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Legal and cultural factors as catalysts for promoting women in the boardroom[☆]



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Abstract This study focuses on whether regulation as well as national cultures play significant roles in defining women's role in society. We are contributing to the existing debate by providing the first empirical analysis to calibrate which legal mechanisms and cultural dimensions are more efficient in achieving boardroom gender equality. We have highlighted the impact of regulation by distinguishing between those countries that have passed positive laws imposing gender quotas in the boardroom and those applying the 'comply or explain' recommendation in their good governance codes. We have monitored enforcement levels among countries and tested the validity of Hofstede's cultural factors in impacting on gender quotas. The emerging picture is that of gender diversity being triggered by the adoption of positive laws rather than by soft recommendations. Moreover, gender diversity policies are more commonly promoted in countries where governments, corporations and institutions are characterized by less masculinity and lower power distance.

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Introduction

The so-called silent revolution, which calls for higher visibility for women in social, political and economic life, has also reached the highest echelons of corporations and their boardrooms. In recent decades, governments of diverse political persuasions have adopted different measures to promote the presence of women in the boardroom. Broadly, there have been two lines of approach: promulgating pos-

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itive regulations, which impose mandatory gender quotas; and incorporating recommendations ('soft' recommendations) in corporate governance codes.

As a result, the study of gender diversity on boards of directors has been attracting great interest in academic, business and political arenas. Its relevance stems from the new demands for greater diversity and creativity in the decision-making process as well as the growing demand for gender balance in corporate leadership. Demands that resemble the process by which gender equality was achieved between candidates running for office (Suk, 2012) and which help shape the new political demographics in the governments of most developed countries. Although the empirical evidence is not always conclusive, achieving gender diversity on boards is a goal that goes beyond the mere promotion of women: in fact it is viewed as a way of guaranteeing independence from controlling groups and is also commonly associated with higher business performance (Siciliano, 1996; Carter et al., 2003; De Andres et al., 2005; Farrel and Hersch, 2005; Terjesen et al., 2009; Carter et al., 2010; Ahern and Dittmar, 2012; Matsa and Miller, 2013; Goergen and Renneboog, 2014).

Although most of the existing literature focuses on the benefits and advantages of including female directors on the board, it is important to identify which factors open up new opportunities for appointing female board members. Of these, positive laws imposing gender quotas have become increasingly important over recent years.

The case of Norway, the first country to introduce gender quotas back in 2003, has served to encourage other governments to follow its example, in view of the positive results: in 2004, 22% of board members were women; by 2009 it was 42% (European Commission, 2011). Evidence of the improvement in boards' gender diversity deriving from the application of gender quota laws is provided in Grosvold et al. (2007, only in a descriptive way). Similarly, Parboteeah et al. (2008) maintain that gender equality mainly exists in countries where there is regulatory pressure at institutional level, and Grosvold and Brammer (2011) suggest that legal institutions play a key role in women's representation on boards of directors. It is therefore advisable to dig more deeply into the analysis of regulation's key role in promoting gender equality. The dichotomy between countries which promulgate positive laws imposing gender quotas in the boardroom versus those applying the 'comply or explain' recommendation in good governance codes gives us a new and rich scenario for empirical analysis.

However, there are other factors helping to shape corporate board demographics. A country's cultural environment develops in parallel to its corporate gender policies, as noted by Burke et al. (2000), Adams and Flynn (2005), Parboteeah et al. (2008), and Grosvold and Brammer (2011). The effects of cultural factors on corporate governance were already highlighted by Hofstede (1984). Of particular interest to our study is the extent to which culturally-held attitudes towards gender may impact on female executives' career opportunities. For this reason, in this study we have adopted a new approach to analysing gender diversity in the boardroom, focusing on the combined effect of legal and cultural dimensions that facilitate the rise of female directors in different European countries.

In this context, this study's first goal is to provide an international comparison between the effects on board composition of imposing gender quotas using positive legislation (i.e., applying positive discrimination¹) versus promoting gender quotas by soft recommendations in corporate governance codes and other forms of coercion. Our second purpose is to identify those cultural features which may open up opportunities for the pursuit of gender equality. Specifically, we analyse the effects on gender equality of those Hofstede cultural factors most correlated with gender inequality (i.e. masculinity and power distance). Taken together, this paper provides new international evidence on legal and cultural factors that encourage female directors onto boards and contributes to a very vivid debate which has ballooned in 2018 since the #MeToo movement. For the first time in the literature we provide an analysis on how different kinds of regulation affect how gender quotas evolve and we also look at differing levels of enforcement. The combined effect of regulation and cultural factors produces solid results that help to make projections about the present and future of women's access to positions of power. The scenarios vary insofar as welfare states, their access to education, the labour market or other institutional factors differ, but regulation has overcome these limitations, opening up new opportunities for women.

Since there is only limited empirical evidence on this issue, our objective is to advance further the research conducted in prior studies by providing empirical results, also taking into account endogeneity, applying panel data and GMM methodology. To implement the empirical analysis, we have used an international sample (Norway, Spain, France, Germany, Sweden and United Kingdom²), composed of firms in countries where gender quota laws on boardroom equality and diversity have been passed, comparing these with countries where demands for equality have been answered by recommendations in good corporate governance codes.

The results of the GMM analysis suggest that the existence of gender equality legislation, a lower degree of masculinity and a lower power distance all increase the number of women on boards. Therefore, it is the countries with positive laws imposing gender quotas on corporate boards, rather than corporate governance recommendations that have the most scope for improving gender diversity on boards, as

¹ The term "positive discrimination" refers to the enforcement of legislation that supports and promotes the presence of women in senior management positions and on boards of directors. We use the term 'soft recommendation' to refer to a recommendation only, where compliance is neither enforced nor guaranteed.

² In 2004, Norway adopted a mandatory gender quota law requiring 40% of positions on the boards of listed companies to be reserved for women. This initiative has motivated many countries in Europe to follow suit, including Belgium (2011), Finland (2005), and Spain (2007). In the Australasian region, Australia (2009), Hong Kong (2012), Malaysia (2011), New Zealand (2012) and others have revised their corporate governance codes to include new "comply or explain" provisions. The new provisions require listed companies to report measurable goals for diversity in their boardrooms, as well as progress in attaining those goals (see e.g. Catalyst, 2012 for details). France amended its constitution in 2008 to give women and men access on equal terms to elected mandates as well as in professional and social arenas.

well as those countries where gender role differences are smoother and hierarchies are less rigid.

The rest of the paper is structured as follows. The next section poses the hypotheses to be tested based on a review of the literature and the empirical evidence. Section 3 describes the sample, measurement of the variables and the methodology; and Section 4 presents and discusses the results. Finally, the last section offers the main conclusions, implications and future lines of research.

Literature review and hypotheses

Institutional approach to gender equality in the boardroom

Demand has been increasing in recent decades to increase diversity on directors' boards in terms of gender, nationality, religion, ethnicity, social grouping and professional backgrounds. Board diversity is deemed a useful mechanism for corporate decision-making since it guarantees a more diverse range of views and opinions, increasing the board's independence (Grosvold et al., 2007), while leading to greater creativity and more varied solutions to business problems (Tyson Report, 2003). Among the benefits from diversity highlighted in the literature, it improves perceptions of corporate effectiveness (van der Walt and Ingle, 2003); signals the organization's awareness of the needs of a particular group of stakeholders (Bilimoria and Wheeler, 2000); and leads to improvements in workforce motivation and loyalty (Powell, 1999). In conclusion, and according to Selby (2000), directors with diverse skills and backgrounds will cause more questions to be raised, instead of 'simply echoing the voice of the management'.

Thus, demands for board diversity soon lead to demands to draw non-executive directors from a larger demographic pool. As noted by Burke (1999) and Terjesen and Singh (2008), the presence of women on the board varies significantly between countries, suggesting there may be underlying reasons other than industrial or managerial differences. In fact, recent research has found that board demographics are determined by institutional factors, in the same way as La Porta et al.'s (1999) 'law and finance' approach outlined different corporate governance systems. Indeed, Meyer's (2010) institutional theory suggested that the institutional environment shapes people's actions and decisions and Peng et al. (2008, 2009) applied this institution-based view to business strategy. Institutions within a country are usually classified, using North's definitions (1990), as either formal or informal. 'Formal institutions' refer to explicit rules in a society and 'informal institutions' are constraints that people in a society impose upon themselves to structure their relations with others. Legal factors could thus be categorised as formal institutions, whilst cultural dimensions are informal ones.

Grosvold and Brammer (2011), Terjesen et al. (2015) and Grosvold et al. (2016), among others, have extended the institutional-based approach to the analysis of the presence of women on corporate boards of directors. In the case of Terjesen et al. (2015), the authors outline an integrated model with three institutional factors (welfare state, government coalitions and gender equality initiatives) that

explain the establishment of gender quota legislation on directors' boards. Grosvold et al. (2016) identify the relationship between women on corporate boards and the five fundamental institutions in every society, previously listed by Verwiebe (2014), namely family, education, government, economy and religion. Grosvold and Brammer (2011) stated that the higher or lower presence of women on boards is attributable to institutional characteristics, among which they highlight different types of capitalism, national business systems, national legal systems, governance systems and cultural clusters.

The number and variations of institutional factors affecting gender diversity on boards seem thus to be extensive, but two sets of factors particularly demand our attention, firstly for their relevance in the formation of gender demography and secondly for the lack of empirical evidence on the subject.

Firstly, on the subject of regulation, a recent paper by Terjesen et al. (2015) insists that existing research neglects the important role of political institutions in establishing gender quotas on boards. From their point of view (despite the lack of empirical analysis), legislation generates the most substantial change to the representation of women, far greater than any individual, firm, industry or country-level factor previously identified; a feature also detected by Adams and Kirchmeier (2013). Evidence on the effectiveness of legislation in favour of women is found in Brammer et al. (2009), who observed that affirmative action programmes in Norway have considerably accelerated the growth in female board representation compared to countries which have quotas.

Thus there seems to be a general consensus that legislation affects gender quotas and that quota laws are needed to generate a significant improvement in gender diversity on boards (Grosvold et al., 2007). However, governments have chosen different routes in legislating gender quotas. According to Aguilera and Jackson (2003) and Lubatkin et al. (2007), variations in the institutional and legal environment underpin differences in corporate governance structures and explain why countries have chosen a range of regulatory paths. In fact, the two main formulas for regulating gender demography on boards are (i) positive laws, which impose the establishment of gender quotas with enforced penalties for non-compliance, versus (ii) corporate governance code recommendations, which are not binding and may not always produce a modification in board demography.

The reasons why one country chooses one route or the other go beyond the scope of this paper; however, Engelstad and Teigen (2012) suggest that the greater the State's intervention in board regulation, the more quota laws are likely to be adopted; and Terjesen et al. (2015) insist on the effects of the so-called path dependence of gender equality initiatives. In any case, if we focus on Western Europe, we can see a variety of solutions, which is why different authors state the need to implement Europe-wide regulation that helps to achieve the right balance.

Secondly, on the effects of cultural systems on gender quotas, Brammer et al. (2009) believe that cultural attitudes have played an important role in generating higher gender quotas. The role of cultural patterns in business behaviour and strategy is widely demonstrated in the literature. Since Hofstede's seminal paper identifying five

dimensions to national culture, this has been deemed to be multifaceted and countries can be easily characterised insofar as they have similar patterns of cultural institutions.

Gupta et al. (2002) analyse national cultures using data from the GLOBE project and construct a framework showing that national cultures, though consisting of a set of distinct dimensions, also share significant similarities across particular geographic regions. These authors show that clusters of countries have common cultural characteristics, identifying in total 10 such geographic cultural clusters.

Hypotheses testing

In view of recent advances in cross-national comparisons of the relationship between gender equality in board demographics and institutional factors such as regulation and cultural features, we have built a new empirical model to explain how to promulgate equality in the boardroom and help societies advance in gender-neutral opportunities for men and women.

In terms of regulation, Verge and Lombardo (2015) find that most governments exert pressure on boards of directors in the dimensions of transparency and independence, and similarly that they are exerting pressure on quota laws. According to Grosvold et al. (2007), quota laws are needed to generate a significant improvement in gender diversity on boards. Similar conclusions are found in Engelstad and Teigen (2012), who suggest that the greater the State's intervention in board regulation, the more likely quota laws are to be adopted. According to Aguilera and Jackson (2003) and Lubatkin et al. (2007), who consider that differences in the institutional and legal environment are the cause of variations in corporate governance structures, it is also understandable why different countries have chosen different regulatory routes. Among these regulations, the most common are to regulate female quotas either by positive laws or by recommendations in their corporate governance codes.

Nordic countries such as Norway and Sweden share a social-democratic political tradition in which employment and social measures aim to promote gender equality (Fagan et al., 2012), although their approaches to increasing the presence of women on boards differ. In Norway, there was a rapid increase in women's representation on boards, mainly as a result of the gender quota legislation passed in 2003, which required the boards of companies to comprise at least 40% of each sex (Teigen, 2012). In Sweden, the code of corporate governance includes a recommendation on gender parity for board members, but it was the threat of a gender law being introduced that became the main catalyst for increasing women's representation (Bohman et al., 2012).

Spain does not share the corporate model of many European societies (Fagan et al., 2012). Spain first adopted a recommendation for gender parity in its corporate governance code, which was shortly afterwards reinforced by a gender equality law. Both measures together led to a marked increase in women's representation on boards (González-Menéndez and Martínez-González, 2012). In France, the main change took place after the 2008 reform of the Constitution, amending Article I to promote equal gender access to professional positions, thus opening the gates to approv-

ing a subsequent quota law in 2010 providing for the gradual introduction of gender quotas on boards (Smith et al., 2012).

In the United Kingdom, which follows a market-based liberal model, the level of women's representation on boards has been low, showing a slow upward trend since the late nineties (Fagan, 2013). In 2010, a recommendation on diversity was introduced into the code of good governance and was ratified in 2011 with a recommendation that firms adopt voluntary gender parity targets. Germany, where the model is similar to that of the United Kingdom, had a recommendation until 2016, when it introduced a 30% quota for the boards of listed companies. It thus reinforced positive discrimination to increase the presence of women among senior management, and laid down timing and individual quantitative targets for the ratio of female directors.

In general, the efficiency of quota laws partly depends on their enforcement and the institutional context. In the case of Spain, penalties for non-compliance with the gender quota law are weak and the implementation schedule is longer than that of Norway. As a result, progress towards achieving targets has been slow. González-Menéndez and Martínez-González (2012) recommend stronger governmental sanctions in combination with more efficient equality plans in firms, because the impact of quotas seems to be restricted only to the areas explicitly covered by the law. In Norway however, until 2013 the existence of a quota had not encouraged the adoption of voluntary measures in small, family-run firms nor had it improved gender ratios in senior management in general (Fagan, 2013).

The gender parity recommendation in Swedish codes of good governance also had an impact although, in the absence of an actual quota law, it was lower than in the countries mentioned above (Bohman et al., 2012). In the case of the recommendation in the United Kingdom's 2010 code of corporate governance, by 2012 there were already signs that a European Commission gender quota resolution was being adopted in those cases where voluntary steps were not making sufficient progress (Davies Report, 2014). This shows that codes may have less impact than mandatory quotas.

Based on the quota law literature and on business quota case studies, Piscopo and Muntean (2018) attribute the exclusion of women from boards to systematic gender discrimination rather than lack of individual merit or of appropriate female candidates for positions. They also suggest that action by the State in support of positive discrimination, whether in the form of laws or recommendations, could increase the presence of women on boards in the short term.

In addition, and as argued by Terjesen et al. (2015), the quota of women on boards is determined specifically by the entity's positioning on gender diversity, which depends on the development of existing public gender policies and on political decisions to move from a recommendation, which is a non-binding regulation included in codes of governance, to enactment of a law with penalties for non-compliance. So it is important to know the likely consequences of working with a law or a recommendation in order to anticipate how firms will react. The existence of a recommendation or a 'soft' law might mean that firms will only be interested in pretending to comply (Terjesen et al., 2015), while still obtaining recognition and other benefits from stakeholders and from the

market. On the other hand, enforcing a law with penalties for non-compliance means that, whether companies agree with a specific practice or not, they are obliged to comply. A quota law works in conjunction with a statutory threat. Companies and politicians are usually against quotas since they are perceived as government intervention in company decisions (Piscopo and Muntean, 2018).

In spite of extensive literature on the reasons why women should have greater access to boards and the need to constitute a critical mass (Burgess and Tharenou, 2002; Konrad et al., 2008; Haslam et al., 2010; Labelle et al., 2010), and the yawning differences in women's representation on boards in European Union countries notwithstanding, there has been little research into the possible impact of positive laws (and their corresponding sanctions) to promote greater presence of women directors. Worth mentioning in this regard, however, are Grosvold et al. (2007), Wang and Kelan (2013), Allemand et al. (2014) and Grosvold et al. (2016). Grosvold et al. (2007) explore the issues associated with voluntary and mandatory solutions to the low level of board diversity by examining in a descriptive way the pattern of board gender diversity in the United Kingdom and Norway on a longitudinal basis. Grosvold and Brammer (2011), for a sample of 38 countries and for the years 2001–2007, explore cross-country variation in the pattern of female representation on corporate boards and evaluate the extent to which it is associated with the nature of national institutional systems as synthesised in five frameworks, each of which emphasises the importance of a distinct type of national institution. Wang and Kelan (2013) use a sample of firms from one country, Norway, over the period 2001–2010, being their dependent variable the presence and appointment of female board chairs. Allemand et al. (2014), for a panel of European Union member states, examine the influence of a quota law comparing the percentage of women on boards in 2006, 2011 and 2014. Finally, Grosvold et al. (2016), using a random effect panel data model, analyse national commitments to safeguarding women's right to return to work and national investment initiatives designed to enable women to have a better work-life balance. However, they do not control for an endogeneity problem.

Taking the above arguments into consideration, we pose our first hypothesis:

H1. Women's representation on boards of directors will be greater in countries where there is a mandatory quota system.

A cultural dimension may also influence the presence of women on boards. The well-known Hofstede dimensions (Hofstede et al., 2010) include five cultural variables (power distance, individualism, masculinity, uncertainty and long-term orientation) which may give rise to gender roles, predefining social stereotypes in terms of the professions considered appropriate for men and women (Heilman, 1983). In this way, culture may influence many aspects of the business recruitment process, so only the hiring methods and practices that are in line with national culture are likely to be effective (Milikic, 2009).

Hofstede cultural variables may help explain diversity on boards of directors and, more specifically, gender diversity: the existence of a masculine (masculinity) rather than a

feminine (femininity) culture as well as a country's power distance (broad gap between different hierarchical levels, which in gender terms sets women below men in their hierarchical positions within corporations) are two factors that are highly correlated with the assumption of gender roles in society. For this reason, such variables can be expected to have an influence on the presence of women in business in general and especially on boards. We can consider the cases of Finland and Norway as illustrative of how countries with low indices for masculinity and power distance are also those which exhibit the highest percentages of women in management positions. So, a feminine culture is likely to accept more women in positions of power, and the lower the power distance, the more likely it is that women will be listened to and followed.

In masculine cultures, on average men are more worried than women about achievements outside the home (Hofstede and Hofstede, 2005). Heilman (1983) stresses that people aspire to jobs that are socially acceptable for their sex and avoid those that are considered appropriate or traditional for the opposite sex. These stereotypes or gender roles, as described in Gupta et al. (2008), also determine norms relating to the behaviour that is considered appropriate for each sex, that is, how men and women "should" behave (Heilman, 2001). Thébaud (2010) indicates that men and women fall back on the gender beliefs of their society when assessing their own capabilities. In addition, in very masculine cultures, gender roles create a gap between men's and women's values (Hofstede and McCrae, 2004) in important areas such as income, recognition, progress and challenges (Hofstede and Hofstede, 2005). Arvey et al. (2007), also examining gender roles, add that when certain occupations are described as masculine, women are less inclined to do them because they perceive themselves as less able or less specialized. Generally speaking, according to Heilman (2001), the qualities considered essential for business tend to be associated with men and seen as inherent to them. They include independence, aggressiveness and autonomy (Gupta et al., 2008).

Based on the above arguments, we pose the following hypothesis:

H2. Women's representation on boards of directors will be greater in countries with a feminine culture.

Hofstede also suggests that culture types are rooted in the value systems of essential groups of the population (Reiche et al., 2012). The power distance refers to the degree to which individuals accept and expect that power is unequally distributed in organizations and institutions (Hofstede, 1980; Hofstede et al., 2010). Cultures with a high power distance have an unequal distribution of power, with strong hierarchies and multiple control mechanisms; members of organizations tend to accept the power and authority of their superiors, accepting orders without question (Griffin and Pustay, 2010). The members of an organization with a high power distance prefer not to be consulted by their superiors and subordinates, while in cultures in which there is a low power distance between different hierarchy levels, leaders adopt a consultative style and people endeavour to achieve power equality and to account for any power inequality (Hofstede, 1984). In addition, people are pre-

pared to question decisions taken by their superiors or even to refuse to accept them (Griffin and Pustay, 2010). Employees in cultures with a lower power distance also prefer flexible social benefit plans covering needs such as child care, maternity leave or unpaid leave (Aycan, 2005), which suit women very well and facilitate their access to positions of responsibility.

Where there is a higher power distance, remuneration plans are based on subjective decisions taken by senior management (Aycan, 2005), and candidates to the board may also be appointed on a subjective basis. According to Aycan (2005), power distance is also positively correlated with the number of years worked in the firm, good interpersonal relationships with the board members and is an important factor when deciding remuneration and bonus payments, all of which support the prior statement.

In a comparative study of 25 countries, Glick (2006) identifies a positive correlation between power distance as a cultural characteristic and gender inequality. Glick maintains that countries with the highest scores in the Hofstede index show male predominance in the world of business. So, in countries with a high power distance, women are less likely to become board members, which is consistent with our next hypothesis, Hypothesis 3. Parboteeah et al. (2008) suggest that women are more likely to adhere to more traditional female gender roles, which keep them at the bottom of the career ladder and the social hierarchy. Moreover, they also detect that society as a whole is more prepared to accept this type of inequality, a relationship also noted by Shinnar et al. (2012) when analysing power distance and traditional gender roles. Therefore, women's participation on boards will be less common in countries where cultures exhibit high power distance, in line with our Hypothesis 3.

H3. Women's representation on boards of directors will be greater in countries with a low power distance.

Sample, variables and methodology

Sample

To test the hypotheses presented above, we examined listed firms from six countries (Norway, Spain, France, Germany, Sweden and United Kingdom) over the 2000–2010 period and built a panel comprising 905 firms and 7065 observations. The countries were selected on the basis of their different political and cultural frameworks and history in the promotion of women's employment and gender equality. We also aimed to achieve a balance between those with legislation that directly promotes positive discrimination by firms to get women onto boards of directors and into senior management positions and those that have no such legislation. Thus, we included countries that aim to achieve board gender diversity by means of quota laws (positive or 'hard' laws) and others that only incorporate recommendations into their corporate codes of governance – without consequences or penalties for non-compliance (which we have termed 'soft' laws). The time period was chosen because 2000 was the year when the first steps were taken towards gender equality on boards by nations such as Norway, while by 2010 most European Union countries had defined their position in this

regard. Other countries that were about to pass a gender quota law soon after 2010 were excluded from the analysis since the available data period was too short. We ended up with an unbalanced panel of 5995 year-group observations corresponding to 783 groups because there were values missing in some of the variables and because the econometric technique we used, the Generalized Method of Moments (GMM), requires information to be available for at least four consecutive years for each country in order to test for the absence of second-order serial correlation.

This data panel is the result of combining data from corporate good governance reports and the World Bank database, which provides information for most countries in North America, Europe, Asia and Australia.

Measuring variables

Dependent variable

FEM_QUOTA represents the proportion of women on boards of directors in each of the years; that is, it is the result of dividing the number of women board members by total board members (Carter et al., 2003; Adams and Ferreira, 2009; Allemand et al., 2014).

Explanatory variables

As possible determinants of the number of women directors, we considered the following explanatory variables:

LAW: This is a qualitative variable that distinguishes between different levels of enforcement of gender quota regulation: the variable takes the value of 3 for the most exigent countries, in those years for which they implement a quota law stipulating the number of women directors and senior managers; it takes the value of 2 for France since 2008 when it amended its Constitution in 2008 to admit quota laws; and it takes the value of 1 for the remaining cases; i.e. those countries without quota systems that base their gender policy on soft recommendations in their corporate governance codes, and those years before any quota laws had been passed. The prior literature supports the need for a law to achieve a real increase in the presence of women on boards of directors (Grosvold et al., 2007; Allemand et al., 2014).

MASCULINITY: This is the degree to which a society is masculine (the extent to which a society gives power to men) (Hofstede et al., 2010). A high score indicates that the society places priority on competition, achievements and success. A low score (feminine) means that the society's priorities are caring for others and quality of life. A feminine society is governed by the belief that quality of life indicates success, and that standing out from the crowd is not admirable (Shinnar et al., 2012; Carrasco et al., 2015).

POWER_DISTANCE: This dimension refers to the fact that individuals in a society are not equal. It is defined as the degree to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally (Hofstede et al., 2010). Therefore, the higher the value in this variable, the greater the power distance. This means there is more submission, opinions are less powerful and there is, in general, less predisposition towards greater diversity. Studies that consider

Table 1 Summary statistics.

Variable	Min.	Max.	Mean	St. Dev.
<i>Panel A: continuous variables</i>				
FEM_QUOTA	0	1	0.120	0.151
MASCULINITY	5	66	38.594	23.179
POWER_DISTANCE	31	68	46.622	16.498
GDP	-5.170	6.557	1.541	2.401
EDUCATION	47.461	54.598	49.063	1.339
REGULATORY_QUALITY	0.960	1.873	1.409	0.189
<i>Panel B: dummy variables</i>				
LAW	76.19% value = 1; 11.66% value = 2; 12.16% value = 3			
LEGAL_ORIGIN	95.56%			

n = 6778.

this variable include Carrasco et al. (2015), Shahwan (2016), and Tarhini et al. (2016).

Control variables

As control variables we used: GDP, the annual percentage growth rate of GDP, the aggregates for which are based on constant 2010 US dollars, and measured as the sum of gross value added by all resident producers in the economy, plus any product taxes, minus any subsidies not included in the value of the products. This was calculated without making deductions for the depreciation of manufactured assets or for depletion and degradation of natural resources; EDUCATION, measured as the percentage of female students enrolled in all secondary education programmes in a given school year; LEGAL_ORIGIN, which is a dummy variable that takes the value of one if a country's legal origin is non-common law and zero otherwise; and REGULATORY_QUALITY, which refers to the country's regulatory quality and captures perceptions of the government's ability to formulate and implement sound policies and regulations that permit and promote private sector development as defined by the World Bank. These factors have been examined in previous literature, such as Grosvold and Brammer (2011), Grosvold et al. (2016), and Terjesen et al. (2015).

Methodology

We used panel data methodology to estimate our models and, more specifically, we applied the two-step GMM model drawn up for dynamic panel data models by Arellano and Bond (1991). Unlike cross-sectional analysis, dynamic panel data analysis allowed us to control for individual heterogeneity or unobservable individual effects as well as an endogeneity problem. The GMM estimator uses internal instruments that are based on lagged values of the explanatory variables that may present problems of endogeneity. Specifically, in our model it is important to gauge whether the current quota is the result of last year's regulation or not. It is important to gauge whether this year's quota has not been modified because it was modified last year and the firm has now decided to keep it stable for a longer period once the number of women in the board seemed reasonable. To get a proper picture of the mechanisms which promote

changes in the quota we need to know the direction of the causality, and we do this by controlling for endogeneity.

To check the validity of the model specification when using GMM, we used the Hansen statistic of over-identifying restrictions in order to test for the absence of correlation between the instruments and the error term. We also included m_2 statistics to verify the lack of second-order serial correlation in the first-difference residuals. The following Wald test was also included in the estimations: (z_1) for joint significance of the reported coefficients; (z_2) for joint significance of the dummy year variables. Additionally, we corrected the estimations for heteroskedasticity problems by using the robust option for the xtabond2 command of the Stata program.

Specifically, the general panel data dynamic model is as follows:

$$FEM_QUOTA_{it} = a_0 + \beta X_{it} + \sum_{t=2000}^{2010} Y_t + \gamma_i + \mu_{it}$$

where i refers to the group, t to time, X to the explanatory and control variables, $\sum_{t=2000}^{2010} Y_t$ is a set of time dummy variables, and γ_i is the group's effect, which we assume to be constant for group i throughout period t , and μ_{it} is the error term.

Results

Table 1 presents the main descriptive statistics. The women's quota variable FEM_QUOTA presents the firms in the sample with an average proportion of women on their boards of 12%. Variable quota law (LAW) takes value 1 in 76.19% of the cases, value 2 in 11.66% of the observations and value 3 in 12.16% of the observations. As to the Hofstede cultural variables, the MASCULINITY variable scored an average of 38.594, indicating that the society is relatively masculine, that priority is given to competition, achievement and success, the latter being defined by the winner. The variable POWER_DISTANCE presents an average value very close to 50 (46.622), indicating that, on average, societies accept a high degree of inequality and that there are several hierarchical levels, with greater privileges for the higher levels.

Table 2 Correlation matrix for the dependent and explanatory and control variables.

Variables	1	2	3	4	5	6	7	8
1. FEM_QUOTA	1							
2. LAW	0.263***	1						
3. MASCULINITY	-0.312***	-0.270***	1					
4. POWER_DISTANCE	-0.189***	0.061***	0.243***	1				
5. GDP	-0.065***	-0.215***	-0.145***	-0.109***	1			
6. EDUCATION	-0.084***	-0.038***	-0.427***	-0.013	0.189***	1		
7. LEGAL_ORIGIN	0.210***	0.384***	-0.028**	0.132***	-0.289***	-0.419***	1	
8. REGULATORY_QUALITY	0.110***	-0.264***	0.005	-0.779***	0.093***	-0.006	-0.041***	1

*p-Value statistically significant at a 0.1 level.
 ** p-Value statistically significant at a 0.05 level.
 *** p-Value statistically significant at a 0.01 level.

Table 3 GMM results.

Variable	Model 1	Model 2	Model 3	Model 4
FEM_QUOTA-1	0.959*** (27.34)	0.912*** (22.06)	0.823*** (17.91)	0.793*** (15.93)
LAW		0.014*** (3.64)		0.011*** (2.64)
MASCULINITY			-6.65-04** (-4.22)	-6.84-04*** (-4.37)
POWER_DISTANCE			-9.47-04*** (-4.44)	-6.84-04*** (-2.70)
GDP	0.005*** (3.41)	0.005*** (3.32)	0.005*** (3.68)	0.005*** (3.34)
EDUCATION	0.002* (1.75)	2.34-05 (0.02)	-0.003 (-1.36)	0.004* (1.77)
LEGAL_ORIGIN	-0.009* (-1.86)	-0.009* (-1.81)	-0.009** (-2.04)	-0.008* (-1.86)
REGULATORY_QUALITY	-0.020 (-1.41)	2.26-06 (0.00)	-0.071*** (-2.93)	-0.036 (-1.22)
z ₁	829.43***	1242.009***	1892.08***	2162.93***
z ₂	33.63***	30.61***	41.21***	34.02***
m ₂	0.57	0.36	0.42	0.22
Hansen	35.44	33.04	29.75	27.68
No. observations	5995	5995	5995	5995
No. groups	783	783	783	783

z₁ is a Wald test for the reported coefficients of the explanatory variables, asymptotically distributed as χ^2 under the null of no relationship for all the explanatory variables. z₂ is a Wald test of the joint significance of the time dummies, asymptotically distributed as χ^2 under the null of no relationship. m₂ is the second order serial correlation relation in the regression residuals, asymptotically distributed as N(0, 1) under the null of no serial correlation. Hansen is a test of the over-identifying restrictions, asymptotically distributed as χ^2 under the null of no correlation between the instruments and the error term. (t-value).

* Statistically significant at a 0.1 level.
 ** Statistically significant at a 0.05 level.
 *** Statistically significant at a 0.01 level.

Table 2 lists the correlation coefficients of the variables used in the panel data estimations. Although some of the variables showed a statistically significant correlation, analysis of the variance inflation factors (VIF) revealed no evidence of multicollinearity as they all remained below 10 (Kleinbaum et al., 1998) and even below 5 (Hair et al., 2010). Table 3 summarises the results of the multivariate analysis conducted in order to study in depth the causal relationships proposed. These results were obtained using the STATA13

program. We estimated the model by steps and the results with reference to our hypothesis were the same in all cases. Thus, Model 1 shows the influence of the control variables on the percentage of women on boards, in Models 2 and 3 we added the regulatory and cultural variables, respectively. Finally, in Model 4, the whole model is shown.

If we focus on the extended model (Model 4), our results suggest that the women’s quota from the previous year has a positive and significant influence on the number of women

on the board the following year ($\beta = 0.793$, p -value < 0.000). In addition, in support of Hypothesis 1, the results of Model 4 show that LAW significantly increases the number of women directors ($\beta = 0.011$, p -value < 0.001). These results are based on the reasoning that organizations are legitimate if they comply with laws and regulations, and laws may encourage firms to identify women in their teams who could become directors and promote them (Scott, 2001). Our finding is in line with Wang and Kelan (2013), whose results indicate that the gender quota and the resulting increase in female directors provide fertile ground for women to take top leadership positions. Similarly, Allemand et al. (2014) confirm that coercive pressures explain the growth in female directors in European countries. Grosvold et al. (2007) also conclude that quota laws are necessary to generate a significant improvement in gender diversity on boards.³

Regarding Hypothesis 2, the MASCULINITY variable shows a negative and significant effect on the number of women directors ($\beta = -0.0007$, p -value < 0.000), that is, in masculine societies women are unlikely to become board members. The situation is similar with the POWER_DISTANCE variable ($\beta = -0.0007$, p -value < 0.000) where, in societies with a high distance between those who hold power and their subordinates, women have limited or no opportunities to gain a position on the board, consistent with our Hypothesis 3. This result supports the findings obtained by Grosvold and Brammer (2011), for a sample of 38 countries over 2001–2007, as they show that as much as half of the variation in the presence of women on corporate boards across countries is attributable to national institutional systems and that culturally and legally-oriented institutional systems appear to play the most significant role in shaping board diversity.

Finally, on the control variables, we find that country GDP growth (GDP) and women's education (EDUCATION) are associated with a larger number of women directors ($\beta = 0.005$, p -value < 0.000 , and $\beta = 0.004$, p -value < 0.010 , respectively), corroborating Grosvold and Brammer's (2011) expectations. Thus, the higher the country's economic growth and its women's level of education, the higher the number of women on boards. The results also suggest that in common law countries (LEGAL_ORIGIN) the percentage of women directors is higher, also corroborating Grosvold and Brammer's (2011) assertions. On the contrary, according to Model 4 the quality of regulation (REGULATORY_QUALITY) does not have a significant influence on the number of women directors.

Conclusions and discussion

The aim of the current investigation has been to examine the legal and cultural characteristics that may explain the burgeoning presence of women directors in a sample of European countries. We contribute to previous literature

by providing the first empirical evidence on the combined effect of legal and cultural factors on mapping board geography, by also controlling for other institutional factors. Since national cultures are slow to change, some nations may need to apply more radical regulation options to improve gender quotas, while others may find softer regulation to be sufficient. They may also have different degrees of commitment to pursuing gender equality. Including all these factors in our empirical model may help to provide significant conclusions about the mapping of board gender quotas in Europe in the 21st century.

We have also incorporated improvements in methodology by using panel data estimation for the cross-national comparison and by controlling for endogeneity, since our results show that the legal and cultural environment of a country affects the presence of women on boards of directors. Turning to the legal system, the existence of positive gender laws is positively and significantly related to the likelihood of women being included on boards. On the other hand, in countries with cultural characteristics such as masculinity and a high power distance, it is more difficult for women to gain access to boards, providing evidence of the existence of a glass ceiling effect in the promotion of women in corporations.

Our results thus suggest that the establishment of quotas or minimum percentages for women's participation on boards has a positive influence. Gender ratios are lower in masculine cultures and where power distance is high. This result indicates that nations with a cultural heritage which does not promote women may need to consider more radical options such as positive laws to reshape the gender imbalance in the boardroom. The usefulness of legally-mandated gender quotas should be considered for those countries where female quotas are still very low and where gender legislation can be modified. Nevertheless, the diversity of corporate board systems depending on different cultural and social characteristics, precluded by Aguilera and Jackson (2003), is also illustrated in our results, since there are countries where female gender quotas have increased without the need for laws to enforce them. Still, it seems that a positive law is needed to encourage such a cultural change when needed, particularly as we are aware of how slow cultural change can be. Our results also tell us about the effects of corporate governance systems, since women predominate on corporate boards in firms operating in common law countries.

But women are still outnumbered. According to the Grant Thornton International Business Report (2013), the European average for managerial positions was 25 women, where only two countries working under a quota recommendation (Germany and Sweden), and one under a law (France), were above this average, with a maximum of 31 women. In its document "Gender balance on corporate boards, Factsheet no.1, Economic Arguments", the European Commission reveals that 60% of European university graduates are women and that, with the current shortage of qualified personnel and an ageing population, this is a resource that should not be underestimated. It is therefore necessary to routinely consider the best candidates of both sexes to guarantee that new managers and directors go through a pre-selection process in which their gender is immaterial.

³ It is also worth mentioning that we have replicated the estimations considering a dichotomous variable that distinguishes between whether there is a quota law stipulating the number of women directors and senior managers in each year, in each country, in the sample (1 = law; 0 = recommendation), and the results are the same as those shown in Table 3.

Returning to our results, it seems that the masculinity and power distance variables are not only cultural characteristics that indicate the type of society in a country, but also work, in an ontological fashion, as the behavioural norms in the business world. They have a clear influence on the presence of women in society in general and, specifically, on business leadership. From our point of view, it would be natural to expect a developmental change in thinking, a paradigm shift that leads people to accept diversity, making it possible for women to hold positions in the world of business that, to date, have been stereotyped for men. However, a change in values or culture is not all that is needed to raise the number of women directors. Imposing norms to include women in senior positions has a positive effect on the quest for gender parity and should also be promoted politically if we want countries to adopt this cultural change.

In short, countries' legislation and their cultural environment and values appear to be crucial in determining board demographics and promoting women into the top management positions. Action at political level is needed to increase gender diversity on boards. In addition, over time and with greater awareness in society of the importance of diversity and thus of women's representation on boards, women will be accepted naturally onto corporate boards.

In order to distinguish between compliance with a law and with a recommendation, we omitted from the sample those countries where no regulation on gender equality exists. It would be of interest to include such countries in future research samples as this would help corroborate the findings on some of the variables considered here.

As noted by Steinmetz (2012) and Grosvold et al. (2016), a government can signal its ideological commitment to creating the institutional infrastructure that allows women to pursue professional careers, but it can go further: it can change the law, it can fund the infrastructure, and thirdly it can follow up on its policies. Thus, differences in legislation may go beyond the classification we adopted, and could be highly compelling for future analysis. Also, as noted by Terjesen et al. (2015) and Behnam and Maclean (2011), we could consider variations in enforcement between the countries which have a positive law with non-compliance penalties. In our paper, the sample was too small to make further disaggregation by enforcement level, and secondly, the time period was not long enough for any enforcement penalty to be applied. In most legislations, there was a transition period of at least five years for firms to adapt to the new requirements. Therefore, for future analysis it might be of interest to consider a longer time framework after the passing of a law or quota establishing penalties, since the impact on board and managerial diversity may be more significant after a longer period.

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