Gender Diversity in the Boardroom and Firm Financial Performance

Kevin Campbell
Antonio Mínguez-Vera

ABSTRACT. The monitoring role performed by the board of directors is an important corporate governance control mechanism, especially in countries where external mechanisms are less well developed. The gender composition of the board can affect the quality of this monitoring 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 issue of board gender diversity has attracted growing research interest in recent years, most empirical results are based on U.S. data. This article adds to a growing number of non-U.S. studies by investigating the link between the gender diversity of the board and firm financial performance in Spain, a country which 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 by the Blau and Shannon indices – has a positive effect on firm value and that the opposite causal relationship is not significant. Our study suggests that investors in Spain do not penalise firms which increase their female board membership and that greater gender diversity may generate economic gains.

KEY WORDS: board of directors, corporate governance, endogeneity, firm value, women

Introduction

The effectiveness of the board of directors as monitors depends upon various factors, among them the qualifications and experience of board members, their possible involvement in multiple directorships, their level of share ownership and the type of remuneration scheme employed. This monitoring role has attracted increased attention in recent years as a result of the high-profile failures of companies such as Enron and WorldCom and subsequent corporate governance reforms. An emerging strand of research, based largely on U.S. data, has investigated whether the gender of board members also plays a role in board effectiveness. The presence of women on company boards may enhance shareholder value if women bring an additional perspective to board decision-making; alternatively, women may have a negative impact if the decision to appoint female board members is motivated by societal pressure for greater equality of the sexes. In the U.S., female boardroom appointments have increased in recent years, in contrast to the situation observed in many other countries.

The objective of this article is to examine the impact on firm performance of the presence of women on the board of directors. We study the relationship between firm value and four measures of the extent of female board membership: a dummy measure indicating the existence of one or more female directors, the percentage of female directors and two indices of gender diversity (the Blau index and the Shannon index). We measure firm value using an approximation of Tobin's Q.

This work makes a number of contributions to the literature. First, it adds to the scarce empirical evidence on the topic. Most articles that examine the effect of board gender on firm value use data from Anglo-Saxon countries with legal systems based on common law. This article provides evidence from Spain, which has a civil law system, also common in most other European countries. Second, an increased role for women on company boards has been the subject of intense political debate in Spain and is now positively advocated for ethical reasons, to redress what is perceived to be an under-representation of women in business, and in society more generally; in this context it is interesting to

ascertain whether such a policy passes the "market test" – that is, whether the financial markets encourage or punish gender diversity, and thus whether there is also a "business case" for greater female participation in the boardroom.

Third, our analysis makes use of panel data methodology, which is more powerful in controlling for unobservable heterogeneity, a factor which is ignored by the majority of published studies. Fourth, unlike most existing studies, we also take account of the possible endogeneity of the relationship between gender diversity and firm performance. We employ a causality test to assess whether female board membership really affects firm performance or whether, in fact, better performing firms are simply more likely to hire women. We find that the positive relationship observed between gender diversity and firm value is due to the presence of female directors affecting firm performance rather than the opposite. Finally, this is the first study to examine the effect of board gender on firm performance in the Spanish market.

Our results show that the presence of one or more women on the board has an insignificant effect on firm value, as measured by our proxy for Tobin's Q. However, we find that the ratio of women to men on the board and diversity indices have a positive influence on firm value. We also find that firm value does not affect the ratio of women to men on the board and diversity indices. The direction of causality is thus from board gender to firm performance and not the other way round.

The remainder of the article is organised as follows. The following explains why the issue of gen-

der diversity is particularly worthy of study in the context of corporate governance, and its significance in the Spanish context, while section "Gender diversity in the boardroom and firm value" reviews the literature on the corporate impact of board gender diversity. Section "Data and variables" describes the data selection process and the characteristics of the sample, while Methodology, Results and Conclusions are explained in the following sections.

Gender diversity in the boardroom and corporate governance

The term corporate governance refers to "the system by which companies are directed and controlled" (Cadbury Report, 1992). It comprises a series of mechanisms through which the interests of management, the board of directors, controlling shareholders, minority shareholders and other stakeholders may be aligned. The board of directors is an important governance mechanism, although the nature of the alignment between different interest groups is also partly determined by the legal environment. In a series of articles, La Porta et al. (1997, 1998, 2002) conclude that countries whose legal rules originate in the "common law" tradition – found in the Anglo-Saxon countries – tend to protect investors more than those countries whose laws originate in the "civil law" system.

Table I illustrates the differences in share ownership between selected civil law countries, Japan, and the two main Anglo-Saxon countries, the U.S. and the U.K. It is evident that the U.S. and the U.K have

TABLE I

Comparative ownership structure by country

Country	Individual share ownership (%)	Institutional ownership (%)
France	36.5[a]	8.0[b]
Germany	36.8[a]	30.3[b]
Japan	25.1[a]	35.8[b]
Spain	47.2[c]	6.2[c]
U.K.	24.5[a]	50.1[b]
U.S.	20.5[a]	44.5[b]

[a]*Source:* La Porta et al. (2002) for years 1995, 1996 and 1997.
[b]*Source:* Gerke et al. (2003) for 1995.
[c]*Source:* Authors' research for years 1995 to 2000.

the lowest levels of individual share ownership and the highest levels of institutional share ownership. Of the civil law countries in Table I, Spain has the highest level of share ownership by individuals, reflecting the importance of family ownership, and the lowest level of institutional share ownership. Family businesses are a significant feature of the Spanish economy. Citing Soria (2002), Jaskiewicz et al. (2005) note that family businesses contribute about 60–65% to GDP, represent more than 1.5 million firms and generate over 80% of private employment. Cabrera-Suárez and Santana-Martín (2004) report that more than two-thirds of board members in their sample of 112 large Spanish firms are family members, while Bocatto (2006) provides evidence that most family-owned firms in Spain have a strong desire for continuity and achieve this goal by nominating family members to top senior positions.

Share ownership in Spain is also more concentrated than in the U.S. and the U.K. According to La Porta et al. (1998), the three largest shareholders in Spain held 51% of the total shares, while in the U.S. and the U.K. this proportion was 20% and 19%, respectively. Most Spanish companies are organised as pyramidal groups, with a holding company at the apex controlling one or more subsidiaries (Ballesta and Garcia-Meca, 2005). Consequently, indirect ownership through pyramids gives controlling shareholders, typically wealthy families, control rights that exceed their direct ownership.

Although Spain, unlike other European civil law countries, has a single-tier board of directors, there is a significant difference in the balance between executive directors and independent non-executive directors. In their latest European survey, Heidrick and Struggles (2007) report that the proportion of independent non-executive directors on the boards of Spanish-listed companies is 40%, compared to a European average of 54% and a U.K. figure of 91%. Spain also has the highest proportion of so-called "reference shareholders" (shareholder representatives) on the board of directors in Europe (41%) reflecting the importance of controlling shareholders. Spanish corporate governance thus has different characteristics to that typically investigated in Anglo-Saxon countries.

The board of directors functions as an internal governance mechanism via its appointment, supervision and remuneration of senior managers, as well

as its collective determination of overall corporate strategy. A large number of studies have investigated the influence of board composition on the value of the firm. These have examined, among others, the percentage of insiders on the board (Agrawal and Knoeber, 1996), the tenure of directors and managers (Hermalin and Weisbach, 1991), the share ownership of board members (Weisbach, 1988) and the size of the board of directors (Kini et al., 1995). More recently, researchers have begun to investigate the influence of board diversity, which may be defined as the variety inherent in the board's composition. This variety can be measured on a number of dimensions: gender, age, ethnicity, nationality, educational background, industrial experience and organisational membership, among others.

In this study we focus on gender, which is arguably the most debated diversity issue, not only in terms of Board diversity, but also in terms of female participation in economic activity and in society in general. We do not consider the ethnic dimension of Board diversity as it is not an important issue in Spain. While Spain has three peripheral ethnic groups in addition to its Castilian ethnic core – Catalans, Galicians and Basques – White people constitute around 98% of the Spanish population (Aja et al., 2000). This situation contrasts with the racial diversity of the United States where, according to the Cervantes Institute (1999), White people constituted 71.8% of the population in the year 2000, compared to Blacks (12.2%), Hispanics (11.4%), Asians (3.9%) and others (0.7%).

During the 1980s and 1990s female participation in labour markets worldwide grew substantially, although this was not always matched by improvements in job quality (ILO, 2007). In most European countries, the labour force participation rate of women is lower than that of men (Curdová, 2005). Spain is no exception. In comparison to other OECD countries, the proportion of women in the Spanish workforce is low. In 2005, 46.4% of Spanish women participated in the workforce compared to an OECD average of 50.3%, giving Spain a ranking of 24 out of 30 OECD countries (OECD, 2006a). Unemployment is also higher for women in Spain than for their male counterparts and higher than the OECD average among women (OECD, 2006b). However, the unemployment gender gap in Spain is smallest for those women attaining advanced tertiary

qualifications. Spanish women achieving this level of education had an unemployment rate of 8.8% in 2005 (OECD average 4.3%) compared to 5.3% of males (OECD average 3.5%).

Attracting more women to serve on company boards requires that they have the educational opportunities and skills necessary to compete with male counterparts. In the U.S., there is no gender gap in tertiary education: women earned more than one-half of all bachelor's and master's degrees (57.3% and 58.5%) and nearly one-half of all doctorates and law degrees (44.9% and 47.3%) awarded in 2002 (Catalyst, 2004). This perhaps explains why the number of women board directors serving on U.S. boards has increased over the past 10 years or so. Catalyst – a research and advisory services organisation working to expand opportunities for women at work – has monitored the progress of women in U.S. board positions since 1995. In its 2005 *Census of Women Board Directors of the Fortune 500*, it reported that women held 14.7% of all *Fortune* 500 Board seats, up from 13.6% in 2003 and 9.6% in 1995 (Catalyst, 2006). The rate of growth over this ten-year period was, on average, one-half of one percentage point per year – a rate characterised by Catalyst as "sluggish". The 2006 Census revealed a "stagnant" situation, with women holding 14.6% of all *Fortune* 500 board seats, a decline of 0.1% compared to the previous year (Catalyst, 2007). Based on interviews with CEOs, female directors and company secretaries at *Fortune* 1000 companies, Konrad and Kramer (2006) contend that women tend to have a greater impact on board decision-making if Boards possess three or more female members. However, in 2006 only 84 of the *Fortune* 500 companies had achieved this critical mass of women on their boards, although this represented a slight increase from 76 in 2005 (Catalyst, 2007).

In Europe, the average number of women in European boardrooms has increased in recent years, from 5.0% in 2001 to 8.4% in 2007 (Heidrick and Struggles, 2007) as shown in Table II. However, this is still a low level of representation in comparison to the U.S. and hides a wide degree of variation across countries. Sweden had the highest number of female directors (21.0%) while Portugal has the lowest number (0.7%). Spanish boards had an average of only 3.1% female directors.

TABLE II

Women in the boardroom by country

2001 European average	5.0%
2003 European average	6.1%
2005 European average	7.3%
2007 European average	8.4%
Portugal	0.7%
Italy	2.3%
Spain	3.1%
Belgium	5.3%
Switzerland	7.2%
France	7.5%
Netherlands	9.0%
Germany	12.4%
UK	15.2%
Sweden	21.3%

Source: Heidrick and Struggles (2007).

This study focuses on the relationship between gender diversity and firm financial performance in Spain, where the issue of gender equality has risen up the political agenda in recent years. Women have traditionally been poorly represented in the Spanish workforce, reflecting deep-rooted societal attitudes towards the role of women. While the womens' rights movement made major advances in Europe and the U.S. in the 1960s, this was not true for Spain, then ruled by a conservative military dictatorship. When General Franco died in 1975, after almost four decades in power, it was illegal for women to work, own property, open a bank account or even travel without their husband's permission (Catan, 2006). The gender ideology of the dictatorship was summarised in Article 47 of the Spanish Civil Code, which stated that "husbands must protect their wives and wives must obey their husbands" (Carrera et al., 2001).

Franco's death led to growing female emancipation, known in Spain as the "destape" – literally

"taking the lid off". For the first time, women began to leave the home and entered the workforce in large numbers. The womens' rights agenda received a boost in 2004 when a new Socialist Prime Minister José Luis Rodríguez Zapatero promised to make gender equality one of his Government's top priorities. He appointed women to half of the positions in his 16-member Cabinet and unveiled a succession of initiatives to change "machista" behaviour. Women constituted about 48% of the workforce in 2006, up from 28% in 1980, and the majority of graduates from Spanish universities are now female (Catan, 2006). Despite catching up with the U.S. in terms of the proportion of female graduates, women are rarely represented at senior levels in the business world. To address this situation, and also to provide more opportunities for Spanish women to achieve elected office, the Spanish Parliament approved a new, so-called "Law of Equality" in March 2007. The law specifies that 40% of candidates filed on party ballots must be female and it encourages greater employment of women by giving companies with higher ratios of female to male employees preferential treatment when bidding for government contracts, among other measures (Wools, 2007).

The drive to promote women as members of the board of directors also features in Spain's code of corporate governance. Like companies listed on most European stock markets, Spanish-listed companies are required to report the extent to which they "comply or explain" with good corporate governance practice. Best practice is embodied in Spain's *Unified Good Governance Code*, approved in May 2006 by the Spanish Securities & Exchange Commission, the Comisión Nacional del Mercado de Valores (CNMV). This unified code merged and updated previous Spanish guidelines on corporate governance – the 1998 Olivencia Report and the 2003 Aldama Report – as well as incorporating recommendations made by the European Commission and the OECD. It was used for the first time by Spanish companies publishing their 2007 Annual Governance Reports.

A unique aspect of Spain's 2006 *Unified Good Governance Code* is that it recommends positive discrimination in favour of female boardroom appointments for those firms with low- or zero-female representation. Principle 15 of the code states that:

When women directors are few or non existent, the Board should state the reasons for this situation and the initiatives taken to correct it; in particular, the Nomination Committee should take steps to ensure that:

(a) The process of filling board vacancies has no hidden bias against women candidates;
(b) The company makes a conscious effort to include women with the target profile among the candidates for board places.

In its justification for this new requirement, the CNMV argues that a good gender balance on boards of directors is not only a matter of ethics or social justice, but is also "an efficiency objective" and represents "economically rational conduct", thus appealing to the business case for female boardroom appointments (CVMV, 2006).

Gender diversity in the boardroom and firm value

Arguments for greater female boardroom representation can be split into two categories: ethical and economic. The former argues that it is immoral for women to be excluded from corporate boards on the grounds of gender and that firms should increase gender diversity to achieve a more equitable outcome for society. Accordingly, these arguments suggest that firms should regard greater female representation not as a means to an end but as a desirable end in itself (Brammer et al., 2007). Economic arguments, on the other hand, are based on the proposition that firms which fail to select the most able candidates for the board of directors damage their financial performance. We now consider the theory that lies behind this "business case" for greater gender diversity on the board.

It can be argued that greater board diversity increases a firm's competitive advantage relative to firms with less diversity. The arguments that lie behind this are based largely on intuitive reasoning and are articulated by Robinson and Dechant (1997). While they focus on workplace diversity in general and consider diversity in terms of age and race as well as gender, we consider their arguments as they apply to the gender diversity of the board. First, it is argued that greater diversity promotes a better understanding of the marketplace by matching

the diversity of a firm's directors to the diversity of its potential customers and employees, thereby increasing its ability to penetrate markets. Therefore, one would expect board composition to systematically vary across industry sectors according to the cross-sector variation in the demographic composition of customers and employees. In this context, it is worth noting that Brammer et al. (2007) in their study of UK corporate boards find that the highest rates of female directors are associated with retailing, banking, the media and utilities – all sectors associated with a close proximity to final consumers – while producer-oriented sectors such as resources, engineering and business services – characterised by isolation from final consumers and male-dominated workforces – have significantly fewer female directors.

Second, it is argued that diversity increases creativity and innovation as these characteristics are not randomly distributed in the population, but tend to vary systematically with demographic variables such as gender. Third, it is argued that diversity can enhance problem-solving as the variety of perspectives that emerges from a more diverse board means that more alternatives are evaluated. By taking a broader view, the board will have a better understanding of the complexities of the business environment and thus improve decision-making. A more gender diverse board may also improve a firm's competitive advantage if it improves the image of the firm and if this has a positive effect on customers' behaviour and thus on a firm's 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 consider whether gender diversity enhances the board as a mechanism to control and monitor managers. They suggest that greater diversity may increase the independence of the board as women are more inclined to ask questions that would not be asked by male directors. However, they also point out that a fresh perspective may not necessarily result in more effective monitoring if female board members are marginalised and conclude that there is no a priori reason to expect greater gender diversity to enhance board monitoring.

Another argument for a more diverse board is that it may improve the quality of the directors if they are selected without prejudice from both genders. Farrell and Hersch (2005) note that, if women are scarce commodities at board level, they may choose to serve on the boards of better performing firms. This suggests a positive relationship between the presence of the women on the board and firm value, although it is also possible that the two variables are endogenously defined.

There are also arguments that greater gender diversity may serve to reduce firm performance. Earley and Mosakowski (2000) suggest that members of homogeneous groups tend to communicate more frequently as they are more likely to share the same opinions. Similarly, Tajfel and Turner (1986) and Williams and O'Reilly (1998) suggest that homogeneous groups are more cooperative and experience fewer emotional conflicts. However, if greater gender diversity among board members generates more opinions and critical questions, and thus more conflicts, decision-making will be more time-consuming and less effective (Lau and Murnighan, 1998). It has been suggested, however, by Nowell and Tinkler (1994) that women are more cooperative than men, although Brown-Kruse and Hummels (1993) argue that the opposite is true. Boardroom conflict may also be partly determined by the degree of altruism inherent in male and female behaviour: 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. A further argument supporting the view that greater gender diversity is associated with lower firm performance can be found in the observation of Jianakoplos and Bernasek (1998) that women are more risk-averse than men, while Cox and Blake (1991) suggest that women increase the costs of the firm as a result of higher turnover and absenteeism.

More gender diverse boards may also encourage stronger identification by directors with the opinions expressed by other directors of the same gender, thus increasing the likelihood of conflict (Richard et al., 2004). This can be especially problematic if a firm is operating in a highly competitive environment where the ability to react quickly to changes in the market is an important issue (Williams and O'Reilly, 1998). Although the decisions of a gender diverse board may be of a better quality in the end, this may fail to balance the negative effects of a slow decision-making process

if the market demands quick responses (Hambrick et al., 1996).

These different arguments encompass both positive and negative associations between the presence of women on the board of directors and firm value, so the impact of gender diversity cannot be determined a priori. The empirical evidence is also inconclusive and mostly based on U.S. data. For example, Shrader et al. (1997) are unable to find any significantly positive relationship between the percentage of female members of U.S. boards and several accounting measures of financial performance, and find significantly negative relationships in some cases. Carter et al. (2003) find a positive and a significant relationship between Tobin's Q and the proportion of women on the boards of *Fortune* 1000 firms, after controlling for size, industry and other corporate governance measures. Erhardt et al. (2003) report that the percentage of women on the boards of large U.S. firms is positively associated with two accounting measures of performance, return on assets and the return on investment, while a report by Catalyst (2004) finds that *Fortune* 500 companies with the highest representation of women on their top management teams experienced significantly higher returns on equity and total shareholder returns compared to the companies with the lowest female representation. Farrell and Hersch (2005) report an insignificant stock market reaction to the announcement of female additions to the boards of *Fortune* 500 companies and conclude that the increase in female boardroom appointments in the U.S. that has occurred has been in response to calls for greater diversity rather than as a response to the "business case" for female directors.

Of the non-U.S. studies that exist, Du Rietz and Henrekson (2000) fail to find any relationship between the presence of women on the boards of Swedish firms and performance – measured by profitability, employment or orders growth – when controlling for firm size and industrial sectors. A study of Danish firms by Smith et al. (2006) fails to find a significant link between female board representation and accounting measures of firm performance, a result which is consistent with the finding of Rose (2007) that no significant link exists between female representation on Danish boards and firm performance as measured by Tobin's Q. However, this result stands in contrast to the findings of Böhren and Ström (2005) who report a significantly negative relationship between the proportion of women on the boards of Norwegian firms and Tobin's Q. Randøy et al. (2006) analyse the impact of board diversity on the performance of the 500 largest firms from three Scandanavian countries – Denmark, Norway and Sweden – and find no significant gender diversity effect on stock market performance or on the return on assets.

The ambiguous empirical evidence may be explained in a number of ways. First, the studies relate to different countries and to differing time periods, and the effect of board gender diversity may be dependent on the timing and on the legal and institutional context. Second, the conflicting results may be due to the different estimation methods employed by various researchers. For example, in some studies no controls are made for factors such as firm size and leverage, which are known to affect firm performance. Further, there may be other unobserved factors which affect firm performance. Therefore, the use of panel data in our study will facilitate a more reliable picture than that arising from purely cross-sectional studies.

Data and variables

The sample for the panel data analysis comprises non-financial firms listed on the continuous market in Madrid during the period from January 1995 to December 2000. Due to some limitations in the availability of the data, the sample comprises 68 companies and 408 observations. The identities of the directors and the dates on which they were appointed were obtained from the register of directors of the Spanish Stock Exchange Commission (CNMV), which provides details of the dates of appointment and termination of the posts of each member of the board of directors of listed companies. From the register of directors we also calculated the number of board members. The accounting data were obtained from the SABI[1] database. Finally, the number of shares and the share prices were obtained from the annual Madrid stock exchange list.

As a measure of firm value we use an approximation of Tobin's Q (Q), defined as the sum of the market value of stock and the book value of debt divided by the book value of total assets. The

measurement of firm value in other studies varies considerably, but these studies can generally be divided into two groups: those that use mainly accounting measures and those that use Tobin's Q. We use Tobin's Q as a measure of firm value in our study rather than accounting-based measures because it reflects the market's expectations of future earnings and is thus a good proxy for a firm's competitive advantage (Montgomery and Wernerfelt, 1988). The unity value of the Tobin's Q ratio provides a clear yardstick for the measurement of firm performance: firms with a Tobin's Q ratio greater than 1.0 are expected by investors to be able to create more value by using available resources effectively, while those with a Tobin's Q ratio of less than 1.0 are associated with poor utilisation of available resources. In addition, Tobin's Q accounts for risk and, unlike accounting measures such as return on assets, is not liable to reporting distortions due to tax laws and accounting conventions (Lindenberg and Ross, 1981). In particular, reported financial performance may vary significantly from year to year as firms write off items such as goodwill from an acquisition. Accounting results are based on events that have already occurred, and thus offer a view of past performance, while Tobin's Q focuses on expectations of future performance (Demsetz and Villalonga, 2001). More recent research tends to use Tobin's Q, which has gained acceptance as a measure that helps to explain a wide variety of economic phenomena, including industry concentration (Montgomery and Wernerfelt, 1988), corporate diversification (Hyland and Diltz, 2002; Lang and Stulz, 1994; Steiner, 1996), research and development (Hall, 1999; Megna and Klock, 1993), management ownership (Griffith, 1999) and the structure-performance relationship (Smirlock et al., 1984) among others.

As proxies for the gender diversity of the board of directors, we first use a dummy variable, DWOMAN, that takes a value of one when at least one woman is present on the board, and zero otherwise. The second variable is the percentage of women on the board, PWOMEN, calculated as the number of female directors divided by the total number of directors. We also calculate two further measures of gender diversity that take into account both the number of gender categories (two) and the evenness of the distribution of board members among them.

These two attributes of diversity, referred to, respectively, as 'variety' and 'balance', may be combined into 'dual concept' measures of diversity (Stirling, 1998).[2] These measures are widely used across a range of scientific fields, including ecology, genetics, linguistics, communications and cultural studies, as well as economics. We utilise two such measures.[3] The first is the Blau index[4] measured as $1 - \sum_{i=1}^{n} P_i^2$, where P_i is the percentage of board members in each category and n is the total number of board members. Values of the Blau index for gender diversity range from 0 to a maximum of 0.5, which occurs when the board comprises an equal number of men and women. The second measure is the Shannon index[5], calculated as $-\sum_{i=1}^{n} P_i \ln P_i$, where P_i and n have the same meaning as in the previous expression.[6] Once again, the minimum value of the index is zero and diversity is maximised when both genders are present in equal proportions, which gives rise to a value of 0.69. The properties of the Shannon index are qualitatively similar to those of the Blau index although it will always yield a larger number than the Blau index and is more sensitive to small differences in the gender composition of boards since it is a logarithmic measure of diversity.[7]

We also include a number of control variables. Specifically, the logarithm of the total number of directors, LNDIR; the debt level, LEVER (calculated as the ratio of total debt to total assets); the return on assets, ROA and the size of the firm, SIZE (approximated by the natural logarithm of total assets).

In Table III, we report the descriptive statistics for all of the variables. The approximation of Tobin's Q (Q) has a mean value of 1.6, which is close to the values obtained by Demsetz and Villalonga (2001) for the U.S. market (1.1), by Hillier and McColgan (2001) for the U.K. market (1.96) and by López-Iturriaga and Rodríguez-Sanz (2001) for the Spanish market (1.01, 1.44 and 1.23, for different years).

The mean percentage of women on Spanish boards of directors, PWOMEN, is 3.2. This is lower than the numbers reported for the U.S. market. For example, Carter et al. (2003) report a value of 9.6%, Farrell and Hersch (2005) a value of 6.9% and Catalyst (2004) a value of 10.2%. However, the greatest difference between Spain and the U.S. is apparent when we observe the percentage of firms with one or more women on the board, DWOMAN. Only 23.7% of Spanish-quoted firms have one or more

TABLE III

Descriptive statistics

	Mean	Median	Standard deviation	Minimum	Maximum
Q	1.642	1.287	1.220	0.3318	10.763
PWOMEN	3.283	0.000	7.157	0.000	40.000
DWOMAN	0.237	0.000	0.426	0.000	1.000
BLAU	0.053	0.000	0.108	0.000	0.480
SHANNON	0.089	0.000	0.172	0.000	0.673
NDIR	10.750	10.000	4.518	2.000	26.000
LNDIR	0.9912	1.000	0.193	0.301	1.415
LEVER	0.384	0.383	0.214	0.000	0.9830
ROA	5.482	4.450	7.594	−19.420	38.120
SIZE	5.535	5.447	0.667	3.778	7.680

Variables: Q (approximation of Tobin's Q), PWOMEN (percentage of women on the board of directors, %) DWOMAN (binary variable that takes a value of 1 when there is at least one woman on the board of directors, and 0 otherwise), BLAU (Blau index of diversity), SHANNON (Shannon index of diversity), NDIR (number of directors on the board), LNDIR (logarithm of the number of directors on the board), LEVER (total debt over total assets), ROA (return on assets, %), SIZE (logarithm of the book value of the total assets of the firm).

women on their board, while the comparative value for U.S. firms is 70% (Farrell and Hersch, 2005). The incorporation of women into the workplace has been slower in Spain than in other developed countries, a fact reflected in our results.

The mean value of the number of directors (NDIR) is 10.75, the same as that found by Fernández et al. (1998) in their study of the Spanish market. This board size is consistent with the recommendations of the Olivencia code for an ideal board size of between 5 and 15 members. The average board size in the U.S. is also similar to that reported in our study. For example, Carter et al. (2003) report a mean value of 10.9 while Farrell and Hersch (2005) report a value of 11.7. In the U.K., Beekes et al. (2004) report a mean board size of 8.2.

Finally, the means of our leverage variable, LEVER, the return on assets variable, ROA and the firm size variable, SIZE, are 38%, 5.4% and 5.5, respectively. For comparison, Demsetz and Villalonga (2001) report a value of 19% for leverage and 9.46 for firm size in the U.S.

Methodology

The panel data methodology allows us to eliminate any unobservable heterogeneity that may be present among the companies in our sample. If unobservable heterogeneity (highlighted by Himmelberg et al., 1999, among others) is correlated with the explanatory variables, thereby biasing the coefficients obtained, we undertake a conditional inference (estimation by fixed effects). However, if the effects are not correlated with the independent variables, we instead carry out unconditional inference using the random effects method (Arellano and Bover, 1990).

To test for the existence of any correlation between unobservable heterogeneity and the explanatory variables, we use the Hausman test. This test examines the equality of the coefficients of the fixed effect estimations and the random effect estimations. The null hypothesis is that the coefficients of both models are similar. If this hypothesis is rejected, the coefficients will differ markedly among themselves, with only the intragroup estimation (fixed effects) being consistent. In addition, in order to control for the possible endogeneity of the variables, which could bias the coefficients obtained, the estimation is carried out with panel data using two-stage least squares (2SLS).

To determine the nature of the relationship between female board membership and firm value we estimate two different models. In the first, our proxy for Tobin's Q is the dependent variable and measures of female board representation are the independent variables. We estimate the following model:

$$Q_{it} = \beta_0 + \sum \beta_j \text{WOMAN}_{jit}$$
$$+ \sum \beta_j \text{CV}_{jit} + \psi_t + \eta_i + \varepsilon_{it}, \qquad (1)$$

where Q represents firm value (our proxy for Tobin's Q); WOMAN represents four alternative variables – the percentage of women on the board of directors (PWOMEN), a dummy variable that takes a value of one when one or more women are present on the board, and zero otherwise (DWOMAN), the Blau index of diversity (BLAU) and the Shannon index of diversity (SHANNON); CV represents the control variables (LEVER, ROA and SIZE).[8] Finally, the expressions ψ_t and η_i refer to time effects and unobservable heterogeneity, respectively.

It is not clear, a priori, how female board membership (WOMAN) influences firm value (Q). On the one hand, greater gender diversity may be associated with more imaginative company strategies (thus generating a positive sign). On the other hand, the presence of women may lead to greater conflict on the board, or women may be appointed due to societal pressure rather than on the basis of merit (thus implying a negative sign). Finally, an insignificant relationship would be expected if gender, in fact, has no influence on firm value.

We expect the sign of the leverage variable, LEVER, to be positive if debt is an efficient mechanism for reducing the agency conflict in the firm. The expected sign for firm size, SIZE, is negative, while that of ROA is positive.

In the second model, we consider the possibility that the relationship between the variables representing female board membership and Tobin's Q may be endogenously determined. To account for this we specify firm value as an independent variable and PWOMEN, DWOMAN, BLAU and SHANNON as dependent variables. We thus use the following model:

$$\text{WOMAN}_{it} = \beta_0 + \sum \beta_j Q_{jit}$$
$$+ \sum \beta_j \text{CV}_{jit} + \psi_t + \eta_i + \varepsilon_{it}, \qquad (2)$$

where CV represents the logarithm of the number of directors, LNCON, and the size of the firm, SIZE. The other variables are the same as those specified in Model (1).[9]

The effect of firm value on female board representation will be positive if women choose to work in better performing firms. Finally, we postulate that larger firms, and firms with larger boards, will be more likely to employ female board members.

Results

The results of our tests of models (1) and (2) are presented in Tables IV–VII. Thus, in Table IV we present the relationship between the percentage of women on the board and Tobin's Q, while in Table V we report the effect on firm value of the presence of one or more women on the board, and *vice versa*. Finally, in Tables VI and VII we show the relationship between Tobin's Q and the Blau index (Table VI) and firm value and the Shannon index (Table VII). All of the estimations were carried out using fixed effects, since the Hausman test was significant.

In Table IV, we can observe that the percentage of women on the board (PWOMEN) is positively and significantly related to our approximation of Tobin's Q. Therefore, it seems that any negative aspects of greater female board representation are outweighed by the positive aspects. This result is similar to those obtained by Erhardt et al. (2003) and Carter et al. (2003) in the U.S. market.

As far as the control variables are concerned, firm leverage (LEVER) does not have a significant effect on Tobin's Q. On the one hand, a high level of debt may imply more control over insiders by creditors, but it may also be associated with higher bankruptcy costs. The result reported here is indeterminate. Return on assets (ROA) has a positive influence on Tobin's Q, which is unsurprising as more profitable firms are more likely to have a higher value. Finally, we observe that firm size (SIZE) has a negative influence on Tobin's Q.

From the final column of Table IV, we can observe that the impact of firm value (Q) on the percentage of women on the board (PWOMEN) is not significant. This contrasts with Carter et al. (2003) who report a positive relationship in the U.S. Our result suggests a lack of societal pressure in Spain to add women to the board during the time frame of the study. Spanish women do not appear to choose to serve on the boards of the more profitable Spanish

TABLE IV

2SLS panel data regression of the percentage of women on the board of directors (PWOMEN) and Tobin's Q (Q)

	Q	PWOMEN
Constant	9.820 (2.88★★★)	6.677 (0.64)
Q		−2.132 (−1.11)
PWOMEN	0.413 (1.89★)	
LNDIR		6.436 (2.22★★)
LEVER	−0.396 (−0.40)	
ROA	0.089 (2.15★★)	
SIZE	−1.766 (−2.39★★)	−1.132 (−0.74)
Wald Chi^2	378.86★★★	249.80★★★
R^2	0.163	0.061
Hausman test	28.61★★★	19.48★★★

Notes: ★, ★★, ★★★ Denote significance at the 1%, 5% and 10% levels, respectively.
Variables: Q (approximation of Tobin's Q), PWOMEN (percentage of women on the board of directors, %), LNDIR (logarithm of the number of directors on the board), LEVER (total debt over total assets), ROA (return on assets, %) and SIZE (logarithm of the book value of the total assets of the firm).

firms. Female board appointments are, in reality, more likely to be related to family links than to any external process.[10]

However, it is worth noting that the logarithm of the number of directors (LNDIR) has a positive and significant effect on the percentage of women on the board (PWOMEN). This suggests that in larger boards there is a greater probability of a woman

being employed. Finally, we can also observe that firm size (SIZE) does not have a significant effect on the PWOMEN variable.

In Table V, we can observe that the presence of women on the board (DWOMAN) does not have a significant impact on Tobin's Q and vice versa. It thus appears that a woman's presence, per se, does not affect to the value of a company. This result

TABLE V

2SLS panel data regression of a binary variable that takes the value of 1 when there is at least one woman on the board of directors (DWOMAN) and Tobin's Q (Q)

	Q	DWOMAN
Constant	4.183 (3072★★★)	0.356 (0.54)
Q		0.028 (0.819)
DWOMAN	−0.071 (−0.13)	
LNDIR		0.941 (5.12★★★)
LEVER	−0.611 (−1.64)	
ROA	0.024 (2.58★★★)	
SIZE	−0.437 (−2.09★★)	−0.198 (−2.03★★)
Wald Chi^2	20.38.42★★★	344.69★★★
R^2	0.099	0.013
Hausman test	25.47★★★	26.91★★★

Notes: ★★, ★★★ Denote significance at the 1% and 5% levels, respectively.
Variables: Q (approximation of Tobin's Q), DWOMAN (binary variable that takes a value of 1 when there is at least one woman on the board of directors, and 0 otherwise), LNDIR (logarithm of the number of directors on the board), LEVER (total debt over total assets), ROA (return on assets, %) and SIZE (logarithm of the book value of the total assets of the firm).

TABLE VI

2SLS panel data regression of the Blau index of diversity (BLAU) and Tobin's Q (Q)

	Q	BLAU
Constant	8.943 (2.98★★★)	0.086 (0.57)
Q		−0.021 (−0.77)
BLAU	25.653 (2.01★★)	
LNDIR		0.006 (2.73★★★)
LEVER	−0.396 (−0.43)	
ROA	0.079 (2.24★★)	
SIZE	−1.600 (−2.49★★)	−0.202 (−0.90)
Wald Chi^2	428.15★★★	306.96★★★
R^2	0.160	0.042
Hausman test	27.59★★★	20.11★★★

Notes: ★, ★★, ★★★ Denote significance at the 1%, 5% and 10% levels, respectively.

Variables: Q (approximation of Tobin's Q), BLAU (Blau index of diversity), LNDIR (logarithm of the number of directors on the board), LEVER (total debt over total assets), ROA (return on assets, %) and SIZE (logarithm of the book value of the total assets of the firm).

coincides with several previous studies that demonstrate that gender diversity is unimportant for the firm.

Concerning the control variables, we also find that return on assets (ROA) and firm size (SIZE) have, respectively, a positive and a negative impact on firm value. The logarithm of the number of directors (LNDIR) is also positively related to the variable measuring the presence of women on the board (DWOMAN). Finally, firm size (SIZE) has a negative impact on DWOMAN. This result is contrary to our expectations; it would seem that the smaller, and thus the more family-owned firms, are more likely to have women appointed to the board.

In Table VI, we use the Blau index to measure the gender diversity of the board of directors. Some authors argue that the percentage of women on the board is not an appropriate measure of diversity, since boards with a high female presence will actually exhibit a high degree of homogeneity in terms of this gender category. The Blau index takes its maximum value when the proportion of women and men is equal, i.e. when diversity is at a maximum. The results are similar to those reported in Table IV, though it is notable that the positive coefficient on the Blau index is greater and more significant than that reported for the percentage of female board members in Table IV. This suggests that the mixture of men and women is the key to more effective boards.

We can observe that the value of the company does not affect the diversity of the board of directors (last column of Table VI). This result corresponds to that reported in Table V, as do the results concerning the control variables.

In Table VII, we present the results using the alternative diversity index, the Shannon index, to assess the robustness of our findings. The conclusions we obtain are similar to those reported in Table VI, namely that board gender diversity has a positive and significant impact on firm value, while firm value has an insignificant effect on diversity.

Conclusions

In this article we contribute to the literature on board diversity and firm financial performance. While most studies of board gender are based on data from a few economies, it is widely accepted that idiosyncratic and institutional characteristics suggest that caution is exercised in the generalisation of results. This study offers new insights into the relationship between board gender diversity and firm value by using data from firms listed in Spain, a civil law country characterised by concentrated and largely family ownership, low legal protection for investors, pyramidal ownership structures and boards of directors that are not totally independent of managers. Spain is also a

TABLE VII

2SLS panel data regression of the Shannon index of diversity (SHANNON) and Tobin's Q (Q)

	Q	SHANNON
Constant	8.463 (2.79★★★)	0.130 (0.54)
Q		−0.023 (−0.51)
SHANNON	16.621 (1.93★)	
LNDIR		0.225 (3.34★★★)
LEVER	−0.422 (−0.44)	
ROA	0.076 (2.13★★)	
SIZE	−1.158 (−2.35★★)	−0.041 (−1.14)
Wald Chi^2	394.25★★★	343.08★★★
R^2	0.150	0.019
Hausman test	26.84★★★	20.98★★★

Notes: ★, ★★, ★★★ Denote significance at the 1%, 5% and 10% levels, respectively.
Variables: Q (approximation of Tobin's Q), SHANNON (Shannon index of diversity), LNDIR (logarithm of the number of directors on the board), LEVER (total debt over total assets), ROA (return on assets, %) and SIZE (logarithm of the book value of the total assets of the firm).

country which has traditionally had a low proportion of women occupying responsible positions in business, a situation which the Government has recently began to address via legislative changes and corporate governance reforms.

We use a panel data methodology to examine the relationship between female boardroom participation, measured by several variables, and firm value (measured by a proxy for Tobin's Q), using an event study. Our findings demonstrate that the presence of women on the board of directors does not, in itself, affect firm value. However, we find that the diversity of the board (measured by the percentage of women and by the Blau and Shannon indices) has a positive impact on firm value. This implies that the most important focus for Spanish companies should be the balance between women and men rather than simply the presence of women. We also show that firm value has no influence on women's presence and on gender diversity.

Overall, our result suggests, at a minimum, that increased gender diversity can be achieved without destroying shareholder value, and that Spanish investors may in fact value the contribution made by female directors. The positive discrimination in favour of female boardroom appointments recommended in Spain's 2006 Unified Good Governance Code is thus likely to persist as a feature of the corporate governance

landscape in Spain. An important topic for future research would be to identify the impact on firm performance of female board members who have family ties to the owners and also whether the qualifications of female board members are related to performance. Obtaining data on board member qualifications would also enable a distinction to be drawn between economically and socially motivated reasons for boardroom appointments and thus permit a view to be formed as to whether or not the recent changes in support of positive discrimination are likely to be detrimental to performance in the longer term. Given the political initiatives in Spain to increase the number of women on corporate boards it is important that there is a pool of sufficiently qualified women to fill boardroom positions so that improvements in performance are sustainable.

Notes

[1] System of Analysis of Iberian Balance Sheets, provided by Bureau Van Dijk.
[2] Stirling (1998) also defines a third property of diversity, called 'disparity', which refers to the nature and degree to which categories themselves – male and female in our context – are different from each other. He notes that it is "an intrinsically qualitative,

subjective and context-dependent aspect of diversity''
(p 40). The possible differences between males and fe-
males, in terms of their boardroom behaviour, that may
enhance diversity, and thus impact upon firm perfor-
mance, are discussed in section three of the article.
[3] For a comprehensive review of diversity theory
and research, see Harrison and Klein (2007), who pro-
pose a similar threefold decomposition of diversity to
that advocated by Stirling (1998).
[4] Blau (1977). A version of this index was originally
proposed by Simpson (1949) as a measure of species
diversity in an ecosystem and it is also known as Herfin-
dahl's (1950) index and Hirschman's (1964) index when
applied to the measurement of industrial concentration.
[5] Shannon (1948). The index is commonly known as
Shannon's 'entropy' index due to its formal resemblance
to the entropy expression from statistical thermodynam-
ics. It was also independently proposed by Wiener
(1961) and is therefore sometimes referred to as the
Shannon–Wiener index.
[6] Since the logarithm of 0 is not defined, if $p_i = 0$ we
adopt the convention that the expression $p_i \ln p_i = 0$.
[7] For more information about the differences be-
tween the Blau and Shannon indices see Baumgartner
(2006).
[8] The selection of the control variables is based on
the previous work of Morck et al. (1988), Yermack
(1996), Carter et al. (2003) and others.
[9] For the control variables, we use those specified in
Carter et al. (2003).
[10] More than 60% of female boardroom appointments
in our sample occur in family firms.

References

Agrawal, A. and C. R. Knoeber: 1996, 'Firm Perfor-
mance and Mechanisms to Control Agency Problems
Between Managers and Shareholders', *Journal of
Financial and Quantitative Analysis* **31**, 377–397.
Aja, E., F. Carbonell, W. Pereda, C. Ioė, J. Funes and I.
Vila: 2000, 'La inmigración extranjera en España. Los
retos educativos', Colección de Estudios Sociales, 1,
Fundación La Caixa, Barcelona.
Aldama Report: 2003, 'Report of the Special Commis-
sion for the Promotion of the Transparency and the
Security in the Financial Markets and in Listed
Companies', Madrid.
Andreoni, J. and L. Vesterlund: 2001, 'Which is the Fair
Sex? Gender Differences in Altruism', *The Quarterly
Journal of Economics* **116**, 293–312.

Arellano, M. and O. Bover: 1990, 'Un Estudio
Econométrico Con Datos de Panel', *Investigaciones
Económicas* **14**, 3–45.
Ballesta, J. P. S. and E. García-Meca: 2005, 'Audit
Qualifications and Corporate Governance in Spanish
Listed Firms', *Managerial Auditing Journal* **20**, 725–
738.
Baumgartner, S.: 2006, 'Measuring the Diversity of
What? And for What Purpose? A Conceptual Com-
parison of Ecological and Economic Biodiversity
Indices', Working Paper, University of Heidelberg.
Beekes, W., P. Pope and S. Young: 2004, 'The Link
Between Earnings Timeliness, Earnings Conservatism
and Board Composition: Evidence from the UK',
Journal of Corporate Governance **12**, 47–59.
Blau, P. M.: 1977, *Inequality and Heterogeneity* (The Free
Press, New York).
Bocatto, E.: 2006, 'Family Owned Business Succession:
The Influence of Pre-Performance in the Nomination
of Family and Non-Family Members: Evidence from
Spanish Firms', Paper presented at the Department of
Economics de l'Empresa Jornada Conference,
November 30, 2006. Available at: http://selene.uab.
es/dep-economia-empresa/Jornadas/Papers/2006_11/
IVJornadas_paper_EBocatto.pdf.
Böhren, O. and R. O. Ström: 2005, 'Aligned, Informed,
and Decisive: Characteristics of Value-Creating
Boards', Working Paper, Norwegian School of
Management BI, Oslo, September.
Brammer, S., A. Millington and S. Pavelin: 2007,
'Gender and Ethnic Diversity Among UK Corporate
Boards', *Corporate Governance: An International Review*
15(2), 393–403.
Brown-Kruse, J. and D. Hummels: 1993, 'Gender
Differences in Laboratory Public Goods Contribution:
Do Individuals Put Their Money Where Their Mouth
is?', *Journal of Economic Behavior and Organization* **22**,
255–267.
Cabrera-Suárez, K. and D. J. Santana-Martín: 2004,
'Governance in Spanish Family Business', *International
Journal of Entrepreneurial Behaviour and Research* **10**(1/2),
141–163.
Cadbury Report: 1992, *Report of the Committee on the
Financial Aspects of Corporate Governance* (Gee, London).
Carrera, N., I. Gutiérrez and C. Salvador: 2001, 'Gender,
the State and the Audit Profession: Evidence from
Spain (1942–88)', *European Accounting Review* **10**,
803–815.
Carter, D. A., B. J. Simkins and W. G. Simpson: 2003,
'Corporate Governance, Board Diversity, and Firm
Value', *Financial Review* **38**, 33–53.
Catalyst: 2004, *The Bottom Line: Connecting Corporate
Performance and Gender Diversity* (Catalyst, New York).

Catalyst: 2006, *2005 Census of Women Board Directors of the Fortune 500* (Catalyst, New York).

Catalyst: 2007, *2006 Census of Women Board Directors of the Fortune 500* (Catalyst, New York).

Catan, T.: 2006, 'In the Dark Heart of Machismo Shines a Beacon of Sexual Equality', *The Times*, November 29.

Cervantes Institute: 1999, *Anuario 1999* (Centro Virtual Cervantes, Madrid).

Comisión Nacional del Mercado de Valores: 2006, *Report of the Special Working Group on the Good Governance of Listed Companies*, 19 May (CNMV, Madrid).

Cox, T. H. and S. Blake: 1991, 'Managing Cultural Diversity: Implication for Organizational Competitiveness', *Academy of Management Executive* **5**, 45–56.

Curdová, A.: 2005, 'Discrimination Against Women in the Workforce and the Workplace', Committee on Equal Opportunities for Women and Men, Spanish Parliamentary Assembly, Doc. 10484.

Demsetz, H. and B. Villalonga: 2001, 'Ownership Structure and Corporate Performance', *Journal of Corporate Finance* **7**, 209–233.

Du Rietz, A. and M. Henrekson: 2000, 'Testing the Female Underperformance Hypothesis', *Small Business Economics* **14**(1), 1–10.

Earley, P. C. and E. Mosakowski: 2000, 'Creating Hybrid Team Cultures: An Empirical Test of Transnational Team Functioning', *Academy of Management Journal* **43**, 26–49.

Erhardt, N. L., J. D. Werbel and C. B. Shrader: 2003, 'Board of Directors Diversity and Firm Financial Performance', *Corporate Governance: An International Review* **11**, 102–111.

Fama, E. F. and M. C. Jensen: 1983, 'Separation of Ownership and Control', *Journal of Law and Economics* **26**, 301–325.

Farrell, K. A. and P. L. Hersch: 2005, 'Additions to Corporate Boards: the Effect of Gender', *Journal of Corporate Finance* **11**, 85–206.

Fernández, A. I., S. Gómez-Ansón and C. Fernández-Méndez: 1998, 'El Papel Supervisor del Consejo de Administración Sobre la Actuación Gerencial. Evidencia Para el Caso Español', *Investigaciones Económicas* **22**, 501–516.

Gerke, W., M. Bank and M. Steiger: 2003, 'The Changing Role of Institutional Investors – A German Perspective', in K. J. Hopt and E. Wymeersch (eds.), *Capital Markets and Company Law* (Oxford University Press, New York), pp. 357–385.

Griffith, J. M.: 1999, 'CEO Ownership and Firm Value', *Managerial and Decision Economics* **20**, 1–8.

Hall, B. H.: 1999, 'Innovation and Firm Value', National Bureau of Economic Research Working Paper 6984. National Bureau of Economic Research, Cambridge, MA. Retrieved from http://www.nber.org/papers/w6984.pdf/.

Hambrick, D. C., T. S. Cho and M. J. Chen: 1996, 'The Influence of Top Management Team Heterogeneity on Firms' Competitive Moves', *Administrative Science Quarterly* **41**, 659–684.

Harrison, D. A. and K. J. Klein: 2007, 'What's the Difference? Diversity Constructs as Separation, Variety, or Disparity in Organizations', *Academy of Management Review* (forthcoming).

Heidrick and Struggles: 2007, 'Corporate Governance in Europe: 2007 Report', Paris.

Herfindahl, O. C.: 1950, 'Concentration in the U.S. Steel Industry', Unpublished doctoral dissertation, Columbia University, New York.

Hermalin, B. and M. S. Weisbach: 1991, 'The Effect of Board Composition and Direct Incentives on Corporate Performance', *Financial Management* **20**, 101–112.

Hillier, D. and P. McColgan: 2001, 'Insider Ownership and Corporate Value: An Empirical Test from the United Kingdom Corporate Sector', Financial Management Association (FMA) Meeting, Paris.

Himmelberg, C. P., R. G. Hubbard and D. Palia: 1999, 'Understanding the Determinants of Managerial Ownership and the Link Between Ownership and Performance', *Journal of Financial Economics* **53**, 353–384.

Hirschman, A. O.: 1964, 'The Paternity of an Index', *American Economic Review* **54**, 761–762.

Hyland, D. C. and J. D. Diltz: 2002, 'Why Firms Diversify: An Empirical Examination', *Financial Management* **31**, 51–81.

ILO: 2007, 'Global Employment Trends for Women Brief', March, International Labour Organization, Geneva.

Jaskiewicz, P., V. M. González, S. Menéndez and D. Schiereck: 2005, 'Long-Run IPO Performance Analysis of German and Spanish Family-Owned Businesses', *Family Business Review* **18**(3), 179–202.

Jianakoplos, N. A. and A. Bernasek: 1998, 'Are Women More Risk Averse?', *Economic Inquiry* **36**, 620–630.

Kini, O., W. Kracaw and S. Mian: 1995, 'Corporate Takeovers, Firm Performance, and Board Composition', *Journal of Corporate Finance* **1**, 383–412.

Konrad A. M., V. W. Kramer: 2006, 'How Many Women Do Boards Need?', *Harvard Business Review*, December, **84**(12), 22.

La Porta, R., F. de Lopez Silanes, A. Shleifer and R. Vishny: 1997, 'Legal Determinants of External Finance', *Journal of Finance* **52**, 1131–1150.

La Porta, R., F. de Lopez Silanes, A. Shleifer and R. Vishny: 1998, 'Law and Finance', *Journal of Political Economy* **106**, 1113–1155.

La Porta, R., F. de Lopez Silanes, A. Shleifer and R. Vishny: 2002, 'Investor Protection and Corporate Valuation', *Journal of Finance* **57**, 1147–1170.

Lang, L. H. and R. M. Stulz: 1994, 'Tobin's q, Corporate Diversification and Firm Performance', *Journal of Political Economy* **102**, 1248–1280.

Lau, D. C. and J. K. Murnighan: 1998, 'Demographic Diversity and Faultlines: The Compositional Dynamics of Organizational Groups', *Academy of Management Review* **23**, 325–340.

Lindenberg, E. and S. Ross: 1981, 'Tobin's q Ratio and Industrial Organization', *Journal of Business* **54**(1), 1–32.

López-Iturriaga, F. J. and J. A. Rodríguez-Sanz: 2001, 'Ownership Structure, Corporate Value and Firm Investment: A Simultaneous Equations Analysis of Spanish Firms', *Journal of Management and Governance* **5**, 179–204.

Megna, P. and M. Klock: 1993, 'The Impact of Intangible Capital on Tobin's q in the Semiconductor Industry', *American Economic Review* **83**, 265–269.

Montgomery, C. and B. Wernerfelt: 1988, 'Tobin's q and the Importance of Focus in Firm Performance', *American Economic Review* **78**(1), 246–250.

Morck, R., A. Shleifer and R. W. Vishny: 1988, 'Management Ownership and Market Valuation: An Empirical Analysis', *Journal of Financial Economics* **20**, 293–315.

Nowell, C. and S. Tinkler: 1994, 'The Influence of Gender on the Provision of a Public Good', *Journal of Economic Behavior and Organization* **25**, 25–36.

Olivencia Report: 1998, 'Report of the Special Commission to Consider a Code of Ethics for Companies Boards of Directors', Madrid.

Organisation for Economic Co-Operation and Development: 2006a, *OECD Labour Force Statistics by Age and Sex* (OECD, Paris). http://stats.oecd.org/wbos/default.aspx.

Organisation for Economic Co-Operation and Development: 2006b, *Education at a Glance 2006* (OECD, Paris). http://www.oecd.org/edu/eag2006.

Randøy, T., S. Thomsen and L. Oxelheim: 2006: 'A Nordic Perspective on Corporate Board Diversity', Working Paper, Nordic Innovation Centre, Oslo.

Richard, O. C., T. Barnett, S. Dwyer and K. Chadwick: 2004, 'Cultural Diversity in Management, Firm Performance, and the Moderating Role of Entrepreneurial Orientation Dimensions', *Academy of Management Journal* **47**, 255–266.

Robinson, G. and K. Dechant: 1997, 'Building a Business Case for Diversity', *Academy of Management Executive* **11**, 21–30.

Rose, C.: 2007, 'Does Female Board Representation Influence Firm Performance? The Danish Evidence', *Corporate Governance: An International Review* **15**(2), 404–413.

Shannon, C. E.: 1948, 'A Mathematical Theory of Communication', *Bell System Technical Journal* **27**, 379–423.

Shrader, C. B., V. B. Blackburn and J. P. Iles: 1997, 'Women in Management and Firm Financial Value: An Exploratory Study', *Journal of Managerial Issues* **9**, 355–372.

Simpson, E. H.: 1949, 'Measurement of Diversity', *Nature* **163**, 688.

Smirlock, M., T. W. Gilligan and W. J. Marshall: 1984, 'Tobin's q and the Structure–Performance Relationship', *American Economic Review* **74**, 1051–1060.

Smith, N., V. Smith and M. Verner: 2006, 'Do Women in Top Management Affect Firm Performance? A Panel Study of 2,500 Danish Firms', *International Journal of Productivity and Performance Management* **55**, 569–593.

Soria, F.: 2002, 'Los Principales Retos de la Empresa Familiar en el Siglo XXI', Fusiones y Adquisiciones Capital & Corporate, Octubre, UNILCO.

Steiner, T. L.: 1996, 'A Reexamination of the Relationships Between Ownership Structure, Firm Diversification, and Tobin's q', *Quarterly Journal of Business and Economics* **35**(4), 39–48.

Stirling, A.: 1998, 'On the Economics and Analysis of Diversity', Science Policy Research Unit Electronic Working Paper Series, Paper no. 28, University of Sussex.

Tajfel, H. and J. Turner: 1986, 'The Social Identity of Inter-Group Behavior', in S. Worchel and W. Austin (eds.), *Psychology and Intergroup Relations* (Nelson-Hall, Chicago), pp. 7–24.

Weisbach, M.: 1988, 'Outside Directors and CEO Turnover', *Journal of Financial Economics* **20**, 431–460.

Wiener, N.: 1961, *Cybernetics* (MIT Press, Cambridge).

Williams, K. and C. O'Reilly: 1998, 'Forty Years of Diversity Research: A Review', in B. M. Staw and L. L. Cummings (eds.), *Research in Organizational Behavior* (JAI Press, Greenwich, CT), pp. 77–140.

Wools, D.: 2007, 'Spain Lawmakers OK Women's Equality Law', Associated Press, March 15.

Yermack, D.: 1996, 'Higher Market Valuation of Companies with a Small Board of Directors', *Journal of Financial Economics* **40**, 185–211.

Kevin Campbell
Department of Accounting and Finance,
University of Stirling,
Cottrell Building, Stirling campus,
Stirling, FK9 4LA, U.K.
E-mail: kevin.campbell@stirling.ac.uk

Antonio Mínguez-Vera
Department of Financial Economy and Accounting,
Polytechnic University of Cartagena,
Facultad de Ciencias de la Empresa, Paseo Alfonso XIII,
no 50, 30203, Cartagena, Murcia, Spain
E-mail: antonio.minguez@upct.es