Does gender Matter? Female presence on Corporate Boards and how firm’s Financial Performance is affected.

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I hereby declare that the work submitted is mine and that where I have made use of another’s work, I have attributed the source(s) according to the Regulations set in the Student’s Handbook.

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Abstract

This dissertation was written as part of the MSc in International Accounting, Auditing and Financial Management at the International Hellenic University.

The observing role fulfilled by the board of directors is an essential corporate governance control mechanism, particularly in countries where external mechanisms are less well developed. The composition of the board based on gender can affect the quality of this observing role and thus the financial performance of the firm. This is part of the “business case” for female participation on boards, though arguments may also be framed in terms of ethical considerations.

While the matter of board gender diversity has captured researchers’ attention in recent years, most empirical results are based on U.S. data. This article is trying to focus to an increasing number of non-U.S. studies by investigating the link between the gender diversity of the board and firm financial performance in UK, which is a country that historically has had minimal female participation in the workforce, but which has now introduced legislation to improve equality of opportunities. We investigate the topic using panel data analysis and find that gender diversity – as measured by the percentage of women on the board and according to two more indexes– has a positive effect on firm value and that the opposite causal relationship is not significant.

Our study suggests that investors in UK do not penalize firms which increase their female board membership and that greater gender diversity can generate economic gains.

Key Words: board of directors, corporate governance, firm value, women, gender diversity
1. Introduction to the research problem

1.1 Introduction

The importance of effective corporate governance became a hot topic after the disclosure of the most high-profile accounting scandals and failures such as Enron, WorldCom, Arthur Andersen and Lehman Brothers. Despite the actions of some countries to enact guidelines or impose compulsory laws in order to increase the women’s’ presence on the boards of the listed companies, a wide number of boardrooms are still consisted of male directors. Owning to this social discriminating method, much attention and criticism have been pointed at those companies’ boards of directors’ due to the concern that male directors from the past fail to exercise the appropriate measures and independence of judgment to board decisions (Burke 2003).

The issues arising about board profiles stalks from the increased belief that diverse groups are likely to be more effective since varied opinions may enforce conversation, different innovative ideas and quicker decision making (Forbes & Milliken 1998). The organizational perspectives mentioned above ultimately constitute the basis for organizations that have a better financial performance. While some national capital market regulators, such as UK, Germany, and Australia, have introduced some recommendations and disclosure requirements, other countries, such as Norway, Spain, France, the Netherlands, and Italy, have by legislation a minimum requirement 40% of women’s participation in a company’s board of directors (Adams and Ferreira 2009; Rose 2007).

The intention of these regulatory interventions is to eliminate the social and labor grievances that women experienced over time and which use to exclude them from higher-scale jobs. Despite the indisputable progress that has been made, the female representation in boardrooms is still far from the desired levels. For example, in Germany it is observed that women own less than 10% of participation on supervisory boards in the 30 largest listed companies (Holst and Schimeta 2011), especially in the countries with non-mandatory gender quotas. It is important to
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mention at this point the benefits of board gender diversity from an economic and ethical point of view.

First, experts believe that diverse work environment keep employees more satisfied and encourage a combination of positive attitudes and behaviors which can lead to better decision making. It is a general belief that decisions are preferred when they are coming from diverse groups of people with diverse backgrounds and perspectives. A study from the Kellogg School of Management supports that belief by stating that groups of people of the same gender get worse results than heterogeneous groups because the resulting tension or discomfort leads to thorougher information processing.

Moreover, when an organization owns a reputation of being a pleasant workplace for diverse groups it automatically has an easier recruitment and selection process from today’s diverse hiring pool a fact that can save both money and time. Also, some people believe that women directors deal more effectively with risk depending on their nature, so the companies which promote women on higher positions can only benefit from them. Additionally, women can address in a more effective way concerns of customers, employees, shareholders, and the local community in general and they also tend to focus on long-term priorities.

Finally, considering the fact that women directors are likely to be more in tune with women’s needs than men are, can help a company or an organization to develop successful products and services. Because after all, we should consider that the women’s market is key to many industries because they make 41% of purchasing decisions. Women-owned businesses have a huge impact on our economy if we think that women control trillions of dollars of wealth and influence more than 85% of retail decisions. Summarizing, we can state that there is not a miracle worker for an organization. But, organizations should at least acknowledge that women can be as good and effective as men can. Women should at least be provided with the same opportunities as their male counterparts according to board seat participation, because it’s the fair thing to do and organizations which refuse to appoint women to their boards are stuck in the past and probably are missing out on some extraordinary talent.

[6] Board Gender Diversity and firm performance
2. Theoretical Background – Women in Governance – Diversity in Performance

There is a long way in literature history that indicates how the governance is connected to the gender diversity on the board of directors, focusing on the fact that poor governance means lower diversity, (Adams and Ferriera 2009, Benjamin E. Hermalin and Michael S. Weisbach 2003, Shivdasani, A. 1993, Warther, V. 1998, Tufano, P., and M. Sevick. 1997). The most analyzed perspective linked with the gender diversity is the agency perspective. We must mention that it is a topic that is hardly approached through independency characteristics. Kiel and Nicholson, 2004 believe that the one and only theory that explains the relation between diversity and performance, simply does not exist (Geoffrey C. Kiel, 2003). ‘The power of the board as a competitive weapon depends on the quality and the diversity of its directors’, (Gavin J. Nicholson, 2004). Based on this, there are three major theories that indicate the effect of gender diversity on the corporation’s performance, agency theory, the theory of resource dependency and the stakeholder theory.

Regarding the first one, the agency theory focuses on the relation between the agency and the principal. To the point, it puts emphasis on the conflicts that occur between owners and managers, because of the asymmetry of information. These conflicts can lead to agency costs. Thereafter, by applying a well-structured corporate governance, these costs are possible to be reduced and give a strong boost at the performance of the organization. According to Core 2006, ‘poor governance causes agency costs (e.g., managerial shirking, overinvestment, and perquisite consumption)’, (John Core, 2006). An heterogenous board can provide a wider range of views, thus decreasing the possibilities for agency costs through the gender diversity and so increasing the possibilities for higher value of the firm. However, there is a great dilemma here because there is not a clear linkage between board diversity and firm value. Hermalin and Weisbach state that a principal-agent model like that may provide many insights although it can be useless for explaining board-specific phenomena. For example, why the ratio of insiders to outsiders matters or changes: or why management seems to have such influence in the
selection of directors (Weisbach, 2003). Nevertheless, we have to admit that most of the empirical research and literature publications support that if a company or organization achieves greater corporate diversity it promotes a better understanding of the marketplace, because diversity increases creativity and innovation, deals effectively with problem-solving, improves the effectiveness of corporate leadership and encourages more effective global relationships.

The second theory, the theory of resource dependency, is one among those that should be considered as it associates the gender diversity with the firm’s performance. To be more specific, the resource dependence theory states that diversity can be a powerful weapon for accessing resources that are critical to the firm’s success and can foster its overall ability to problem-solving (Isabel Gallego – Alvarez, 2009). Moreover, according to this publication, another view close to the previous theory is the resource-based view that focuses on the synergies arising from the interaction of males and females and on diversity as a source of competitive advantage, (Isabel Gallego – Alvarez, 2009). Regarding although the resource dependence theory, it associates ownership and management with the company’s links relevant to its environment, (Reguera – Alvarado, 2015). Resources can diminish the dependency between the organization and external contingencies, lessen the risk for the firm, lower transaction costs, and finally contribute to the solvency of the firm, (Amy I. Hillman, 2003). This fact puts emphasis on the board’s ability to extend its independency, as the members set external links and resources to collect vital information for the company, (Siciliano, 1996). Gender diversity has a crucial role in expanding the directors’ ability to improve relations with competitors, customers and other industrial stakeholders, giving the opportunity for more information about the industry and more possibilities for access to finance, (Reguera – Alvarado, 2015). Thereafter, the theory of resource dependency, as well as the agency theory, suggests the gender diversity drives to more effective organizational performance.

The third theory, stakeholder theory is a perspective that emphasizes the interest of other stakeholders besides the shareholders (employees, investors, competitors, government regulation, customers, suppliers, education and financial institutions
and so on), something that creates value for the firm. Consequently, it is a factor that should be considered for the decision-making process, (Simionescu, 2015) as the firm has to reflect the stakeholders’ interests. At this direction, and with the target of maximizing the firm’s value, the existence of gender diversity on the board and other managerial and crucial positions is a sign of a stakeholder-oriented firm, (Elizabeth, 2016).

2.1 Gender diversity on boards and corporate governance

Reliable relations between the corporation and its interested parties such as employees, customers, suppliers, and their community are created thanks to good corporate governance. The sustainable development is founded on grounds of trust. The invasion of globalization in our life increased the mutual interdependence and as a result we take advantage of the resources and benevolence in our way to success. This practice can only be accomplished through ensuring their trust. In the economic field they key to success is the trust of global financial markets and of all the stakeholders in the value chain. Good corporate governance in action is characterized by the following qualities: consistency, responsibility, accountability, fairness, transparency and effectiveness. Through strategic guidance and oversight boards have the decisive role to ensure sustainable improvements in corporate valuations taking management decisions regarding their selection and change, whenever necessary. The board of directors constitutes the most important part of the governance structure, despite the fact that lineup between different interest groups is also partly determined by the legal framework. In a series of articles, La Porta et al. (1997,1998,2002) conclude that countries whose laws are based on the “common law” tradition (in the Anglo-Saxon countries) tend to protect investors more than those countries whose laws come from the “civil law” tradition. Moreover, as the OECD’S corporate governance factbook 2017 concludes, countries characterized by dispersed ownership holding share of global market capitalization do not no longer have the lead. After the implantation of the Principles of Corporate Governance in 1999, the market share of countries with concentrated ownership structures has increased from 20% to 34%. Ownership structures in corporations can have various
classifications. Generally, social enterprise ownership structures can be private, public or collective. Ownership can be either lead or define the legal structure of a social enterprise. A simple separation between “concentrated” and “dispersed” ownership cannot be enough to thoroughly understand the various types of ownership structures if we take into consideration its multiple levels. Even so, in order to define the corporate governance standards, the degree of ownership concentration at company level remains a determining factor.

Four countries (Australia, Ireland, the United Kingdom and the United States) are generally characterized as having mostly “dispersed” ownership structures. According to OECD calculations based on World Bank data, the total share of global market capitalization among these countries was diminished from 58% in the period of 1998-2002 to 49% in the most recent period of 2013-2015. Yet, these calculations cannot accurately measure the intention of companies all over the world adopting concentrated ownership structures. For example, even if USA is considered a country with dispersed ownership structures at company level in their majority, many of them have controlling owners, such as Amazon, Berkshire Hathaway and Facebook. On the other hand, Canada, Germany, Japan, the Netherlands and Switzerland have been reported to make use of a “mixed” ownership structure.

38 other OECD and non-OECD jurisdictions included in the Factbook indicate that the majority of companies are mostly governed by a controlling shareholder or group. According to OECD calculations based on World Bank data, the aggregate share of countries with predominantly “concentrated” ownership structures in global market capitalization presented and increase from 20% in the period of 1998-2002 compared to 34% in the recent period of 2013-2015. The growth of countries with concentrated ownership structures is actually based on the rapid development of capital markets in non-OECD G20 countries, whose share of global market capitalization increased from 4% (1998-2002) to recently 17%. The wide variety in ownership structures of individual companies and the changing nature of ownership characteristics in each country are identified irrespectively of the country classification. The most concerning issue in those companies with concentrated ownership structures, are “horizontal” agency
problems created between controlling and minority shareholders, while “vertical” agency problems between managers and shareholders may be moderated (Vermeulen, 2013). Countries having dispersed ownership structures have also brought provisions in purpose of enhancing minority shareholder’s protection in the threat of a controlling shareholder. An example of these provisions is met in the United Kingdom where the Financial Conduct Authority released, in May 2014, the following in order to improve the effectiveness of the Listing Regime: additional voting power for minority shareholders when electing independent directors where a controlling shareholder is present; and the requirement for an agreement between the company and a controlling shareholder to ensure that the company operates independently of its controlling shareholder. On the other hand, in the United States, listed companies with a controlling owner having the power to act veto in the board election, are not required to have a majority independent board.

Most of listed companies with concentrated ownership structures have a controlling shareholder. Trying to characterize a company having concentrated ownership, we need to keep in mind factors such as pyramid structures, family control, company groups, and state ownership. The table below presents some examples of ownership structure around the world.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Ownership Structure</th>
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<tbody>
<tr>
<td>Spain</td>
<td>In 35 listed companies (25.5% of the total), there is a controlling shareholder that holds the majority of voting rights. In 91 other listed companies (66% of the total), the sum of declared significant shareholdings, including shareholdings held by the Board, exceeds 50% of share capital, without any individual shareholder exercising control (CNMV, 2015). Total free float climbed to 43.4% in 2015 (42.9% in 2014).</td>
</tr>
<tr>
<td>Sweden</td>
<td>The control of a significant extent lies in the hands of domestic family groups, in different constellations, or other block holders. About 64% of listed firms have one shareholder with at least a 25% shareholding. State ownership is also quite significant.</td>
</tr>
<tr>
<td>Italy</td>
<td>Nearly 2/3 of listed companies are controlled by a single shareholder. The presence of widely held companies is still limited (5% of the total number of firms and 24% of total market capitalization). There is a sharp decline of the pyramid structure, shareholder agreements and non-voting shares in the last decade, possibly as a reaction to increasing market pressure (Consob, 2015).</td>
</tr>
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Since listed companies of the London’s Stock Exchange are the object of our research, it is worth noting some initiatives taken by the U.K. government regarding the female representation on the boardroom.

Few years ago, in 2011, the U.K. government assigned to Lord Davies to conduct an independent review of women on board. He recommended that by 2015, the target that should be accomplished by FTSE 100 companies is a minimum of 25 percent female board member representation. He outlined that this target is attainable since companies have made significant progress to this direction. His report recommended that FTSE 350 companies should challenge themselves by setting higher standards and live up to the expectation of exceeding this minimum. In other words, they should find ways and acts that will lead more capable and talented women to higher-ranked job positions in companies across the United Kingdom. Board chairs are asked to communicate these goals and CEOs to reconsider the minimum percentage of women on their executive committees in 2013 and 2015. The U.K. Financial Reporting Council responded to Lord Davies’ report by releasing two revisions to the U.K. corporate governance code demanding companies to present and annual report on their boardroom diversity policies and to include gender diversity criteria in the evaluation of board effectiveness. These changes on corporate governance code were valid starting on or after October 1, 2012. The 30% Club is a group of board chairs and organizations committed to bringing more women onto U.K. corporate boards. Their work is focused on the stimulation, debate, and influence of the political agenda.
sharing information and support of gender diversity in boardrooms along with related
groups such as the Davies Committee. Additionally, they monitor progress making
regarding the threshold of 30 percent female board representation by 2015.

In March 2015, the U.K. Department for Business, Innovation, and Skills issued an
update on progress. The report outlined an increase of 11% from 2011 regarding the
board seats belong to women (263 or 23.5% of FTSE 100). A research of Deloitte about
women’s participation on boardrooms globally gives us interesting results. More
specifically, 8.6% of FTSE 100 are executive directors and 28.5% are nonexecutive
directors. In contrast to the 12% in 2011 within the FTSE 100, 41 boards include at
least 25% women participation. All the FTSE 100 companies have at least one female
board member, in contrast to 21 percent all-male boards in 2011. There are still 23 all-

2.2 Board gender diversity and firm performance

The entity of the board is strengthened by the board diversity as this offers various
opinion aspects and skills. Many important discussions take place on boards. These
various opinion aspects presented in board with diversity limit the group thinking and
result in fully-developed decisions. There are two types of arguments in defense of
more female representatives in the board of directors: ethical and economic. In terms
of fairness and gender equality in corporate boards, it is considered unethical for
women not to be represented at the same level with me in boardrooms. The target of
higher women participation in board of directions should not be just an obligation, but
a continuous pursuit. On an economic basis, researchers argue that companies
avoiding women in higher-ranked job positions may deal with a financial failure. We
shall now continue by presenting the theory regarding companies’ precedence
considering they include gender diversity. The writers Robinson and Dechant (1997)
base their point of view on intuition. Despite the fact that their research is based on
diversity in general, including age, race and gender, we shall implement their theory
in the gender diversity in boardrooms. Firstly, in the context of chasing new markets
the gender diversity in boardrooms is in accordance with the gender diversity of
customers and employees and this means that diversified boards of director are in a privileged position to deeply understand markets and workforce. Therefore, someone would assume that the percentage of gender participation in boardrooms depends on industry sectors according to the cross-sector variation in the demographic composition of customers and employees. One unexpected finding noted by Brammer et al (2005) in their study of UK corporate boards is the fact women are more represented in industry fields that have a distance from final consumers, that are retailing, banking, the media and utilities-all sectors such as resources, engineering and business services, while as it was expected women constitute a minority in boardrooms whose workforce is controlled by men. Secondly, creativity and innovation are qualities that are highly connected with demographic indicators, such as gender and they are casually found in the population. Thirdly, gender diversity means variety of opinions and points of view that would improve the problem-solving process through various brainstorming. Being privileged with diversity and various perspectives, they could be aware of market complexities and enhance the decision-making process. Additionally, a firm with gender diversity in board takes a precedence regarding the public image of the corporation as this can have an impact to clientele, its promotion and finally, its performance (Smith et al., 2006). Carter et al. (2003) consider the link between board diversity and firm value in the context of agency theory, as outlined by Fama and Jensen (1983), and conclude that a firm with gender diversity would monitor better the managers and workforce in general. Further to their reasoning, women have a tendency to ask questions that would not be asked by male directors and this advantage could be interpreted to higher independence of the board. To the contrary, they argue that board diversity does not result in a better board monitoring as gender diversity despite the advantage of various opinions does not guarantee this outcome. Undoubtedly, if directors are chosen on basis of qualitative criteria without any bias, its quality will be improved considering selective criteria shall be education, professional experience and personality. Farrell and Hersch (2005) note that, an advantage for women is that they can choose more successful companies to be a part of, since female board representation is not something common. This can be interpreted as a beneficiary interdependence between female presence and firm value, although it is also possible that the two variables are
endogenously defined. On the other side, our research finds arguments that shows a negative effect on firms with greater gender diversity. Early and Mosakowski (2000) suggest that members coming from homogenous groups tend to communicate better as they are more likely to share similar perspectives. Under the same context, Tajfel and Turner (1986) and Williams and O’Reilly (1998) argue that homogenous groups tend to cooperate better and are not often involved in conflicts. As a result, taking into consideration that people with difference on background, gender, age and race are more usually driven to disputes because of their different opinions, the process of decision-making will become more difficult as it would demand more time and effort. Across various researches, we find contradictory findings: Nowell and Tinkler (1994) suggest that women tend to be more cooperative than men, while Brown-Kruse and Hummels (1993) believe the opposite. The likelihood of disputes may be also defined by the tendency to altruism, women and men have. Andreoni and Vesterlund (2001) argue that men are more altruistic than women when the cost of altruism is low and that the opposite is true when this cost is high. Moreover, regarding the firm performance, Giannakopoulos and Bernasek (1998) argue that gender diversity may lead to lower firm performance and women are not as willing as men to take risks, while Cox and Blake (1991) outline that women cause higher costs to the firm as they are characterized by higher turnover and absenteeism.

More gender diverse boards have also the tendency of creating smaller groups sharing the same opinions, e.g. “alliances under the common ground of gender. As a result, this practice may lead to more frequent disputes (Richard et al., 2004). This, of course can create problems when quick decisions are needed in a constantly changing competitive environment as business market (Williams and O’Reilly, 1998).

Although a gender diverse board may take decisions characterized by higher quality, this may not be enough to balance the slow decision-making process that gender diversity may cause. (Hambrick et al., 1996). After all these various arguments, we assume that the effect of gender diversity cannot be determined a priori since they are both positive and negative and have the same gravity. In addition to the above our findings are based on U.S. data and on empirical observation. For example, Shrader et
al. (1997) investigating U.S. boards found only negative associations between gender diversity and firm performance in some cases as they had hard time to connect these factors in a positive way. Carter et al. (2003) find a positive and a meaningful relationship between Tobin’s Q and the percentage of women on the boards of Fortune 1000 firms, after monitoring size, industry and other corporate governance measures. Erhardt et al. (2003) agree with the previous report as they managed to connect positively the female representation on boards of large U.S firms with return on assets and the return on investment, while a report by Catalyst (2016) finds that Fortune 500 companies with the highest percentage of women on highly ranked job positions present increased returns on equity and total shareholder returns. Farrell and Hersch (2005) don’t identify any significant impact on stock market by the higher female representation and conclude that this phenomenon did not occur after actual need, but only because of call for greater diversity. Other researches outside U.S.A. such as the one conducted by Du Rietz and Henrekson (2000) shows that there is no connection between female participation in boards of Swedish firms and performance indicators such as profitability, employment or orders growth across various in size and industry corporations. Another two studies over Danish firms conclude to the same result as they could not identify any relationship between increased female boards seats and performance-measured factors (Smith et al. (2006) and Rose (2007).

To the contrary, Bohren and Strom (2005) analyzing Norwegian firms assume that there is a negative impact of women representation on firm performance. In a wider study of the 500 largest firms from three Scandinavian countries-Denmark, Norway, and Sweden, Tobin’s Q. Randay et al. (2006) consider that gender diversity does not significantly affect the stock market performance or on the return on assets.

The aforementioned conflicting results can be explained in many ways. Firstly, since these studies were conducted in different time periods and countries, we have to take into consideration that firm performance may be affected by these factors. Secondly, the researchers might have used various estimation methods that can justify this mixed evidence. In other words, all studies did not all consider the same factors such as size and leverage, while there must be other important indicators regarding firm performance that were not taken into account. Therefore, we hope that our study will
be more reliable using panel data and not just various studies over different industry sectors.

3. Literature Review

3.1 Historical and compliance factors that affect women representation on boards of directors

The controversial topic about how women can be as directors has centered on a lot of questions. More specifically, there have been inquiries about whether one can find good women easily, whether they may have limited skills or whether their absence reflects cronyism and established social and cultural patterns (Pajo, McGregor and Cleland, 1997).

In spite of the fact that more and more educated women are entering the workforce, increasing their buying power and influence, they continue to represent only a small proportion of leadership positions in business (Catalysts, 2004). Bradshaw & Wicks (2000) assert that women have all the experience, credentials or skills required in order to be leaders, “but they lack the demographic similarities that boardroom gatekeepers assume will minimize social uncertainty in governance.” (Ronald J. Burke, 1994) "Women on Corporate Boards of Directors: Forces for Change?", Women in Management Review, Vol. 9 Issue: 1, pp.27-31)

3.1.1 Hegemony

Bradshaw and Wicks (2000) believe that hegemony is often invisible or even taken for granted as it has been greatly integrated in social structures and policies, dogmas and cultural artifacts. These authors equate the “old boys club” to hegemonic manliness. Leighton (1993) states that the “boys club” and the fact that women were excluded, is due to antiquated systems where well- educated and socially homogenous groups of white males choose as directors’ people with similar backgrounds whom they know and trust. Kanter (1977) called this process “homosocial reproduction” and Zajac & Westphal (1996) referred to it as “self-cloning".
3.1.2 Recruitment

According to US data, while it is vital that women representation in corporate management should increase, this increase cannot be achieved using proportionate representation (Burke and Mattis, 2000). Natividad (2006) reminds us that the director recruitment process is still an informal referral system among male directors by tradition. This in combination with the fact that the search for board members tends to focus on certain parts of the organization, specifically the line positions with profit and loss responsibility and overlooks others (McCall, 1998). While women are not proved to be less capable of pursuing managerial careers than men (Powell, 1990) they usually hold support roles instead of management ones that generally have a higher status. (Vinnicombe et al, 2000).

Directors are more often selected for their personal, social or business ties, or even for their ability to add symbolic luster to a company’s board. “Think director, think male” characterizes the procedure which suggests that directors recruited have the same characteristics as their present incumbents (Kanter, 1977). Stephenson (2004) believes that many companies recognize the fact that diversity fosters ideas and learning thus establishing strategies to recruit directors coming from different cultures and backgrounds, (in SA, especially companies procuring services from government). However, males continue to dominate in boards. In the majority, they are white males being of the same social backgrounds and sharing the same circles of influence and views (Stephenson, 2004).

3.1.3 Social stereotyping

According to Burgess and Tharenou (1997), the limited women representation on Australian boards is due to social stereotyping and statistical discrimination. A common comment about the lack of women is that there is not a sufficient number of qualified women, capable of participating in boards (Elgart, 1983, McGregor, 1997), while the lack of profile and visibility of women has been suggested as a problem (Mattis, 1993). In workplace, stereotypes based on gender can be really harmful. The research conducted by Catalyst (2005) called Women „Take Care“, Men „Take Charge“.
exposed that stereotyping still exists amongst U.S. business leaders perpetrated by both men and women. Stereotypes can hinder women’s advancement, setting obstacles to acquire leadership positions. Catalysts (2005) concludes that these obstacles are due to the common beliefs that portray women to lack the qualities commonly associated with effective leadership.

3.1.4 Shareholder activism

Shareholders can impose their authority even if they do not run a company and they are often able to affect a corporation’s decisions by exercising their rights as owners. They can influence both board of directors and management in many ways; from expressing their concerns about an issue by holding a dialogue, to submitting formal proposals at a company's annual meetings.

Good governance is a mixture of the enforceable and intangible (Wagner, S. and Dittmar, L., 2006). Currently, there is no penalty in case women are excluded from corporate boards (Burke, 1994b), but more and more investors and shareholder associations are exerting pressure to boards so that they will increase woman representation, especially in managerial positions (Investor Responsibility Research Center, 1993). Institutional investors and shareholder activists are increasingly pressurizing companies to choose directors with diverse backgrounds assuming that the greater managerial diversity is the better board decision-making will be achieved (Westphal & Milton, 2000, p.366).

3.2 Environmental factors that affect the configurations of boards of directors

The board of directors is a group of individuals having diverse backgrounds and characteristics who act as a link between the owners or the shareholders and their agents. They are legitimately appointed by shareholders, having as their main duty to monitor the management and provide advice (Truong, 2006). In other words, boards of directors act independently from managers and they monitor them in order ensure that the latter do not pursue their own interest at the expense of other shareholders.
Boards of directors account for the company’s performance as well as its strategic movements and its internal control. Strategy comprises company’s plans to achieve its goals and each strategic movement should be in alignment with the characteristics of each organization. As demonstrated in the figure 3 below, strategy serves as a link between the organization and its environment.

As far as strategic thinking is concerned, it involves a thorough analysis of a corporation related to its industry, its competitors and its environment in both the short-term and the long one (Collis & Montgomery, 2005). That is why, each board member should meet the strategy of a corporation, something which suggests that the board comprise a group of individuals with diverse skills, knowledge and experience. (Conger, Finegold and Lawler, 1998a). Undoubtedly, the success of any corporation is determined by the quality of its leadership (Adam & Khoza, 2005).

3.2.1 Agency Theory

In 1932, Adolph Berle and Gardiner Means established the agency theory and noted the consequences of the separation of ownership and control, which are that shareholders (owners) typically want to maximize earnings, whilst managers (agents) want to maximize the firm size (Collis & Montgomery, 2005). Agency theory argues that when given decision rights, self-interested managers may take decisions that serve their own interest acting at the expense of the company’s good. Collis & Montgomery (2005) suggest that monitoring and control systems should arise in order to avoid the dangers of wrong decision makings. According to Colley, Jr. et al (2003), all those being would-be members of the board must have integrity and morality, as shareholders give them the authority to act on their behalf. (Colley, Jr. et al, 2003). Boards of directors connect the shareholders of a firm with the managers which are in charge for the function of the firm (Monks & Minow, 1995).

The board of directors, no matter which the type of the organization will be, should have all the important skills and experience in order to help company achieve its goals and objectives (Colley, Jr. et al, 2003).
Burke (2000) clarifies that boards are responsible for affecting strategic decisions and monitoring managers’ strategic movements, but they have nothing to do with the implementation of these decisions for the administration of the corporation. The rationale for a structure of boards of directors and the role that they play in organizations, according to Burke (2000), is the belief that a group of people with diverse knowledge, experience and skills is better than a single member. The poet Ezra Pound once said, “When two men in business always agree, one of them is unnecessary”. There are a lot of times when board members prefer to exercise an advisory role rather than a monitoring one. Firstly, this is because CEO and/or management are those who appoint directors, thus making them feel uncomfortable to evaluate the people who nominate them, particularly when management performance is substandard (Johnson, Daily, Ellstrand, 1996).

3.2.2 Board responsibilities

According to Conger, Finegold and Lawler (1998), the most important activities and responsibilities of corporate boards are the following:

• Being responsible for business strategy development.

• Being in charge of seeing that the company has the highest caliber Chief Executive Officer (CEO) and executive team and senior managers are being prepared so that they will become the next CEO.

• Ensuring that senior management is well informed about whether the company is meeting its goals and conforming to external legal and ethical standards and its own values.

3.2.3 Board profile

Board composition is a serious concern as it plays a key role in framing the balance of power between company managers and directors. The composition of boards varies from country to country as no company is wholly insulated from its political or economic environment. The discernible characteristics of board structure are made
of the board size, leadership, committees, skill sets and diversity. Few years ago, there was a general belief that board seats were premium assignments, bringing status and financial rewards, but not requiring a lot of effort. Yet, directors nowadays face increased legal liability for negligence and thus a heavier workload. Nadler et al (2006) express concern that just when boards need them, the most, highly qualified, independent directors are getting harder to find especially as new corporate governance principles require most of board members to be outside (non-executive) directors and to adhere to a stricter definition of independence. As a result, the search is no longer amongst “the usual suspects” with business connections with the company and its CEO. In addition, a major change is that the nomination process is no longer under the control of the CEO, but the nomination committee composed of independent directors. Therefore, appointing outside board members in no longer an informal and incestuous process (Nadler et al, 2006) which opens opportunities for women to be invited onto boards. Leaving in an era in which the demand for women board members significantly exceeds supply Burke (1994c) states that not enough women have sufficient business and executive experience as they have chosen career paths which do not lead to board selection. Too many women have chosen staff jobs instead of line management (Mattis, 1993) which are not usually targeted when recruiting for board positions. This is an era of triple bottom-line reporting, the “softer” considerations should not be removed from discussions of corporate strategy and direction as they are in fact hallmarks of enduring corporate success (King Report 2). Executive search firms are flourishing because of the demand for leadership talent (Charan, Drotter & Noel, 2001). This war for talent is an indication that there has been a lack of effective talent development within organizations which has contributed to the leadership deficit. There is a need for companies to focus on intervention strategies to promote equity at board level. Women, however, do not always have access to the experiences that would best develop their executive abilities, so organizations need some mechanism or process that determines who gets what experience (McCall and Hollenbeck, 1998). All these changes and interventions should open opportunities for women on boards, including those in support roles.
3.3 Studies in women representation on boards of directors around the world

The available literature, which examines women corporate directors, is small, scattered and piece-meal (Burke, 1994; Burke and Mattis, 1997). This is a common characteristic of studies focusing in new areas of research. Data exist predominantly from the USA, Australia, Canada, UK, New Zealand (NZ), and SA and in the recent years from Scandinavian countries and are highlighted in this literature review. Some countries have investigated women’s progress more systematically than others (Catalyst, 2003, 2005; Singh and Vinnicombe, 2005).

The Catalyst census 2004 found that women on boards of directors in Australia were 8.4%, in the USA 13.6%, and in Canada 11.2%. Singh and Vinnicombe (2003) observed that in the Scandanavian countries, in early 2002, ministers proposed legislation if private companies did not have at least 40% of female representation on their boards by 2005. Whereas in May 2002, women comprised 7.5% of directors in the top 300 companies, in a pre-emptive response to the threat of legislation, by 2003, women held 18.8% of all top 100 company directorships and 10.7% of executive positions (Singh and Vinnicombe, 2003).

3.3.1 USA

Catalyst (2005) which has been conducting benchmarking research on women on boards since 1993 found that in the USA, although women make up more than 45% of the US workforce, they were managers in only seven Fortune 500 companies and only ten Fortune 501 – 1000 companies. Catalyst (2005) observes that while women appear more and more in the economy as business owners, investors, employers and employees or consumers, they do not have the same access to corporate boardroom in US companies. More specifically, as consumers, women are responsible for over 80 percent of all purchases of goods and services (Popcorn & Business Women’s Network, 2001). As investors, they represent over 45 percent of all investors (National Association of securities Dealers, 2001) and as managers, they consist of over half of all financial managers and accountants in the US (US Bureau of Labor Statistics, 1999).
Similarly, as company owners, they possess over ten million companies (over 45 percent of all US companies). (Center for Women's Business Research, 2003). However, although more and more women possess director seat, progress is still slow. (Catalyst, 2003).

Fairfax (2005) contributes to the representation of women on boards’ literature by breaking down the marginalised groupings further. She compares the representation of women with that on people of color, concluding that both have experienced some increase in board representation as time passes. Yet, the people of color, especially women of color, seem to have experienced the most significant obstacles. Fairfax (2005) highlights the irony in the fact that women have progressed better than the people of color even though the women’s entry into board ranks was advanced in part by the struggles of people of color during the Civil Rights Movement. In 2003 and 2004, people of color held 10% of board seats at Fortune 500 companies. This percentage is relatively low if it is compared to that of people of color in the labour force where they are 30% (Fairfax, 2005).

### 3.3.2 United Kingdom

In the UK, in 2004, women accounted for 10% of FTSE 100 board positions and 4% of executive and 13% of non-executive directors (Female FTSE Report 2004: Cranfield School of Management). Thomson and Graham (2005) present breakthrough research concerning the real reasons why there are so few women as executive and non-executive directors in the UK. The authors use discussions with Chairmen and CEOs from both FTSE 100 and Fortune 500 companies, who are those nominating board members, reaching the conclusion that there is no conspiracy or deliberate attempt to keep women from the managerial positions.

Thomson and Graham (2005) found that there are a lot of reasons why there are only a few women in managerial positions. These reasons interact in many ways being either historical or organizational. Some others have to do with differences prevailing in society concerning male and female minds. That means that there are differences in the way males and females think, act and deal with various situations. One cannot
ignore the deep-rooted roles assigned to women by nature and society, which contribute to their scarcity at the top of companies (Thomson and Graham, 2005, p.3).

Many CEOs and Chairmen interviewed expressed the benefits of having women in managerial positions. Thomson & Graham (2005) conclude that if women were given the opportunity to participate more actively in companies’ guidance and governance, there would be more economic growth and development.

3.3.3 New Zealand

Jayne (2005) says that women constitute almost half of NZ's workforce and even though they also dominate tertiary graduation statistics; they are still not adequately represented in public company boardrooms. Jayne (2005) asserts that women currently hold about one in every 20 directorships.

According to Jayne (2005), in NZ, the women representation divide is between the public and the private sectors. The Crown Company Monitoring Advisory Unit (CCMAU) plays a key role with regards to governance processes for state-owned enterprises. The CCMAU had in the past used general advertising as a means of characterizing applicants, but this brought up unsatisfactory because many names were gathered of people who always wished to be directors, but most were not appropriate, and the process tended to raise expectations which could not be readily fulfilled (Adam & Khoza, 2005). Jayne (2005) attributes the higher proportion of women representation in public companies to the fact that the Former Prime Minister, Jenny Shipley championed affirmative action in Crown companies resulting in the number of women directors reaching 35 percent in 2005. Jenny Shipley pushed for gender and ethnic representation on government boards and committees so that they reflect NZ's demographic makeup. The political will to increase women representation on boards continues under the auspices of the Ministry of Women's Affairs which operates a Nominations Service that keeps the issue of women representation on government bodies high on the agenda and has a target of 50 percent women representation by 2010 (Jayne, 2005).

4. Research Methodology
4.1 Data and methodology

4.1.1 The dataset

Our dataset includes 139 UK observations of non-financial firms listed in the London Stock Exchange, being analyzed for a 5-year period (2012-2016). For obtaining our final sample we applied a selection procedure including several filters. Below, we are describing them step by step. First, financial firms were decided to be excluded as their financial statements have a specific structure that does not allow for comparing to the statements of other firms. Secondly, we decided to include in our sample those entities that have positive current market capitalization as we apply a Tobin’s Q regression. Third, we eliminated those observations with outliers for any variables considered through the time under our empirical study. Continuously, we collected those firms that were headquartered in United Kingdom and had female presence percentage (on Board of Directors) information published for at least one year of the period under investigation. Finally, we decided to focus on a specific country (UK) as we use country information (as GDP) for the regression to take into consideration law and economic crisis effects on firms’ financial performance.

The financial information of the companies was gathered from Amadeus and Thomson Eikon Reuters databases. Moreover, data on the composition of the board of directors regarding the gender characteristics, were derived from the corporate governance report of each company analyzed. Individual financial statements have been used in the case of non-consolidated financial statements. The figure 1 below, shows the sample by sector.
Since our research is related to the gender diversity and the presence of females in the Board of Directors, the following table provides information about the percentage of women representation in BOD annually for the years between 2012 and 2016:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Firms</th>
<th>Mean Female Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>121</td>
<td>12.90%</td>
</tr>
<tr>
<td>2013</td>
<td>124</td>
<td>15.15%</td>
</tr>
<tr>
<td>2014</td>
<td>123</td>
<td>19.55%</td>
</tr>
<tr>
<td>2015</td>
<td>135</td>
<td>19.73%</td>
</tr>
<tr>
<td>2016</td>
<td>138</td>
<td>21.30%</td>
</tr>
</tbody>
</table>

It is of major importance to mention that although the percentage of female presence in the boardroom seems to increase from 2012 to 2016, the number of the firms with published information relevant to gender characteristics increases too. This was one of the difficulties that we faced, as we cannot be sure about the actual reason of female percentage incensement. However, what is observable through the table 1 is that the number of firms’ growth rate is typically lower than the female percentage one. Without doubt, this table confirms the women’s under-representation in the boardroom, which is in line with the ‘WOMEN IN UK FINANCIAL SERVICES 2016, by Yasmine Chinwala, 2016, regarding women’ underrepresentation. Comparing 2012 to 2016, the percentage of women presence
was increased by 8.4%. Generally, these results demonstrate that in UK, there is still minimal presence of women on boards. Unfortunately, we had not the opportunity to find the exact number of men in boardrooms, so we moved through their proportionate percentage, which seems to decrease from year to year. According to a 2016 review of 1,000 listed companies by Bloomberg, the average representation of women in the leadership was 23% in senior management, 21% on boards, 4% have a female chairperson, and 3% have a female CEO, (LSEG, *March 1, 2017 New York*).

### 4.1.2 Variable description

The approaches applied by previous studies and researches regarding the measurement of the financial performance and its relation to women’s presence on the Board of Directors vary a lot. The main well-identified approaches are the following: studies using accounting data as base for measurements and researchers using Tobin’s Q. Comparing these two choices, we decided to use Tobin’s Q approach (TOBINSQ) as a searching measurement for our firms’ financial performance. The formal definition of Tobin’s Q ratio is as follows: 

\[
Q = \frac{\text{Total Market Value}}{\text{Firm's Total Asset Value}}
\]

Obviously, if Q is higher than 1, the firm is worthy for investment. If Q ratio is between 0 and 1, this means that the cost to replace a firm’s assets is greater than the value of the stock, which consequently is undervalued (Investopedia). On the other hand, a high Tobin’s Q ratio leads to the fact that the firm’s stock is overvalued as it is more expensive than the assets’ replacement cost. So, we concluded that it is a representative proxy for the stock valuation and of course a major driving factor for investment decision making. It measures the company’s competitive advantage as it indicates the market’s forecast of future earnings (Montgomery and Wernerfelt 1988). Thereafter, higher value of Tobin’s Q ratio means higher financial performance for the firm. In accordance with several studies such as Lopez and Morros 2014; Coles et al. 2008; Fich and Shivdasani 2006; Haniffa and Hudaib 2006; Ferris et al.2003, we decided to follow the same path.
To compare the presence of women in the boardroom to the total number of members, we created the TAMCAD variable. TAMCAD measures the board size (total number of members) and to continue our study we examine how this is relativized to the women’s percentage in the BOD. Using as guideline the research methodology applied in the article: ‘Does Board Gender Diversity Influence Financial Performance? Evidence from Spain’, by Nuria Reguera-Alvarado, Pilar de Fuentes and Joaquina Laffarg, 2014 (even though it is a research for Spanish Companies), we created three variables as proxies for the description of gender diversity in the boardroom. The first one is the PWOMEN variable, which measures the women’s presence in the board of directors in a percentage form. Thereupon, according to Reguera 2015 (Does Board Gender Diversity Influence Financial Performance? Evidence from Spain’, by Nuria Reguera-Alvarado, Pilar de Fuentes and Joaquina Laffarg, 2014) as well as Campbell and Minguez-Vera (2008), we calculate two further variables that take into consideration the distribution evenness of the boardroom’s members between the two gender categories (male and female). At this point, we have to mention that while in the ‘guide – article’ (Does Board Gender Diversity Influence Financial Performance? Evidence from Spain’, by Nuria Reguera-Alvarado, Pilar de Fuentes and Joaquina Laffarg, 2014) these two measurements are calculated as proxies for the gender diversity and combines them in one variable, in our study we choose to use them as two separate variables for our regression. Analyzing them, according to Stirling 1998, we try to combine the two categories of gender diversity and their distribution in the boardroom to examine the variety or the balance in it. The first variable is the Blau Index, which is calculated by the following equation:

$$\text{Blau Index} = 1 - \sum_{i=1}^{n} P_i^2$$

where $P_i$ is the percentage of board members in each one of the two categories (male and female), and $n$ is the total number of board members. Blau Index can seems as valued between 0 and 0.5 (maximum), with 0.5 meaning that the number of women and men is the same. The second variable is the Shannon Index, which is calculated as follows: Shannon Index = $-\sum_{i=1}^{n} P_i \ln P_i$, where $P_i$ and $n$ have the same meaning as in Blau Index. Shannon index ranges between 0 and 0.69, with 0.69 as maximum value and meaning equal presence of men and women in the boardroom. In addition to these, we decided to include eight more variables in our research. Initially, in accordance with Navarro and Martinez (2004)
and posterior Reguera 2015 (Does Board Gender Diversity Influence Financial Performance? Evidence from Spain’, by Nuria Reguera-Alvarado, Pilar de Fuentes and Joaquina Laffarg, 2014), we calculate the LNTAB variable which is used as a proxy for the firm’s size and is calculated as the natural logarithm of total assets for each one of the firms of our sample. Secondly, we decided to turn our interest to operating revenue (sales). Consequently, the next variable used is LNOPER which is calculated as the natural logarithm of operating revenue. Operating revenue is revenue (sales) generated from a company’s daily business activities, which means revenue coming from selling the company’s products or services (Investopedia – Operating Revenue). Our next step combines two ratios, so we decided not to include EPS (Earnings per Share) as a variable, which is a key ratio for evaluating a firm’s stock price, but operating revenue as it is a primary source for EPS calculation. The two ratios mentioned above are ROA and ROE, which represent two variables respectively. Higher ROA means higher profitability and gives an idea about how efficient management is at using the firm’s assets to generate earnings. Combining it with percentage of women in boardroom and the previous variables we examine its contribution to Tobin’s Q configuration (Does Gender Matter? Female Representation on Corporate Boards and Firm Financial Performance - A Meta-Analysis, Jan Luca Pletzer, * Romina Nikolova,3,4 Karina Karolina Kedzior,4,5 and Sven Constantin Voelpel, 2015). Similarly, ROE is used as a profitability index which explains the relation between the capital provided by the shareholders of the firm and the profit derived from the effective exploitation of this capital. Consequently, it is relative to the effective management. Furthermore, as in Reguera 2015, to take into consideration, the effect of the economic crisis on a UK firm’s financial performance, we decided to include a variable named GDP, obviously representing the country’s annual GDP and one more named UNERATE representing the annual unemployment rate of United Kingdom. Finally, we define two more variables: the lagged variable named LAG_TOBINSQ, which is used in order to examine the endogeneity as well, and the dummy variable RECOMVDUMMY. The last one, is designated according to the mean of the women’ percentage of presence in the board of directors. The benchmark is 0.25. To be more specific, we found that according to Lord Davies’ report (2015), UK FTSE 100 firms’ presence of women had

[30] Board Gender Diversity and firm performance
reached 25% since 2015, a target that set by Lord Davies in 2011. So, we decided to use it as milestone, taking into consideration the UK law, (GOV.UK, Lord Davies: FTSE 350 boards should be 33% female by 2020, October 2015).

4.1.3 Instrumental Variables

As previously mentioned, and according to literature sources (Adams and Ferreira 2009; Campbell and Minguez-Vera 2008), there are problems related to endogeneity, existing between a firm’s financial performance and the presence of women in positions of major importance. This lead as to examine how gender diversity affects the financial position. We decided to use instrumental variables correlated with the women’ presence in BOD. Consequently, we had to define and select these instruments among the variables of the main equation. It is worth mentioning that there was a substantial straightness in our methodology as the variables to be selected were already existing, making our ‘choice’ decisive for the results. According to Stock, James H.; Trebbi, Francesco (2003). "Retrospectives: Who Invented Instrumental Variable Regression? Journal of Economic Perspectives. 17 (3): 177–194 the method of instrumental variables is used to identify causality and endogeneity problems when a treatment is not successfully delivered to every unit in a randomized experiment. A valid instrument induces changes in the explanatory variable but has no independent effect on the dependent variable, allowing a researcher to uncover the causal effect of the explanatory variable on the dependent variable.

According to Baum (2006) and Reguera 2015, an instrumental variable is considered as valid if it is not correlated with the error term of the main performance equation, except through control variables included in the regression and if it is correlated with the endogenous variables (PWOMEN, BLAU, SHANNON)’. Under these conditions, we decided to set as instrumental variable the LAG_TOBINSQ, standing up for the hypothesis stating that if the endogenous variables affect the LAG_TOBINSQ, it is expected to act in this way in a future level of several years.

4.1.4 Methodology
As previously mentioned, this study is based on the Reguera 2015 article. Therefore, we decided to apply a methodology including steps like those suggested. To examine the influence of the board’s gender diversity on the financial performance of the firm, we implemented a two-stage instrumental variable regression. Regarding the first stage of this methodology, the instrumental variable regression (IV) is based on an Ordinary Least Squares analysis (OLS), examining how each one of the independent variables affect the independent one (TOBINSQ). Regarding the second stage of our research, we apply two tests: the generalized method of moments (GMM) and the two-stage least squares analysis (2SLS) which will be analyzed in a subsequent stage. The target is to examine the possibility of endogeneity and causality existence related to relations between the women percentage of presence in the boardroom and the financial position of the firm. To address this concern, GMM test is applied for examining the endogenously determined factors, Baum et al (2007). Throughout the implementation of the two-stage instrumental variable analysis, we conclude to the following equation which includes all the selected variables, considered as determinant for a firm’s financial performance:

\[\text{TOBINSQ} = \beta_0 + \beta_1 \times \text{PWOMEN}_{it} + \beta_2 \times \text{BLAU}_{it} + \beta_3 \times \text{SHANNON}_{it} + \beta_4 \times \text{LNTAB}_{it} + \beta_5 \times \text{LNOPR}_{it} + \beta_6 \times \text{ROA}_{it} + \beta_7 \times \text{ROE}_{it} + \beta_8 \times \text{GDP}_{it} + \beta_9 \times \text{UNERATE}_{it} + \beta_{10} \times \text{LAG}_\text{TOBINSQ}_{it} + \beta_{11} \times \text{RECOMVDUMMY}_{it} + \epsilon_{it}\]

where \(i\) represents each one of our sample’s firms and \(t\) means time (each one of the years under investigation), TOBINSQ measures the firm’s performance, PWOMEN, BLAU and SHANNON are used as proxies for the description of women’ presence in the boardroom, LNTAB is the company size, LNOPR is the company’s operating revenue, ROA is the company’s return on assets ratio, ROE is the firm’s return on equity ratio, GDP is the variation of UK gross domestic product through the 5 years (it is the same for all the firms), UNERATE is the variation of UK unemployment rate through the 5 years, LAG_TOBINSQ is the lagged of the variable TOBINSQ and RECOMVDUMMY is the dummy variable relevant to the 25% percentage proposed by Lord Davies.

The methods implemented and performed for examining the endogeneity and causality existence under this analysis are GMM, and 2SLS. The results of these two
methods are addressed according to three tests: the Durbin, Hausman and GMM statistic (tests of endogeneity and orthogonality conditions).

Continuously, a panel data approach allows for the analysis of the constant term. This term is relative to the firm’s characteristics and aims to more efficient estimates. ‘A key element in panel data is the relation between the fixed effects term and the other explanatory variables’, Reguera 2015.

5. Results

5.1 Evaluation of the results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std.Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>tobsinq</td>
<td>693</td>
<td>1.341273</td>
<td>1.150146</td>
<td>0.018000</td>
<td>9.440000</td>
</tr>
<tr>
<td>tamcad</td>
<td>684</td>
<td>8.785088</td>
<td>2.047535</td>
<td>3.000000</td>
<td>17.000000</td>
</tr>
<tr>
<td>pwomen</td>
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<td>0.106834</td>
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<td>0.500000</td>
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<tr>
<td>blau</td>
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<td>0.141378</td>
<td>0.000000</td>
<td>1.000000</td>
</tr>
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<td>0.105940</td>
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<td>11.370000</td>
<td>18.950000</td>
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<td>0.475509</td>
<td>0.000000</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

The panel of Table 2 presents the descriptive statistics of our sample (139 firms). It is impressive that the level of women underrepresentation in the board of directors in
the firms under investigation, which is determined by the approximately 0.2%, an obviously low percentage. The average board size is 9 directors in the boardroom with a range between 3 and 17. This measurement includes the number of women. The average firm size is 14.5% with a range between 11 and 19. As we can see from the information provided through the above table, the standard deviation measurement is low enough for most of the variables, except ROE and ROA (34.64 and 9.38 respectively). This indicates that the data points are spread out over a wider range of values. To understand it in a better way, we provide the following feature that shows exactly what is the reason for such standard deviation concluded calculations. Regarding the operating revenue (LNOPR), the mean is calculated to 14.25% while it is really close to the median (14.73%) which is calculated for comparison reasons, but not presented in this panel.

*Figure 2: Kernel density estimate*

![Kernel density estimate](image)

In statistics, *kernel density estimation (KDE)* is a non-parametric way to estimate the probability density function of a random variable. It is a fundamental data smoothing problem where inferences about the population are made, based on a finite data sample (Wikipedia). The objective is to visualize the shape of the distribution. Density plots can be thought of as plots of smoothed histograms. The smoothness is controlled by a *bandwidth* parameter (0.0668) that is analogous to the histogram bandwidth.

*Figure 3: Normal Probability plot of the residuals*
Furthermore, regarding the distribution and the regression analysis, as we can understand from the normal probability plot of the residuals provided by the Figure 3 above, it is approximately linear supporting the condition that the error terms are normally distributed (Chambers et al., 1983). We decided to use this technique in order to investigate whether or not our data set is approximately normally distributed. As we can see, the data are plotted in such a way that the points form an approximately straight line. Although there are some points that deviate from this line and range between 0.5 and 4 as addressed according to the Residuals vertical dimension, we decided to focus on the main formed line.
Finally, in order to analyze the statistic relationship existing between the variables used, we provide results in the panel of Table 2, coming from the Pearson Correlation Coefficient analysis (PCC). Also referred as Pearson’s $r$, it is a measure of the linear correlation between the variables. It has a value ranging from -1 to +1, where +1 is total positive linear correlation, 0 is no linear correlation and -1 is total negative linear correlation. The most relevant relations appear between the variables used as proxies for the gender diversity and between TOBINSQ and LNTAB, LNOPR, ROA, ROE and LAG_TOBINSQ. The correlation between the proxies for gender diversity is being justified through the following analysis, where we examine the endogeneity and causality problems. Consequently, this correlation does not disturb our results, supporting this even more if we keep in mind that the variables’ coefficients are very small.

### 5.2 Evaluation of the regression

The regression derived from our analysis, as well as the coefficients are the following:

![Table 2: Pearson Analysis](image-url)
TOBINSQ = 0.6853431 + 1.479136 X PWOMEN_{it} + (-3.5352) X BLAU_{it} + 1.831123 X SHANNON_{it} + (-0.0945) X LNTAB_{it} + 0.04481 X LNOPR_{it} + 0.019668 X ROA_{it} + (-0.00054) X ROE_{it} + (-0.0108788) X GDP_{it} + 0.0270366 X UNERATE_{it} + 0.7720087 X LAG_TOBINSQ_{it} + (-0.0312155) X RECOMVDUMMY\_it + \epsilon_{it}

This is a regression with multiple independent variables. Each of the coefficients indicates how much the dependent variable (TOBINSQ) is expected to increase or decrease, when every independent variable change by 1, holding all the other independent variables constant. Consequently, the firm’s financial performance is expected to be most positively affected by the percentage of women in the board of directors (PWOMEN) and the Shannon index (SHANNON), both of which were used as proxies for the gender diversity. On the other hand, Tobin’s Q seems to be negatively affected mainly by Blau index (BLAU) and the size of the firm (LNTAB). It is reasonable, if we keep in mind that Tobin’s Q ratio is calculated if we divide the Total Market Value of the Firm with the Total Asset Value. Tobin’s Q and Total Assets are inversely proportional amounts.

**5.3 Instrumental Variables Evaluation**

Since we mentioned that there are endogeneity and causality problems that have to be examined as in previous literature, we decided to implement 2 endogeneity analysis and evaluate the results according to 3 endogeneity and orthogonality tests. Both of the analysis is based on the hypothesis that the lagged tobinsq was so far affected by the three proxy variables related to the gender diversity in boardrooms. So, the null hypothesis that corroborates the presence of endogeneity is:

**Ho:** If the lagged tobinsq (LAG_TOBINSQ) is so far affected by PWOMEN, SHANNON and BLAU (the three proxies), then there is endogeneity.

The first analysis is 2SLS (Two-Stage Least Squares Regression Analysis) and the results are depicted in the following panel.

<table>
<thead>
<tr>
<th>Table 4: Instrumental variables (2SLS) regression</th>
<th>Number of obs = 554</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wald chi2(8) = 962.49</td>
</tr>
</tbody>
</table>
We can observe from the Table 4 that the R-squared is calculated as 72.38%, meaning that the model is well-structured and defined. We set LAG_TOBINSQ as instrumented and PWOMEN, SHANNON and BLAU as instrumental variables. Through the Durbin and Hausman tests, we concluded to the following p – values:

<table>
<thead>
<tr>
<th>Table 5: Results of Durbin and Hausman Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durbin Score</td>
</tr>
<tr>
<td>=0.794223</td>
</tr>
<tr>
<td>Wu-Hausman</td>
</tr>
<tr>
<td>=0.781007</td>
</tr>
<tr>
<td>p-value: 0.3728</td>
</tr>
<tr>
<td>p-value: 0.3772</td>
</tr>
</tbody>
</table>

The results confirm the theoretical argument, and suggest that the tree variables of gender diversity influence the financial performance of the firms for the years under investigation. This conclusion is derived from the low p-values as appear in Table 5. Durbin and Hausman test for endogeneity by using the null hypothesis that the instrumental variables are exogenous. Because of small enough p-value this hypothesis is being rejected. On the other hand, we accept the null hypothesis set in our research (Ho).
However, we based our methodology on Reguera 2015, we did not follow all the steps as described in this article as its aim is not only to evaluate but also to predict. For this purpose, it suggests estimation of the instrumental variables, something that is not being applied in this study.

The second analysis is GMM (Generalized Method of Moments), and the results are as shown in the following table:

<table>
<thead>
<tr>
<th>Table 6: GMM regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumental variables (GMM) regression</td>
</tr>
<tr>
<td>Wald chi2(8) = 410.78</td>
</tr>
<tr>
<td>Prob &gt; chi2 = 0.0000</td>
</tr>
<tr>
<td>R-squared = 0.7264</td>
</tr>
</tbody>
</table>

GMM weight matrix: Robust  Root MSE = 0.60755

|                | Robust           | Std.Err.  | z         | P>|z|   | [95% Conf. Interval] |
|----------------|------------------|-----------|-----------|-------|----------------------|
| tobinsq        | 0.31824912       | 0.36502940| 1.05000000| 0.29500000| -0.33295330 1.09793600 |
| lag_tobinsq    | -0.18043850      | 0.08990560| -2.01000000| 0.04500000| -0.35665020 -0.00422680 |
| lnopr          | 0.06372370       | 0.04173710| 1.53000000| 0.12700000| -0.01807950 0.14552680 |
| roa            | 0.05139000       | 0.02974390| 1.73000000| 0.08400000| -0.00690710 0.10968700 |
| roe            | -0.00299650      | 0.00249010| -1.20000000| 0.22900000| -0.00787710 0.00188410 |
| gdp            | 0.02182270       | 0.05477770| 0.40000000| 0.69000000| -0.08553960 0.12918500 |
| unerate        | 0.00807520       | 0.02773570| 0.29000000| 0.77100000| -0.04628570 0.06243610 |
| recomvdummy    | 0.04030230       | 0.08638380| 0.47000000| 0.64100000| -0.12900680 0.20961140 |
| _cons          | 2.11583100       | 1.28981400| 1.64000000| 0.10100000| -0.41215740 4.64382000 |

As well as the previous table, Table 6 appears a representative R-squared of 72.64%. The results are being evaluated by using the GMM Statistic p-value (p-value=0.0781), which seems even better than the Hausman’s and Durbin Score.
Therefore, we conclude to the confirmation of our theoretical background supporting that women presence in BOD affects the corporation’s financial performance.

5.4 Limitations

In this study, the limitations that should be addressed are really important. To begin with, as far as the sample is concerned, it comes from large UK corporations. That means that there is the potential danger that the results may not generalize to smaller companies. So, it is vital that further research be carried out to address diversity at board of director levels as well as its influence on organizational performance for smaller companies. Nevertheless, similar results are expected also in smaller companies, as in these cases individual efforts are more noticeable, thus making diversity have greater effects.

Furthermore, it is difficult if not impossible to understand whether diversity also causes different behavior or not. The results only suggest that diversity is positively related to organizational performance. The research approach used in the present study is not enough so that one can understand behavioral differences. As a result, other approaches are needed such as participant observation and ethnography of executive boards of directors and corporate officers.

Moreover, in this study, it is stated that there is a linear relationship between diversity and organizational performance. Nonetheless, one could not determine how diversity influenced performance. This is mainly because the representation of women and minorities was limited, thus preventing us from reaching safe conclusions. For example, if there were more data concerning women and minorities representation, this linear relationship between diversity and performance could change to a curvilinear one because of the increasing representation. As a consequence, to the above, the board diversity is considered a temporal advantage adopted by our construction regarding the more effective decision-making and innovation of diverse boards. However, the results could be the opposite. That is, the wider board diversity could originate from higher levels of ROA and ROE as company managers are more
confident and thus receptive to more diverse board appointments. The chosen variables could confine the study, as well as the fact that we are based on their temporal effects on each other. Our key study comes from the Fortune data including a two-year experience on these firms. The performance indicators were chosen at the same time and five years before the diversity indicators. Causality was not the final end, but the purpose was to record possible trends. In this context, our study goal is not perfect, though it a result of our keenness. Although the evidence that we processed to come to a conclusion were quite accessible and simple, we have come across other studies on the relationship between diversity and performance using resources such as Fortune magazine (e.g. Murray, 1989; Catalyst, 1993; Daily et al., 1999).

6. Conclusions

This study is based on the literature concerning board diversity and firm financial performance. Most studies used data from a few economies in order to reach conclusions on board gender diversity. However, it is essential one be cautious before generalizing the results. This study used data from UK companies in order to examine the relationship between board gender diversity and firm value and reach some interesting results. United Kingdom is a country with a highly liquid listed company sector with dispersed ownership. The UK is also a country where there have been only a few women occupying managerial positions in corporations, something that made the UK government impose legislative changes and governance reforms.

In this study, the relationship between female boardroom participation and firm value was examined by using a panel data methodology. More specifically, female participation in managerial positions was measured by several variables, while firm value was measured by a proxy for Tobin’s Q. According to our findings, the presence of women on the board of directors does not influence firm value. However, we find that the diversity of the board (measured by the percentage of women and by the Blau and Shannon indexes) has a positive impact on firm value. That means that it is the balance between women and men that should concern UK companies instead of
merely the presence of women. What is more, it was shown that firm value does not affect women’s presence and gender diversity.

After our research, we conclude that higher women representation shall be accomplished without affecting shareholder value and in fact Spanish investors are in a position to appreciate the female participation on boards of directors. Spain’s 2006 Unified Good Governance Code promoted the female representation on boardroom appointments and this created a practice that will be followed in the terms of corporate governance in Spain. Further research is recommended on how female board members with family ties to the owners can affect firm performance and if there is any relationship between women’s skills and educational/professional background and firm performance. If female board members’ CVs were taken into consideration, we could examine whether their promotion is socially or economically motivated and whether women representation affects the firm performance in a positive or negative way in the long run. Since Spanish government promotes policies for wider female participation on corporate boards, the need for an increased number of competent women to cover board chairs is arisen in order to keep the corporate performance sustainable.
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