase the number of bid initiations by respectively 32.58%²⁷ and 2.22%.

On the contrary, one additional female director on corporate board will decrease the number of bid initiations by 5.73% in Belgium, 1% in Germany and 0.20% in Spain.

²⁶ The effect of each interaction was computed by adding the estimated coefficients reported in *Table 9* to the estimated coefficient of the benchmark

²⁷ See *Table D* in *Appendix* for the explanation of the calculations

As already outlined, the presence of different impacts on acquisitive behavior across countries is quite reasonable, since the nations considered have diverse social, legislative and demographic backgrounds.

The reasons behind the differences concerning the sign and magnitude of the impact of female share on acquisition intensity will be further analyzed in the following paragraph. The other significant variables in the model are still *board size*, *fraction of independent directors*, *CEO duality*, *ROA* and *negative sales growth group*.

Their interpretation and values are very similar to the ones reported in the previous model. In fact, as regards firm size, an additional member on board of directors 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 presence of a negative sales growth, the number of bid initiations made by a firm would decrease by 14.44% in comparison to companies with a positive sales growth. This model, like the previous ones, has a low McFadden R-squared (0.0878). Nevertheless, the relevant measure for comparison is AIC (6474.6) which, in this analysis, has the lowest value. This result indicates that this model is the best one among the analyses conducted, because it is the closest to the process that originally generated the data considered in the sample.

After analyzing the results of the research, it is possible to conclude that the overall percentage of women on board of directors has a relevant impact on acquisition intensity. Moreover, the magnitude and the sign of this impact vary across the countries in which the companies are located.

3.3 Interpretation of the results

The results of the empirical analysis conducted on 250 firms in Europe²⁸ in the 2009-2018 decade confirm that female directors have an impact on corporate strategic choices. Specifically, there is a strong²⁹ and positive relation between the percentage of women on boards and acquisition intensity.

In this paragraph I will explain the findings of the research, considering both the similarities and the differences with the extant literature, particularly with the paper *Director gender and mergers and acquisitions*³⁰ by Levi, Li and Zhang.

First, I will analyze the impact of the overall percentage of women on boards on acquisition intensity. During the research, I used two models, Model 1 and Model 2, to investigate the abovementioned impact. However, I will now refer only to the results of Model 2, because it is the best model between the two, since it was obtained by using a stepwise method, which consists of adding and removing some of the independent variables in the analysis in order to identify the ideal combination of statistically significant variables.

The findings of my analysis indicate that an additional woman on a board of directors increases the number of bid initiations by 12.86%. The results of the empirical analysis are in contrast with the extant literature, which attests that there is a negative relation between the percentage of women on boards and the acquisitive behavior of firms. In fact, women are reported to initiate a reduced number of mergers and acquisitions due to the fact that they are generally less overconfident than men who, on the contrary, are more prone to engage in M&A deals to increase their power.

For instance, in the paper *Director gender and mergers and acquisitions*, Levi, Li and Zhang found that an increase in the proportion of female directors on board should lead to a decrease in the number of bid initiations. Specifically, the addition of one female director would diminish the number of bids by 7.6%. They attributed this result to the fact that women are less overconfident than men and, as a result, they are less motivated by empire building motives.

²⁸ Firms are located in the following countries: France, Belgium, Italy, Germany, United Kingdom and Spain

²⁹ In all the four models analyzed, the coefficient of the proportion of women on board is statistically significant at 1% confidence level

³⁰ As already outlined, I considered this paper as a starting point for the development of the thesis

This implies that, since women are more effective monitors (Adams and Ferreira, 2009), their presence should reduce the likelihood of completing value-destroying deals. Consequently, boards with more female directors should experience more thorough decision-making processes, resulting in the initiation of fewer and better deals.

On the contrary, my analysis shows that female presence on board of directors has a strong and positive relation with bid initiations. There may be several reasons behind these contrasting results and I will explain them by making a comparison with the paper *Director gender and mergers and acquisitions* by Levi, Li and Zhang.

First, the sample size of the analyses is very different. Levi, Li and Zhang considered 1500 firms, 6 times the size of my sample (250). Nevertheless, while it is true that a larger sample may increase the likelihood of representing the whole population, 250 is still a significant number for a statistical analysis.

Secondly, the authors of the paper *Director gender and mergers and acquisitions* studied the bid initiations made in the period 1997-2009, while I analyzed the same variable in the following decade (2009-2018). Macroeconomic, sociological, technological and political changes surely had an impact on the merger and acquisition context and this may explain the different outcomes of the analyses. Moreover, the 2009-2018 decade was particularly significant for female presence on board of directors, which was incentivized after an increased awareness of the gender equality issue. In fact, in order to reduce the gender imbalance in upper echelons corporate positions, most of the European countries became more inclusive and some of them even introduced laws establishing gender quotas on boards of directors.

Thirdly, the geographic location of the companies in the samples is another relevant dissimilarity in the analyses. In fact, while Levi, Li and Zhang studied American companies, this thesis focuses on Europe: differences in demographic, economic, political and social factors may have had an influence on the results obtained.

Moreover, as regards the variables considered for the analysis, I took inspiration from the paper *Director gender and mergers and acquisitions*, but I decided to add two dummy variables (Male CEO and Male Chairperson) which are considered quite relevant in the extant literature assessing acquisitive behavior of firms. Nevertheless, in the empirical analysis they did not turn out to be statistically significant, perhaps because they had the same value (CEO and Chairperson being male) in the vast majority of the observations.

It is worth noting that in the paper *Director gender and mergers and acquisitions* by Levi, Li and Zhang all the statistically significant variables (with the exception of the proportion of women on boards) were linked to the performance of the firm. Some examples are book leverage, cash holding and logarithm of market capitalization which, as already underlined, is a proxy for firm size. This result is diametrically opposed to what emerges from my analysis, where the statistically significant factors are mostly boardrooms' attributes and features, except for ROA, that provides an overall indication of the company's profitability. From these findings it appears that there was a shift in the context of the decisive factors determining the choice of initiating a merger or an acquisition.

This indicates that the magnitude of the impact of board's features may be even stronger than expected when considering corporate strategic choices such as M&A.

Nevertheless, it is relevant to point out that it is quite surprising to notice that firm size (i.e. logarithm of market capitalization) is not statistically significant in any model of my analysis. On the one hand, this could be attributable to a poor choice concerning the proxy for the company size, even though I considered the same variable used in the work of Levi, Li and Zhang. On the other hand, this finding may indicate the increasing relevance of profitability indicators such as ROA at the expense of other firms' attributes.

It is not my intent to state that other performance indicators are not relevant for corporate strategic decisions, since it is likely that they will be considered and evaluated by the members of the board during the decision-making process. However, what emerges clearly by my analysis is that the real decisive factors are all linked to board characteristics such as the size of the board itself, the presence of independent members and the percentage of female directors.

Now that I have outlined the differences between my empirical analysis and the work of Levi, Li and Zhang, which was inspiring for the dissertation, I will go deeper into the explanation of the results of my analysis: the relevant positive impact that an additional woman in the boardroom has on the number of bid initiations.

As pointed out in the literature review on M&A in Chapter 2, male CEO *hubris* and overconfidence play a significant role when it comes to initiate a merger or an acquisition. Specifically, it is likely that CEO *hubris* or excessive overconfidence, generally attributed to the male gender, will increase the number of deals made. On the contrary, women are reported to be less overconfident than men and this generally leads to fewer deals initiations, resulting in female presence contrasting the male empire-building motive.

When observing the sample I used for the analysis, I noticed that CEO is a man in 96% of the firm-year observations. Hence, according to the literature for which CEO *hubris* is considered mostly a male attribute, I would expect to find evidence attesting the presence of overconfidence. Hence, the proportion of female directors should have a negative impact on bid initiations, in the attempt to contrast CEO *hubris*.

On the contrary, results show that women on boards increase the number of M&A, signaling the fact that perhaps CEO overconfidence is not a threat anymore. The increase of heterogeneity on board of directors may have contributed to limit CEO's overconfident behaviors. In fact, the average percentage of women on boards in my sample (17.33%) is almost twice the number reported for the precedent decade in the paper *Director gender and mergers and acquisitions* by Levi, Li and Zhang (9.50%). Moreover, when focusing only on Europe, it is evident that there has been a considerable increase in the percentage of women on boards, especially after European Commission started developing strategies to specifically tackle gender imbalance in 2010.

Furthermore, extant literature attests that the presence of opportunistic behaviors, dictated by overconfidence or *hubris*, is mostly enabled by a concentration of power in the hands of the CEO, who is often also the chairperson of the board.

For instance, in the work of Levi, Li and Zhang approximately 62% of the CEOs were also Chairperson of the board, increasing the likelihood of opportunistic behaviors motivated by overconfidence. Therefore, the results of their analysis, attesting that women reduce the number of bids because they are less overconfident than men, are plausible in that context.

As regards the sample I used for the research, in 78% of the firm-year observations, CEO and Chairperson of the board are role held by different people. This result indicates a reduction in concentration of power and, consequently, in the threat of CEO overconfidence.

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 the impact of the percentage of independent members on board. In fact, there are many factors influencing board of directors' dynamics and one of the most relevant one is the presence of independent directors.

Board independence has been proved to restrain acquisitions driven by CEO overconfidence and improve the strategic decision-making process (Kolanski and Li, 2013). Moreover, independent members are reported to reduce the likelihood of completion of a value-decreasing bid and increase the chances of taking corrective actions in case of a bad deal (Paul, 2007).

In the paper *Director gender and mergers and acquisitions* by Levi, Li and Zhang the fraction of independent directors on a board was negatively (yet not statistically significant) linked to the number of bid initiations. This result makes sense if considered in the light of the presence of CEO overconfidence, since it is likely that board independence will diminish the number of value-destroying deals.

In the sample analyzed, the average percentage of independent directors in the boardroom is 53.45%, slightly more than half of the members.

The results of the analysis show that there is a positive statistically significant relationship between the percentage of independent directors on board and the number of bid initiations. This result appears to be consistent with the premises outlined before. Since, according to the extant literature, 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 reasonable that female directors and independent members will both have a positive impact on acquisition intensity.

Moreover, as already highlighted, independent directors are more likely to reduce the initiation of value destroying deals motivated by CEO overconfidence. Hence, their positive impact on acquisition intensity may indicate the absence or weakening of CEO *hubris*.

Once I proved that proportion of female members on board of directors has a relevant impact on corporate decisions concerning mergers and acquisitions, I began wondering whether this impact varied across countries. In fact, the firms in the sample are located in six different nations (Italy, France, Spain, Belgium, Germany and United Kingdom), among which there are legislative, sociological, economic and demographic differences.

I investigated this hypothesis by introducing an interaction term between female share on corporate boards and the countries where companies are located. Specifically, I used two regression models, Model 3 and Model 4, to verify this assumption. However, I will only comment on the results of Model 4: it is the best model among the regression

analyses conducted, because it has the lowest AIC. This means that Model 4 is the closest model to the process that generated the data in reality, indicating that female proportion on corporate boards has a different impact on acquisitive behavior according to the country where the firm is located.

The results of the regression analysis show that the interaction terms are all statistically significant, except for the French one. Moreover, the magnitude and sign of the impact of female share on boards on acquisition intensity varies significantly across countries.

First, France is the only country for which the interaction term is not statistically significant. Therefore, any consideration about the estimated coefficient of the interaction would not have a real meaning. This finding is quite surprising, because France is the country with the highest percentage of women on board (24.17%) in the sample and I was expecting to obtain statistical significance when analyzing the interaction term.

Before going deeper into the possible explanation behind this finding, it is important to recall the evolution of female presence on French board of directors in the decade 2009-2018. In fact, as already explained in Chapter 1, in 2011 France introduced gender quotas on board of directors with the so called *Copé-Zimmermann Law*, namely *Act of 2011*.

The regulation established that there should be a 40% minimum quota of members of each sex on the governing and supervisory boards of companies³¹. This result was supposed to be achieved by 2017. In order to accomplish this goal gradually, a self-regulation mechanism, namely the *AFEP/MEDEF Code* was introduced. It stated that companies were supposed to reach a percentage of 20% of women on board either within three years from 2010, in case they were already listed, or within three years from the admission of firms' shares to a regulated market. The 40% minimum female quota was supposed to be reached within six years of either event. Therefore, for listed companies, the path towards the 40% female representation on board was divided into the following steps: (i) 20% gender quota to be reached by the end of 2013; (ii) 40% gender quota to be reached by 2017.

The percentage of women on French boards has increased dramatically since the introduction of the regulation. In fact, in the decade 2010-2018 France was the nation with the second highest increase (+31.7 percentage points) in the proportion of women

³¹ For the purposes of the dissertation, I will now focus on the measures in place for listed companies, since the sample falls in this category

on boards in the largest publicly listed companies in the EU. Moreover, in 2018 it was the country with the highest female share (44%) on boards in Europe.

Now the question naturally arises: why, despite the presence of this outstanding results, is the relation between female percentage on boards and their location in France not statistically significant in the empirical analysis?

The answer seems to lie in the question: the dramatic increase in the proportion of women on boards of directors indicates that France is in a different phase than the other countries. In fact, the nation adopted a more stringent approach towards gender discrimination on boards, imposing different stages to reach the quota goal. The empirical analysis covers the period 2009-2018, which was determinant for the transformation of French boards in terms of gender presence. In fact, in 2011 there was the introduction of the regulation, in 2014 (approximately in the middle of the decade considered) companies were supposed to have reached the 20% gender quota and in 2017 firms should have achieved the 40%³² female representation quota.

The presence of the 2014 intermediate stage appears to have created a sort of step, dividing the sample into two phases: one in which companies aimed at reaching the 20% quota and one in which firms attempted to achieving the 40% target. The presence of this step is the root of the results obtained with the empirical research.

In fact, the lack of statistical significance of the interaction term may be not due to an actual irrelevance of women on French boards of directors, but it may be caused by the presence of the 2014 step that divides the sample into two phases and makes it impossible for the empirical analysis to detect the effect of the interaction term.

To be precise, there may be also another step interfering with the analysis: in 2017 firms were supposed to meet the 40% female representation goal, potentially creating another division in the sample. However, I believe that the 2014 step was more determinant for the lack of significance for two reasons: (i) in 2017 not all the companies were able to meet the 40% target, (ii) 2017 is the ninth year of the decade considered, so the potential creation of two different phases in the sample would have been quite irrelevant.

Finally, France appears to be in a different phase than the other countries considered, because the stringent regulation for women's inclusion led to a dramatic increase in the

³² It is relevant to point out that in 2017 the 40% goal was not achieved by all companies: only 65% of France's 40 largest firms by market capitalization (CAC 40) had at least 40% of women on boards

percentage of women on board of directors, resulting in a higher female presence in comparison to the other nations.

As regards the interaction terms in the other countries, results show that they are all statistically significant, but their sign and magnitude vary significantly.

In Italy and in the United Kingdom 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 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. Their *hubris*, i.e. excessive overconfidence, leads to the initiation of more mergers and acquisitions deals, which often turn out to be value-detrimental for the bidding firm. However, an increase in heterogeneity on board of directors may limit significantly overconfident behaviors, especially if there is not a concentration of power in the hands of one person. In fact, when CEO and board chairperson are roles held by different people, it is more likely that the board will be able to monitor the situation more effectively.

In both Italy and the United Kingdom, the presence of male CEOs is really high in the sample, but chief executive officers are hardly ever serving also as chairmen 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 relation 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 relation between independent³³ directors on both Italian and British boards and the number of bid initiations. In fact, as already mentioned, board independence improves the strategic decision-making process and reduces the likelihood of completion of value-decreasing deals. Therefore, 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

³³ The percentage of independent directors in the sample is 51.66% for Italy and 60.24% for UK

on board increases the number of bid initiations by 32.58% in Italy, while in the UK the augmentation is only of 2.22%. This result may appear surprising if considering that the average percentage of women on boards in the sample is approximately the same in Italy (14.19%) and in the United Kingdom (14.90%).

The reason behind this phenomenon may be linked to the fact that the two nations chose diametrically different approaches to promote gender balance on corporate boards.

On the one hand, United Kingdom has never introduced a regulation to increase female presence on corporate boards with gender quotas. In fact, while the government opted for initiatives to encourage a change in culture, the executive search firms and the voluntary initiatives of the business community led to an increase in the percentage of women on boards.

Although this approach is different from the ones adopted in the other countries analyzed, it still led to an augmentation of the female share on boards. In fact, in the period 2010-2018 UK had an increase of 16.2 percentage points in the proportion of women on the boards of the largest publicly listed companies. Moreover, in 2018 the female percentage on British boards was 29.9%, which is a good result, if considering that it was obtained without the imposition of 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. This measure represented a big step forward for gender equality: Italy was the country with the highest increase (+31.9 percentage points) in female proportion on the boards of the largest publicly listed companies in the EU in the period 2010-2018. Moreover, in 2018 the female proportion on Italian boards was 36.4%, 6.5 percentage points higher than the British one.

Therefore, the difference in the magnitude of the impact of female proportion on acquisition intensity in the two countries may be due to the fact that Italy has achieved and is still achieving better results in less time as regards gender equality in the boardroom.

In fact, the countries appear to be in two different phases in terms of female representation: in 2019 Italy set a new goal: the achievement of 40% female proportion on corporate boards; in 2016 the British Government supported the *Hampton-Alexander Review* setting a minimum 33% target for women on FTSE 350 Boards to be achieved by the end of 2020.

Furthermore, as regards the other interaction terms, my empirical research shows that in Belgium, Germany and Spain the percentage of women on boards is negatively related to the number of bid initiations. It is worth noting that the magnitude of the impact is very little. For instance, an addition of a female director on corporate boards would decrease the number of bid initiations by 5.73% in Belgium, 1% in Germany and 0.20% in Spain.

As regards Belgium, the negative relation between female proportion on boards and acquisition intensity may be explained in light of the extant literature. In fact, as previously explained, CEO *hubris* or excessive overconfidence, considered a male attribute, leads 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, such as CEO duality, especially when independent members are a minority on boards. Belgium has the lowest percentage of independent directors (37.15%) among the countries in the sample and a considerable presence of CEO duality (in 11.67% of the firm year observations). It may be possible that this context would not provide enough limitations for opportunistic behaviors motivated by overconfidence. Therefore, the presence of a negative coefficient of the female proportion on boards appears reasonable, since it may be an attempt to limit CEO *hubris*.

As regards 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. In fact, although almost all the firms in the sample have a male CEO, Germany is the county with the lowest level of presence of CEO duality in the sample (0.61% of firm-year observations), signaling the absence of a concentration of power in the hands of the chief executive officer. Moreover, independent directors (64.75%) are the majority of board members and it is likely that their presence will 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 representation.

Therefore, it appears reasonable to believe that the negative sign of the estimated coefficient may be caused by specific contingent economic factors.

Finally, as concerns Spain, an additional woman on board would lead to a decrease of 0.20% in the number of bid initiations. Although the impact is very little, it is still a negative number. When considering the result in light of the extant literature, the negative coefficient appears reasonable. In fact, as already explained above, male CEO overconfidence may lead to an increase in the number of deals, often resulting in a loss of value for the company. This is more likely to happen when power is concentrated in the hands of one person, such as in presence of CEO duality. On the contrary, female directors are reported to be less overconfident than men, resulting in the initiation of fewer (and better) deals in the attempt of contrasting CEO *hubris*. In Spain almost all the firms considered have a male CEO and there is a high presence of CEO duality (in 38% of the firm year observations). These aspects, along with the fact that the average proportion of independent directors is well below 50% (38.66%) in the sample, may indicate the presence of a context where self-interest behaviors motivated by CEO overconfidence could take place. Hence, the negative impact of the female percentage on boards on the number of bid initiations may be due to an attempt to contrast CEO overconfidence.

Conclusions

The aim of the dissertation is to highlight the relevance of women's inclusion in the business field, especially in the upper echelons positions, where they are still under-represented.

I investigated whether the female proportion on board of directors has an impact on corporate strategic choices, such as the propensity to initiate a merger or an acquisition.

Strategic decisions regarding M&As are a double-edged sword for companies.

On the one hand, mergers and acquisitions could be an opportunity to enhance firm's value by entering new markets, expanding product portfolios and gaining complementary strengths and competencies, such as access to resources or R&D development. On the other hand, M&As are some of the most challenging and risky endeavors in which board members engage, with a failure rate lying between 70% and 90%.

Therefore, initiating a merger or an acquisition may affect the future of a company irreversibly and the board of directors has a primary role in the decision-making process. Moreover, according to the extant literature, board of directors' features and characteristics, such as board size, board independence and board composition, have a considerable impact on decisions concerning M&As.

I took inspiration from the paper *Director gender and mergers and acquisitions* by Maurice Levi, Kai Li and Feng Zhang and I conducted a research on 250 European companies, located in France, Italy, Spain, Belgium, Germany and the United Kingdom in the period 2009-2018.

Specifically, I conducted a negative binomial regression analysis to investigate whether the proportion of women on board of directors has an impact on the number of bid initiations made (i.e. corporate acquisition intensity). I developed a regression model taking into consideration independent variables concerning two main spheres: (i) boardroom's characteristics, such as board size, percentage of female directors on board, percentage of independent directors on board, CEO duality, male CEO and male chairperson; (ii) firm's performance indicators, such as sales growth, Tobin's Q ratio, ROA, book leverage, cash holdings and firm size.

First, results showed that the statistically significant variables are all boardrooms' attributes and features, with the exception of ROA, that provides an overall indication of the company's profitability.

This indicates that the magnitude of the impact of board's features may be even stronger than expected when considering corporate strategic choices such as M&As.

Although 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 my analysis that the real decisive factors are linked to board characteristics (i.e. the size of the board itself, the proportion of independent members, the percentage of female directors and the presence of CEO duality).

Specifically, the results of the analysis confirmed that women on boards *do* have an impact on corporate strategic choices concerning acquisition intensity. In fact, an additional woman in the boardroom increases the number of initiations by 12.86%.

This finding attests the relevance of female share on corporate boards and may be a little step forward in the recognition of the importance of women's inclusion.

In fact, women are still facing issues in accessing not only top-decision making positions (*glass ceiling* phenomenon), but, sometimes, also the labor market.

Norms about gender roles, for which men should work while women should be responsible for housework and childcare, have their origins in the pre-industrial period agricultural practices. Societies with plough agriculture developed the belief that women should take care of the house and the family instead of working like their male counterparts, because men's body strength and bursts of power were required to use the plough in the fields. This division of labor has affected significantly the role of women in society and in the labor market.

In fact, the root of these beliefs appears so deep that, even after a significant development of the economic and sociological context, gender division of labor is still present and nursing gender gaps, such as earnings and occupational differences between men and women. Hence, it is important to accelerate the still too slow process towards gender equality.

My research showed that the addition of one female director to the boardroom leads to a 12.86% increase in bid initiations, a result in contrast with literature's findings, according to which there is a negative relation between 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, who, on the contrary, are more prone

to engage in M&A deals in order to increase their own power and follow their empire building motives.

In fact, it is reported that CEO *hubris* or excessive overconfidence, generally attributed to the male gender, increases the number of deals made, especially in presence of a concentration of power, such as when CEO is also the chair of the board. 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.

As regards my 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. This indicates 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 board of directors may have contributed to limit CEO's overconfident behaviors. In fact, there has been a considerable augmentation in the percentage of women on boards in Europe, especially after European Commission started developing strategies to tackle gender imbalance in 2010.

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.

Moreover, this consideration appears reasonable also when observing board independence, which, according to the literature, restrains acquisitions driven by CEO overconfidence and improves the strategic decision-making process. The results of my analysis show that there is a positive statistically significant relationship between the percentage of independent directors on board and the number of bid initiations.

This finding is consistent with the premises outlined before. 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.

After observing the significant influence that women on boards have on the number of bid initiations made, I wondered whether this impact changed across countries. In fact, firms in the sample are located in different nations (Italy, France, Spain, Belgium, Germany and the United Kingdom), among which there are legislative, sociological, economic and

demographic differences. I investigated this hypothesis by introducing in the regression analysis an interaction term between female share on corporate boards and the countries where companies are located.

Results show that the interaction terms are all statistically significant, except for the French one. Moreover, the magnitude and sign of the impact of female share on boards on acquisition intensity varies significantly across countries.

First, France is the only country for which the interaction term is not statistically significant, meaning that any interpretation of the coefficient would be meaningless. This finding may be quite surprising, because France has the highest percentage of women on board (24.17%) in the sample, thus I was expecting to obtain a statistically significant interaction term.

However, the lack of statistical significance may not be caused by an actual irrelevance of women on French boards of directors, but it may be due to the fact that France is in a different phase than the other countries analyzed when considering gender presence on board of directors.

In fact, in 2011 France introduced the *Copé-Zimmermann Law*, a regulation stating that boards of listed companies should reach a 40% minimum quota of members of each sex by 2017. In order to accomplish this achievement gradually, a self-regulation mechanism was introduced, stating that companies should reach the 20% female quota on board by the end of 2013. Therefore, the 2014 appears to be an intermediate stage that created a sort of step, dividing the sample into two phases: one in which companies aimed at reaching the 20% quota and one in which firms attempted to achieving the 40% target. The presence of this step is the root of the results obtained with the research, because it makes it impossible for the empirical analysis to detect the effect of the interaction term. As regards the interaction terms in the other countries, in Italy and UK there is a positive relation between the percentage of women on board and corporate acquisition intensity. The considerations previously made about the positive coefficient still hold true. According to the literature, women are less overconfident than men 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. Their *hubris* is linked to the initiation of more mergers and acquisitions deals, which often turn out to be value-detrimental for the bidding firm. However, an increase in heterogeneity on board of directors may limit significantly overconfident behaviors, especially if there is not a

concentration of power in the hands of one person. In fact, when CEO and board chair are roles held by different people, it is more likely that the board will be able to monitor the situation more effectively. Although in both Italy and UK the presence of male CEOs is really high, 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 relation between female proportion 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 relation between independent directors on both Italian and British boards and the number of bid initiations. In fact, board independence improves the strategic decision-making process and reduces the likelihood of completion of value-decreasing deals. Therefore, 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.

Nevertheless, it is relevant to point out that 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%. The reason behind this difference in terms of magnitude may be linked to the fact that the two nations chose diametrically different approaches to promote gender balance on corporate boards.

On the one hand, the United Kingdom has never introduced a regulation to increase female presence on corporate boards with gender quotas, leaving room for voluntary initiatives of the business community. 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. This measure represented a big step forward for gender equality in this country and in 2018 the percentage of women on Italian boards in the largest public companies was 36.4%, 6.5 percentage points higher than the British one (29.9%).

Therefore, the difference in the magnitude of the impact of proportion females on boards on acquisition intensity in the two countries may be due to the fact that Italy has achieved and is still achieving better results in less time as regards gender equality in the boardroom.

In fact, the countries appear to be in two different phases in terms of female representation. In 2019 Italy set a new goal: the achievement of 40% female proportion on corporate boards, in 2016 the British Government supported the *Hampton-Alexander Review* setting a minimum 33% target for women on FTSE 350 Boards to be achieved by the end of 2020.

Furthermore, as concerns Belgium, Germany and Spain, the percentage of women on boards is negatively related to the number of bid initiations. Specifically, an addition of a female director on corporate boards would decrease the number of bid initiations by 5.73% in Belgium, 1% in Germany and 0.20% in Spain.

As regards Belgium and Spain, the negative relation between female proportion on boards and acquisition intensity appears reasonable in light of the extant literature.

In fact, as previously highlighted, male CEO overconfidence may lead to an increase in the number of deals, often resulting in a loss of value for the company. This is more likely to happen in presence a concentration of power, such as when CEO and board chair are the same person, especially when independent members are a minority on boards. On the other hand, women are reported to be less overconfident than men, resulting in the initiation of fewer (and better) deals, also in the attempt of contrasting CEO *hubris*. Belgium and Spain have low percentages of independent directors (respectively 37.15% and 38.66%) and a considerable presence of CEO duality (respectively in 12% and 38% of the observations). It may be possible that this context would not provide enough limitations for self-interest behaviors motivated by overconfidence.

Therefore, the presence of a negative relation between of the proportion of women on boards and the number of deals initiated appears reasonable, since it may be an attempt to limit CEO *hubris* and empire building motives.

As regards Germany, an additional female director on board leads to 1% decrease in the number of bid initiations. It is quite unlikely that the reasons behind this result are linked to CEO overconfidence. In fact, although almost all the firms in the sample have a male CEO, Germany is the county with the lowest level of presence of CEO duality in the sample, signaling the absence of a concentration of power in the hands of the chief executive officer. Moreover, independent directors are the majority of board members and it is likely that their presence will 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 German boards of the largest publicly listed

companies in 2018. This result is a good signal for women representation. Therefore, it appears reasonable to believe that the negative sign of the estimated coefficient may be caused by specific contingent economic factors.

In the end, the dissertation proved that women on 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 board of directors is positively related to corporate acquisition intensity, a result that appears to indicate the presence of a thorough decision-making process.

Furthermore, it was found that the magnitude and sign of the impact that female share on boards has on the number of bid initiations varies across countries due to sociological, economic and legislative differences.

Appendix

In order to investigate the effects of the independent variables on the number of bid initiations, some calculations should be made. In fact, 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 the each variable's effects in all the 4 Models are reported below.

By way of illustration, I 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 1.

First, I chose the type of effect I wanted to analyze: in this specific case, I 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 0.0126 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 1.1343 [=exp(0.0126*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 13.43% increase in the number of bid initiations.

Variables	Estimated coefficient	Type of effect	Calculation	Multiplication factor	Final effect
Percentage of women on board	0.0126	10 percentage points increase	=exp(0.0126*10)	1.1343	+13.43%
Board size	0.0720	1 additional member	=exp(0.0720)	1.0747	+7.47%
Percentage of independent directors	0.0045	10 percentage points increase	=exp(0.0045*10)	1.0460	+4.60%
ROA	0.0235	1 percentage point increase	=exp(0.0235)	1.0238	+2.38%
Sales growth negative group	-0.1546	If the firm belongs to this group	=exp(-0.1546)	0.8568	-14.32%

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

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

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

Variables	Estimated coefficient	Type of effect	Calculation	Multiplication factor	Final effect
Percentage of women on board: interaction with Italy	0.0301	10 percentage points increase	$=\exp(0.0301*10)$	1.3512	+35.12%
Percentage of women on board: interaction with Belgium	-0.0055	10 percentage points increase	$=\exp(-0.0055*10)$	0.9465	-5.35%
Percentage of women on board: interaction with Germany	-0.0010	10 percentage points increase	$=\exp(-0.0010*10)$	0.9901	-1.00%
Percentage of women on board: interaction with Spain	0.0005	10 percentage points increase	$=\exp(0.0005*10)$	1.0050	+0.50%
Percentage of women on board: interaction with UK	0.0015	10 percentage points increase	$=\exp(0.0015*10)$	1.0151	+1.51%
Board size	0.0748	1 additional member	$=\exp(0.0748)$	1.0777	+7.77%
Percentage of independent directors	0.0054	10 percentage points increase	$=\exp(0.0054*10)$	1.0555	+5.55%
CEO duality	0.1732	If present	$=\exp(0.1732)$	1.1891	+18.91%
ROA	0.0237	1 percentage point increase	$=\exp(0.0237)$	1.0240	+2.40%
Sales growth negative group	-0.1539	If the firm belongs to this group	$=\exp(-0.1539)$	0.8574	-14.26%

Table C: Model 3: Calculation of the variables' effects

Variables	Estimated coefficient	Type of effect	Calculation	Multiplication factor	Final effect
Percentage of women on board: interaction with Italy	0.0282	10 percentage points increase	=exp(0.0282*10)	1.3258	+32.58%
Percentage of women on board: interaction with Belgium	-0.0059	10 percentage points increase	=exp(-0.0059*10)	0.9427	-5.73%
Percentage of women on board: interaction with Germany	-0.0010	10 percentage points increase	=exp(-0.0010*10)	0.9901	-1.00%
Percentage of women on board: interaction with Spain	-0.0002	10 percentage points increase	=exp(-0.0002*10)	0.9980	-0.20%
Percentage of women on board: interaction with UK	0.0022	10 percentage points increase	=exp(0.0022*10)	1.0222	+2.22%
Board size	0.0752	1 additional member	=exp(0.0752)	1.0781	+7.81%
Percentage of independent directors	0.0053	10 percentage points increase	=exp(0.0053*10)	1.0544	+5.44%
CEO duality	0.1780	If present	=exp(0.1780)	1.1948	+19.48%
ROA	0.0259	1 percentage point increase	=exp(0.0259)	1.0262	+2.62%
Sales growth negative group	-0.1559	If the firm belongs to this group	=exp(-0.1559)	0.8556	-14.44%

Table D: Model 4: Calculation of the variables' effects

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