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Integrating the board's resources to achieve a firm's internationalisation

Integración de los recursos del consejo para lograr la internacionalización de la empresa

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Abstract

Purpose – From the resource-based view (RBV), the purpose of this paper is to argue that the board has the capability to participate in international strategic decisions and deal with the environmental complexities that internationalisation brings; and moreover, to achieve better performance than its competitors.

Design/methodology/approach – This paper highlights the active participation of the board in firm internationalisation using a sample of 78 Spanish firms quoted on Madrid Stock Exchange. The authors used a longitudinal analysis from 2005 through 2010.

Findings – The results show that while the resources provided by the directors through their level of education and international experience, help them learn and process information, and they are a source of expertise representing "board potential". A board that functions well through the directors' relationships allow the proper integration and use of these resources, and helps create sustainable competitive advantages in an international context.

Originality/value – From a RBV, this paper refines and extends the concept of "board capability" as the combination of potential and internal relations that allow boards to undertake their roles competently over time. Additionally, the paper empirically examines the effect of board capability on firm internationalisation.

Keywords Board of directors, Resource-based view, Firm internationalization

Paper type Research paper

Resumen

Propósito – A través de la RBV, explicamos cómo el consejo de administración posee la "capacidad" necesaria para participar en las decisiones estratégicas internacionales de la empresa y hacer frente a los altos niveles de complejidad que se derivan actualmente del contexto internacional; y además, conseguir un rendimiento superior al de sus competidores.

JEL Classification — G3

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Diseño/metodología/enfoque – Este artículo resalta la participación activa del consejo en la internacionalización de la empresa usando una muestra de 78 empresas españolas que cotizan en la Bolsa de Madrid. Utilizamos un análisis longitudinal para el periodo 2005-2010.

Resultados – Nuestros resultados muestran que mientras que los recursos que aportan los consejeros a través de su nivel de formación y background internacional ayudan a aprender y procesar información y son fuente de conocimiento especializado conformando el "potencial" del consejo; un buen funcionamiento del consejo, a través de las relaciones entre consejeros, permiten la adecuada integración y uso de dichos recursos, conformando la capacidad necesaria para obtener ventajas competitivas sostenibles en el contexto internacional.

Originalidad/Valor – Este artículo perfecciona y amplia desde la RBV, el concepto de "capacidad del consejo" como combinación de potencial y relaciones internas que permitan llevar a cabo sus funciones de manera competente a lo largo del tiempo. Además, el artículo examina empíricamente el efecto de la capacidad del consejo sobre el grado de internacionalización de la empresa.

Palabras clave Consejos de administración, Teoría de los recursos y capacidades, Internacionalización de la empresa

Tipo de papel Trabajo de investigación

Introduction

The influence of boards of directors on a firm strategies and results is an area of study that is virtually unquestioned in the field of management studies (Kiel and Nicholson, 2005; Sonnenfeld, 2002). However, with the rise of globalisation, businesses have been forced to make drastic changes. Internationalisation strategies have never been more important; the borders for today's businesses are increasingly globalised, which encourages firms to develop a greater international presence. But despite the importance of the board for a firm's principal results and the high degree of internationalisation that many firms have undergone in recent years, very few studies have investigated the influence of the board on the firm's international performance (Rivas *et al.*, 2009).

A firm's board of directors is presented with a set of roles or functions (Johnson *et al.*, 1996), and how the board fulfils these roles determines its effectiveness and allows it to add value to the company and influence the company's results (Forbes and Milliken, 1999; Murphy and McIntyre, 2007). The traditional literature, based on agency theory (Fama and Jensen, 1983), identifies the control function as the principal activity of this governing body, and assumes that outside board members are more effective than internal directors in controlling management and protecting shareholders' interests. In the literature relating to the international field, all of the studies have adopted this traditional perspective. Entry into foreign markets is associated with an increased level of uncertainty, risk and asymmetry of information, meaning that relations between board members and management will be affected by agency problems. In this context, these studies highlight the role of outside directors in the board's composition; from a financial point of view, they increase their control over the management team and promote long-term investments that favour company growth (Lien *et al.*, 2005; Xie *et al.*, 2003). These works have been characterised by an ambiguity that makes it impossible to define how effectively the board fulfils its control function and how that affects a firm's international development.

However, more recent studies (Hillman and Dalziel, 2003; Lynall *et al.*, 2003) support the view that new, complementary functions, such as the provision of services and resources, should be added to the control function. These new functions focus on the use of knowledge, information, experience, abilities, etc.; in other words, on the set of resources that each member brings to the board. This new vision will affect studies of board composition by altering their initial perspective: the composition of the board

should now be viewed not only in quantitative terms (percentage of outside directors on the board), but also in qualitative terms, because these resources (abilities, experience, knowledge and information) are very important for carrying out these new functions (Certo, 2003; Westphal and Fredrickson, 2001). Again, while the influence of the top management team's (TMT) experience and knowledge on firm internationalisation has been widely investigated from the upper echelon perspective in the field of international business (Chen, 2011; Sanders and Carpenter, 1998; Zahra *et al.*, 2007), there are very few studies that look at how the board – through its members' resources – influences a firm's international performance.

All of this can be considered within the current context of recent financial scandals and the economic recession, which requires every governing body, not only TMTs, to be adequately qualified to take effective decisions about internationalisation.

This work argues that the experience and knowledge of the board members are important sources of the ability to deal with the complexities of internationalisation and, furthermore, constitute a novel and rarely analysed field of study. We focus on the resources that the board members bring through their international background and their educational attainment, both of which are required to reduce environmental uncertainty and dependence on external markets, to interpret and categorise complex information, and to help management make decisions.

As well as acknowledging the changes that are required in the board's structure, this work aims to go further and examine how boards can improve the degree of internationalisation of the firm by integrating and exploiting the resources of its members, and making use of the competitive advantages that this generates. By examining the board's internal dynamics – specifically, the relations between its members – we study how the resources contributed by its members are integrated in order to create new, socially complex resources, and how these affect each other by supporting and improving performance. In other words, we not only study the mere existence of the resources and their combinations, but also the interactions that occur between the different resources; the effectiveness of the board depends on the resources that the members bring, and the relationship dynamics that arise within the board and that enable these resources to be integrated and put to use. This leads us, from a perspective based on resources and capabilities (resource-based view (RBV)), to the concept of "board capability" (Macus, 2008) as an appropriate configuration of board potential that can be measured by the resources that the directors bring; and internal relations, that affect how competently the directors can carry out their functions over time. For the second point, we focus on the internal density of the board, which is an indicator of the degree of cohesion that exists between board members. Density will be extremely high if all members have close ties with each other (Kim, 2005; Oh *et al.*, 2006).

Our aim therefore is to add to the prior literature on boards of directors with our investigation into how this governing body can influence a firm's international results. We set out the need to study the resources that the board members bring to the board through their international background and educational attainment. Additionally, we refine and broaden the concept of "board capability" as the combination of potential and internal relations that allow board members to carry out their functions competently over time. In the case of firms undergoing the internationalisation process, while Barroso *et al.* (2011) defined the concept of board capability, they did not conduct an empirical study of the effect of board capability on the extent of firm

internationalisation. In this work, we carry out an analysis of how these resources are used (Forbes and Milliken, 1999) as well as how they are integrated (Macus, 2008), by studying the internal relationship dynamics within boards.

The work is constructed as follows: the first section explains the choice of our proposed theme, and our stated objectives. In the following sections we carry out a literature review, allowing us to propose a set of hypotheses. In the final section we describe the empirical study, then present the analysis and interpret the data obtained.

Theory and working hypotheses

The literature on boards has sought to understand how this governing body actually influences firm results. He and Huang (2011) demonstrated that in order to understand how this influence manifests itself, a much more detailed investigation is required. Consequently, and largely in the last decade, researchers have focused their analyses on aspects of board structure (Pfeffer, 1983; Finkelstein and Mooney, 2003; Gabrielsson and Huse, 2004) or the dynamics of board behaviour (Gonzalez, 2006; Stevenson and Radin, 2009; Van Ees *et al.*, 2009) as the mechanisms that explain this relationship. These mechanisms have always been studied in the context of the functions given to the board.

Studies of the board's influence on a firms' international performance has taken a traditional route, overlooking the importance of board composition with regard to the experience, knowledge and capabilities of its members. We should also take note of how internal relationship dynamics affect the board. We believe that a board needs to possess both of these elements simultaneously, so that it can use this set of attributes and relationships to create value within the firm it governs. By adopting the RBV, we can examine how the members of the board use the resources that they bring to it, and explain how these resources are integrated to produce unique and inimitable results. Relationships between board members could therefore play an essential role in the assimilation and use of their resources; only when board members have close relationships with each other will they be able to exchange, combine and make use of their knowledge and experience.

We believe that the resources the directors bring to the board, through their knowledge, experience and abilities, determine the board's potential, and should be seen as essential for creating an effective board. The board's relationship dynamics are currently seen as an enabling factor that allows its potential to be harnessed (Macus, 2008; Nicholson and Kiel, 2004a, b). Taking all of this into account, board capability can be understood as the combination of the potential and the facilitating factors that enable board members to carry out their tasks competently over time.

With regard to board potential, the RBV indicates that resources that are valuable, rare, inimitable and non-substitutable provide the basis for the developing capabilities that distinguish one firm from another. Board members bring a wide variety of resources to the firm, and this makes each board distinct. This variety of experience, abilities and knowledge suggests that a board's resources are distributed heterogeneously across firms, and thus: there can be significant differences in the number of critical resources that board members bring to the firm; and certain resources might be more important for one firm than another. These conditions of "valuable, rare, inimitable and non-substitutable" could also be applied to the unique combination of resources within the board. It is much harder for competitors to imitate a board's characteristics, such as its members' knowledge and experience, etc., than to imitate other aspects

of board composition that the literature has focused on, such as size or the ratio of executive/outside board members. These are easier to imitate and therefore less significant for creating a sustainable competitive advantage (Ortiz *et al.*, 2009).

An essential element in defining the board's potential at international level is the international background of its members. A director's international experience is specific tacit knowledge, and is one of the resources that is most difficult to imitate (Barney, 1991). Firms can improve their ability to face the challenges of the international environment by appointing board members with the particular characteristics, abilities or experiences that are required for the internationalisation process. Board members' international experience could be an attractive characteristic for firms that are seeking to improve their international performance.

Board members with experience in international markets possess the knowledge and capabilities to deal with existing institutions, firms and networks in foreign markets. They can also facilitate the collection, analysis and interpretation of information on opportunities around the world and therefore play a fundamental support role in the decision-making processes regarding opportunities for international business (Zahra *et al.*, 2007).

Therefore:

H1. Board members' international background is positively related to the degree of internationalisation of a firm.

A second crucial element of the board's potential to influence the firm's international results is the educational attainment of its members, which will determine the abilities and knowledge level of the firm. Relatively low levels of educational attainment imply a general issue for proper functioning of the firm (Bennett and Robson, 2004). On the other hand, if the board members are highly educated, they are more likely to become involved with the firms' international strategies, because there is a positive link between board members with higher levels of education and their willingness to access external information, the use of external consultants and closer monitoring of the firm's accounting systems (Crabtree and Gomolka, 1991). People with higher levels of education are better placed to help find creative solutions for the firm that they represent (Wincent *et al.*, 2009). This is a fundamental investment for the acquisition, use and control of knowledge, and allows people to develop capabilities that support effective decision making. Higher academic attainment is also linked to openness to innovation and greater tolerance of ambiguity (Goll *et al.*, 2007), which are essential when board members are faced with the strategic changes necessary for firm internationalisation.

Our working hypothesis is therefore as follows:

H2. Board members' high educational attainment is positively related to the degree of internationalisation of a firm.

In the hypotheses above, we have proposed that specific elements of the board's potential might improve its ability to carry out its tasks and influence the firm's international performance. However, merely possessing this potential does not automatically create a competitive advantage for the firm (Eisenhardt and Martin, 2000; Teese *et al.*, 1997); that is, these hypotheses simply identify the minimum capability required to enable the board to fulfil its functions (Forbes and Milliken, 1999; Hillman and Dalziel, 2003; Nicholson and Kiel, 2004a). In order to understand how boards actually influence firm results, we need to look more closely at how the board functions by examining the social relations between its members (Finkelstein and Mooney, 2003; He and Huang, 2011; McNulty and

Pettigrew, 1999) that act as enabling factors of board potential. Relationship dynamics are now considered to be an enabling factor that allows the board's potential to be put to use (Macus, 2008; Nicholson and Kiel, 2004a, b).

When members of a group have a number of close personal ties with each other, the group is considered to be dense. Board density therefore refers to the degree of connectedness among the members of a board of directors (Kim, 2005), and this will be extremely high if all of the members have close ties with each other (Kim, 2005; Oh *et al.*, 2006). This work focuses on the internal density of the board based on the connections or ties created between board members that sit on the same committees (Kim, 2005; Valenti and Horner, 2010). We believe that this density improves the board's ability to assimilate and integrate the resources possessed by its members. The internal density of a board improves trust between members, which in turn reduces knowledge protection, increases the willingness to share this knowledge, encourages learning, and helps create new knowledge and capabilities. As a result, the resources shared by board members will be richer and of a higher quality.

When a firm is involved in the internationalisation process, where environmental uncertainty is increased, denser groups will be more effective than less dense ones (Liang *et al.*, 2010). First, greater density improves communication; frequent communication between closely connected board members encourages creativity and contributes to organisational innovation, which benefits international decision making at team level (Eisenhardt, 1989). Second, it improves information processing; organisations in uncertain environments face higher levels of ambiguous information and, consequently, if individual interpretations of that information are not properly communicated, confusion and conflicts may arise within the group (Tekleab *et al.*, 2009). Third, board density benefits organisations by reducing resistance to change (Johnson *et al.*, 2001) because it encourages different points of view and increases the general cognitive capability of the group.

We argue that the board can be viewed as a set of unique resources, whose members form a single group that brings together and shares tacit knowledge, much of which relates to the firm's international activities. The process of exchanging this knowledge and experience within the board is facilitated by the ties that are developed between board members, who find that they have to share their individual resources. Furthermore, as the firm becomes more international, the board has to develop more complex tacit knowledge (Athanassiou and Nigh, 1999). Each market has a unique institutional environment (Rosenzweig and Singh, 1991), and so as the firm expands its presence in a growing number of markets, the board will need to develop a new configuration of tacit knowledge to enable board members to decode the articulated knowledge emanating from each market. All of this supports our proposal to consider board density as an enabling factor.

We therefore propose the following hypotheses:

H3a. Internal board density has a positive effect on the degree of internationalisation of a firm, in that it allows the potential derived from board members' international background to be integrated and harnessed.

H3b. Internal board density has a positive effect on the degree of internationalisation of a firm, in that it allows the potential derived from the board members' high educational attainment to be integrated and harnessed.

Methodology

Sample and data collection

The sample of firms consists of a complete set of Spanish firms on the Madrid Stock Exchange that were quoted on the continuous market during the period 2005-2010. We acknowledge the limitation that our study has only selected the boards of directors of large Spanish companies quoted on the stock exchange, given that these firms are only a fraction of the total number of Spanish firms. However, they were chosen because of their obligation to publish data relating to corporate governance and performance.

In order to obtain the sample of firms in our study, we started with a total of 129 firms quoted on the continuous market in 2010. From this initial number, we eliminated the following: first, 13 firms classified as financial services, because of the difficulty of interpreting all of the data relating to that sector; second, 30 firms that ceased operating in one or more years of the study period; and finally, two firms that did not provide corporate governance reports. Our final sample therefore consisted of 84 firms. However, we had to eliminate another six firms with no international activity[1] during one or more years of the study period 2005-2010.

Applying these limitations created a sample of 78 firms. Table I shows the selection process and the total sample selected. The final balanced panel consists of 468 observations for each of the variables used, relating to 78 firms quoted on the Madrid Stock Exchange (continuous market).

The sample is representative of the total population as the 78 firms represent 47.56 per cent of the total number of firms quoted on the Spanish stock markets (regulated market) and 60.46 per cent of the total number of firms quoted on Madrid Stock Exchange (continuous market) (Table II).

Dependent variable

In this study we used two dimensions to measure a firm's internationalisation: performance and structure (Sullivan, 1994; Daily *et al.*, 2000; Rivas *et al.*, 2009; Sanders and Carpenter, 1998). Both of these dimensions represent the "depth" of the firm's participation in foreign markets (Thomas and Eden, 2004). The performance dimension is normally calculated by looking at the proportion of total sales (FSTS) made through foreign subsidiaries (Geringer *et al.*, 1989). It captures the importance of international operations as part of total operations and therefore the degree to which the firm depends on foreign markets (Thomas and Eden, 2004).

Universe	Spanish firms
Target population	164 Spanish firms quoted on the stock exchange (all markets)
Population frame	129 Spanish firms quoted on the Madrid Stock Exchange (continuous market)
Eliminations	30 Spanish firms not quoted in every year of the study period (2005-2010)
	13 firms classified as financial services
	2 firms that did not provide corporate governance reports
	6 firms with no international activity in any of the years of the study period 2005-2010
Sample	78 firms

Source: CNMV, MiFID regulated Market (Markets in Financial Instruments Directive)

Table I.
The selection process and the total sample selected

Industry	Number of observations	% of observations
1. Petroleum and energy	8	10.26
2. Basic materials, manufacturing and construction	26	33.33
3. Consumer goods	26	33.33
4. Consumer services	9	11.54
5. Real estate	4	5.13
6. Technology and telecommunications	5	6.41

Notes: All companies listed in the Spanish exchanges and traded either on the Stock Exchange Interconnection System (SIB) or on any of the four Stock Exchanges in Spain: Madrid, Barcelona, Bilbao and Valencia, have been classified according to a common framework that was implemented on 1 January 2005. The list can be downloaded from www.bolsamadrid.es (listed companies/sectorial classification)

Table II. Composition of the sample by industry

The structural dimension normally calculates foreign assets as a percentage of total assets (FATA) (Daniels and Bracker, 1989). FATA reflects a firm's confidence in its foreign assets.

The theoretical range for each dimension is 0-1. The two variables (proportion of foreign sales and foreign assets as a percentage of total assets) form our composite measure for the degree of internationalisation; our theoretical range therefore is 0-2. We chose this composite measure because it reflects the degree of internationalisation of the firm better than uni-dimensional variables (Lu and Beamish, 2004; Ramaswamy *et al.*, 1996; Sullivan, 1994). In accordance with the literature on boards of directors (He and Huang, 2011; Kor and Sundaramurthy, 2009; Tian *et al.*, 2011), the dependent variable has a one-year delay to protect our results from possible problems of causality and to allow sufficient time for the knowledge and experience of the board members to have an effect on the firm's international performance.

The information was taken from the audited reports obtained from CNMV (Spanish National Stock Exchange Commission). These consolidated reports include data relating to the distribution of sales and assets in each of the geographical sectors in which the firm operates and holds assets. In this way we were able to obtain information on the firms' sales and assets in Spain as well as in other regions or markets.

Independent and moderator variables

We have the variables that describe the board's potential – international background and educational attainment – as well as internal density, a variable that integrates the board's potential and harnesses it.

To calculate the independent variables we identified the board members for each of the 78 firms for each of the six years in our study, a total of 5,075 board members. This information was obtained from the firm's corporate governance reports published by CNMV. Once we identified the directors, we entered the data relating to their education and professional experience, including whether or not they had a high educational attainment, the discipline, and where they had carried out their professional activities or undertaken their further studies (within Spain or abroad). In order to do this, we needed access to the curricula vitae of the board members, which we obtained from the company web sites or elsewhere on the internet.

To measure the board members' international background (experience and/or foreign education), we used a dichotomous variable coded as 1 if the board member

occupied or had occupied a post-abroad for a certain time, or if they worked or had worked in an international branch or division. They were also considered to have an international background if they had completed a course of higher study abroad. We coded this variable as 0 if none of these applied (Rindova, 1999). In order to calculate the board members' level of academic achievement, the high educational attainment variable was coded as 1 if the board member held a master's degree and 0 if they did not (Ruigrok *et al.*, 2007; Wiersema and Bantel, 1992). Almost all of the board members included in the sample held a bachelor's degree (law, economics, engineering, etc.) and a high percentage of them also held a master's degree. In Spain, until the new regulations on the European Credit Transfer System were put in place, holding a bachelor's degree was a prerequisite for obtaining a master's degree. We then measured the percentage of board members with an international background and high educational attainment (Wincent *et al.*, 2009).

To calculate board density we viewed the board as a network of individuals with social ties to each other, focusing on the connections or internal ties between directors. Board density captures the degree of intra-board connectedness by comparing the total number of existing close ties with the potential number of ties if every board member were connected to every other member. This concept of density has already been used in works investigating both TMT (Hayton *et al.*, 2012; Phelps and Paris, 2010; Wong and Boh, 2010) and boards of directors (Westphal and Bednar, 2005; Valenti and Horner, 2010). This study uses the ties between directors belonging to the same committee of the focal firm as the basis for measuring board density. We state that there is a close connection between two board members when they serve together on the board and are also active together on at least one of the firm's committees. Board committees are a fundamental channel through which directors interact; they are the prime movers of the board, assigning to the latter the most important, or exceptional issues. Boards meet only occasionally, so when two directors sit together on the same committee, their more frequent interaction and level of interdependence leads to closer or strengthened ties. It should be noted that the work of committees is carried out in smaller groups (four or five members on average by type of committee), which fosters a greater level of interdependence.

Directors may come to have greater trust in and regard for others on the board when they have had a longer history of exchanging knowledge, experiences and information with them, and have achieved positive results. We are aware that our measure of density is a proxy variable that does not directly capture the basic processes by which the board members access, use and combine each other's knowledge.

To calculate the internal density of the board we needed to know the number of the committees of each firm, as well as their composition or the directors that made up each committee. This information is available from the corporate governance reports published by CNMV. The majority of firms in our sample have an executive committee, an audit committee, and a nominating and compensation committee. Finally, density was calculated using UCINET6 network software.

Control variables

In accordance with other studies on corporate governance, we included the following control variables, which might affect the proposed relations: CEO/chair duality (Holm and Schuler, 2010; Ellstrand *et al.*, 2002), which was measured as a dummy variable that takes the value of 1 when the CEO is also chairman of the board, and 0 otherwise; board size (Amason and Sapienza, 1997; Goodstein *et al.*, 1994; Zahra *et al.*, 2007),

measured as the number of board members; firm age (Barroso *et al.*, 2011; Zahra *et al.*, 2007), measured as the number of years since the firm's founding; and the percentage of outside board members (Chen, 2011; Singla *et al.*, 2010), calculated as the number of outside board members on each board divided by the total number of board members. Finally, to control the time and industry effect, we have included dummy variables for each year (2005-2010) and industry, the latter according to the stock market industry classifications published by CNMV[2].

Results

This section analyses how board members' international background and high educational attainment influence the degree of firm internationalisation. The Appendix shows the correlation coefficients of the variables used in our models, as well as the descriptive statistics of our variables. Our theoretical model is estimated by ordinary least squares (OLS) regression.

This model is expressed as:

$$Y_{it} = \alpha + \beta X_{it} + u_{it} \tag{1}$$

where the subscript i represents individuals ($i = 1, \ldots, N$) and the subscript t, time in years ($t = 1, \ldots, T$).

In our case, we used the firm's degree of internationalisation as a dependent variable, and the explanations and control variables we defined above as independent variables. We also included the time fixed effects, d. The baseline model and the model that included interactions terms are as follows:

$$\begin{aligned} int_{it} = {} & \alpha + \beta 1 backinter_{it} + \beta 2 edu_{it} + \beta 3 density_{it} + \beta 4 boardsize_{it} + \beta 5 duality_{it} \\ & + \beta 6 outdirectors_{it} + \beta 7 firmage_{it} + \beta 8 industry1_{it} \\ & + \beta 8 industry2_{it} + \beta 8 industry3_{it} + d_t + uit \end{aligned} \tag{2}$$

$$\begin{aligned} int_{it} = {} & \alpha + \beta 1 backinter_{it} + \beta 2 edu_{it} + \beta 3 density_{it} + \beta 4 density_{it} x backinter_{it} \\ & + \beta 5 density_{it} x edu_{it} + \beta 6 boardsize_{it} + \beta 7 duality_{it} + \beta 8 outdirectors_{it} \\ & + \beta 9 firmage_{it} + \beta 10 industry1_{it} + \beta 11 industry2_{it} + \beta 12 industry3_{it} + d_t + u_{it} \end{aligned} \tag{3}$$

To determine whether the OLS model produces consistent results, we performed a Breusch-Pagan test for random effects (Breusch and Pagan, 1980). The absence of an unobserved effect is equivalent to *H0*, that the variance of unobserved heterogeneity is zero $\sigma 2\gamma = 0$. In our case, we failed to reject the null hypothesis and conclude that random effects are not appropriate (random effects γ_i are not relevant) and that the OLS coefficients are consistent in all our models. Second, we compared pooled OLS data to the fixed effects. Using the F-significance on the fixed effects test (F-statistic), the p-value in all models shows that we can accept the null hypothesis and it is therefore preferable to use the pooled OLS model rather than the fixed effects one. Finally, using the reset test, it can be seen that our models have no omitted variables (we failed to reject the null hypothesis). These statistics and the results of the OLS regression are shown in Table III. We used the Stata/SE 12.0 software program to calculate all of our estimations.

Following the regression analysis, we proposed different models, each of which includes the proposed working hypotheses. In Table III we introduced the control

Table III.
Results of the OLS estimation

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Variables						
Board members' international background		0.48*** (9.9E-02)		0.49*** (9.9E-02)		0.30** (0.10)
Board members' high educational attainment			0.78*** (0.10)		0.72*** (0.10)	0.62*** (0.10)
Internal board density				0.11 (0.10)	0.19 (0.10)	0.13 (9.6E-02)
Internal board density × board members' international background				1.57** (0.50)		1.26** (0.48)
Internal board density × board members' high educational attainment					1.44*** (0.40)	1.29** (0.42)
Board size	2.46E-06*** (5.43E-07)	2.40E-06*** (4.81E-07)	2.50E-06*** (4.96E-07)	2.20E-06*** (4.88e-07)	2.32E-06*** (5.26e-07)	2.27E-06*** (4.86E-07)
CEO/chair duality	−9.7E-03 (4.8E-02)	−0.02 (4.7E-02)	−0.04 (4.6E-02)	−0.03 (4.7E-02)	−0.03 (0.05)	−0.04 (4.5E-02)
% of outside directors	0.29 (0.21)	0.27 (0.22)	0.19 (0.19)	0.29 (0.20)	0.23 (0.20)	−0.24 (0.19)
Firm age	−9.3E-04 (7.4E-04)	−1.4E-03**** (7.2E-04)	−1.1E-03 (7.3E-04)	−1.3E-03 (6.9E-04)	−9.1E-04 (7.0E-04)	−1.2E-03 (6.7E-04)
Industry 1	0.09 (0.21)	0.14 (0.19)	−0.14 (0.18)	0.09 (0.20)	−0.16 (0.17)	−0.13 (0.17)
Industry 2	0.25 (0.21)	0.33 (0.19)	0.04 (0.18)	0.30 (0.20)	0.05 (0.17)	0.10 (0.17)
Industry 3	0.26 (0.21)	0.32 (0.19)	−0.02 (0.18)	0.28 (0.20)	−0.03 (0.17)	0.02 (0.17)
Regression specification	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS
Annual effects	Yes	Yes	Yes	Yes	Yes	Yes
Regression statistics						
Number of observations	468	468	468	468	468	468
Number of firms	78	78	78	78	78	78
F	2.21**	5.82***	9.40***	6.08***	9.56***	10.68***
R^2	8.04	13.42	18.10	15.48	21.58	26.66
F-statistic on fixed effects test	3.05 [0.095]	4.50 [0.079]	2.31 [0.122]	1.50 [0.168]	3.20 [0.105]	2.22 [0.132]
Breusch-Pagan test for random effects	2.41 [0.138]	2.35 [0.134]	2.66 [0.108]	2.16 [0.148]	2.55 [0.115]	2.12 [0.158]
Hausman specification test	3.86 [0.79]	3.03 [0.88]	7.97 [0.437]	18.60 [0.046]	12.23 [0.269]	30.29 [0.003]
Test on omitted variables (Ramsey RESET test)	2.21 [1.110]	0.33 [0.801]	1.10 [0.350]	2.15 [0.118]	1.48 [0.230]	1.93 [0.122]

Notes: Robust standard errors are in parentheses and p-values are in brackets. Pooled OLS: ordinary least squares. The table displays the OLS regression results using as dependent variable the degree of internationalisation of a firm and as independent variables board members' international background and board members' high educational attainment. All regressions have considered time and industry fixed effects and standard errors corrected by heterocedasticity. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; ****$p < 0.10$

Source: White (1980)

variables in model 1. Models 2 and 3 include the independent variables, while models 4 and 5 show the interaction of each independent variable with density. Finally, model 6 includes the complete set of the interactions of this density with each of the individual variables. We have accounted for the problem of heteroscedasticity, so that in the cases where it was detected our estimated model is robust.

Several things are worth highlighting. The central findings are related to how board experience variables (international background and high educational attainment) affect firm internationalisation. First, consistent with *H1*, board members' international background positively affects the degree of a firm's internationalisation. The marginal partial effect of board members having international background implies a premium of 48 per cent on the degree of a firm's internationalisation (model 2). This result is consistent with the idea that internationalisation requires the resources to access external markets through new, specialist knowledge, and we can therefore expect board members' international experience to have an effect on decision making in relation to expansion strategies and the degree of internationalisation of the firm. Experience abroad could help people to become more familiar with operations in a dynamic environment and overcome the associated difficulties and obstacles.

Second, according to *H2*, board members' high educational attainment also positively affects the degree of firm internationalisation. The marginal partial effect of board members having high educational attainment implies a premium of 78 per cent on the degree of a firm's internationalisation (model 3). This result confirms that educational attainment is a fundamental pillar of internationalisation and has special relevance in our analysis. Some very highly qualified board members make the most rational contributions to the decision-making process, suggesting more creative solutions to complex problems. They also bring a greater confidence to the decision-making process, offering a variety of points of view and encouraging others to become more tolerant of change. All of this increases the understanding of foreign market conditions, leading to familiarity with these conditions and greater effectiveness (Barkema and Shvyrkov, 2007).

H3a and *H3b* propose the moderator effect of density on these relationships. We have included the interaction effects separately (models 4 and 5) to provide an accurate reading of the marginal effects, and together as a block (model 6) to observe their simultaneous effects (Golden and Veiga, 2005).

Looking at the interaction between international background and high educational attainment with board density (models 4 and 5), the regression coefficients can be seen to keep the same sign, but the magnitudes of the coefficient are greater and more positive. These results suggest that internal density allows a board's potential to be integrated and harnessed when it relates positively to the degree of internationalisation of the firm. In other words, the greater the density within the board, the stronger the positive relationship between international background and a high level of educational attainment and the degree of firm internationalisation.

To facilitate interpretation of the regression coefficients, we plotted the gradients of the simple regressions of these terms (Cohen *et al.*, 2003). Figures 1 and 2 used the coefficients of the variables in model 6, where "low" indicates that the value of the density variable is below average and "high" indicates that it is above average. In both cases the gradient is steeper when board density is greater, indicating that as board density increases, the influence of the board members' international background and level of educational attainment on the firm's international results also increases.

Finally, the control variables included in the empirical model yield coefficients are consistent with the theoretical standpoint; however, most of them do not have an

impact on firm internationalisation. The main finding is that board size has a significant and positive impact on the degree of internationalisation. Board size is an important demographic characteristic, which could affect the firm's results (Kim, 2005, 2007). There is a greater range of abilities and specialised knowledge within a large board than in a smaller board, and the former is better equipped to establish external links. The larger board is therefore more likely to have access to critical resources (Goodstein *et al.*, 1994), which will affect the firm's general performance (Amason and Sapienza, 1997). As for influencing internationalisation, it has been argued that firms with larger boards are more internationalised because of the demand for more information from the board of directors, and the ability of a group to process information depends on the number of people in that group (Sanders and Carpenter, 1998).

All the significant findings result in statistically significant improvements in the variance explained by the models. We would point out that while models 2 and 4

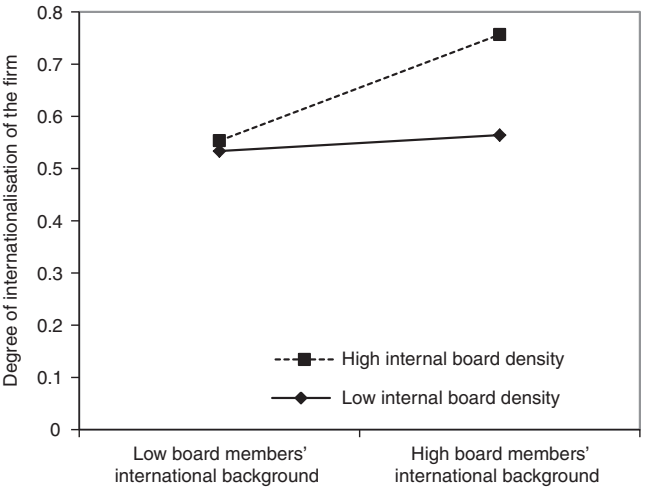

Figure 1.
Moderating effect of internal board density on the relationship between board members' international background and degree of internationalisation of the firm

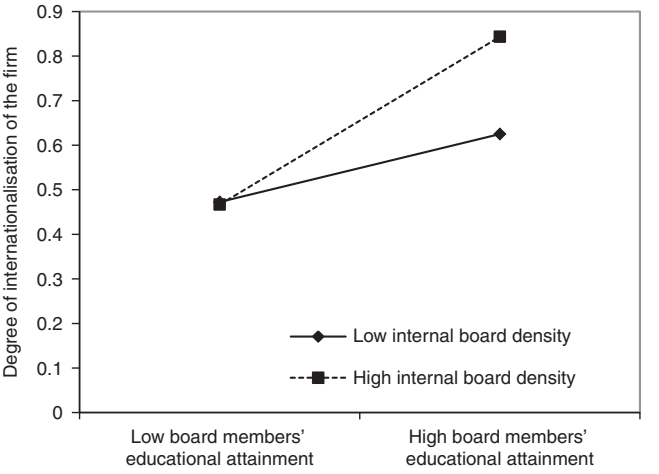

Figure 2.
Moderating effect of internal board density on the relationship between board members' educational attainment and degree of internationalisation of the firm

(relating to international background) explain 13.42 and 15.48 per cent of the variance, respectively, models 3 and 5 (relating to educational attainment) explain 18.10 and 21.58 per cent of the variance, respectively. Model 6 rises to 26.66 per cent. The joint significance test of our explanatory variables also shows that the variables were significantly different from 0 in all models.

Board resources and firm internationalisation: the endogeneity of international background and level of educational attainment.

Endogeneity creates difficulties for the analysis of relationships between board composition and firm value, meaning that if this is not controlled, the results could generate errors and inconsistent estimations (Aguilera and Cuervo-Cazurra, 2009; Hermalin and Weisbach, 2000; Pombo and Gutiérrez, 2011). While in this study we look for the source of endogeneity in simultaneity or reverse causality (Hermalin and Weisbach, 2003), there are studies that argue the contrary, i.e. internationalisation leads to boards adopting certain characteristics to face complexities in the global environment (Dinomohammadi, 2009; Holm and Schuler, 2010; Kim, 2005; Oxelheim and Randøy, 2003; Sanders and Carpenter, 1998; Singla *et al.*, 2010). In our particular case, a more experienced and knowledgeable board (measured by a higher percentage of board members with an international background and high educational attainment) could be a response to firm internationalisation strategies. In order to account for potential endogeneity due to simultaneous causality, we used an instrumental variable (IV) method (two-stage least squares estimation (2SLS)). IV estimation provides an alternative strategy to address the potential endogeneity of a more experienced and knowledgeable board in determining the degree of internationalisation of the firm (Greene, 2003; Wooldridge, 2002). We used the following IVs:

(1) *Foreign market entry*: number of foreign direct entry investments undertaken by a company in a particular year (Nielsen, 2010; Hambrick, 2007). For each of the years included in the sample, we counted the mergers and acquisitions undertaken by any company beyond its national borders. This information is available from the Mergerstat M&A Database, which is included in the Lexis-Nexis company dossier.

(2) *Foreign ownership*: this is measured as the share (percentage) of the equity held by foreign citizens or foreign institutions (of any nationality) in relation to the firm's total equity (all share classes). This information was extracted from the SABI database, which contains details on every firm in our sample with regard to historical information relating to the company's shareholders, where they are based, and their percentage interest in the firm.

(3) *Subsidiaries*: we used a dummy variable for firms that are foreign subsidiaries. Companies with a single foreign owner holding 20 per cent or more of the firm's equity were classified as foreign subsidiaries (Oxelheim and Randøy, 2003). The data were extracted based on the previous information regarding the percentage interest provided by the SABI database.

(4) *Firm size*: (Oxelheim and Randøy, 2003; Boermans and Roelfsema, 2013). This variable was measured using the number of employees of each firm in a particular year of the period studied. This information was obtained from the OSIRIS database.

In order to evaluate important information regarding entry into new markets, the firm appoints board members with high levels of education and international experience. Similarly, foreign shareholders will demand that the board members of the firms that they are investing in should be highly qualified in the field of internationalisation. Likewise, when the firm is a subsidiary of a foreign company, the board members should not only be familiar with the corporate governance model of its home country, but should also be able to monitor the regulations of its investors' countries at international level. Finally, larger firms are able to attract directors with international experience. The use of these variables potentially reduces selection bias.

An appropriate IV of board members' level of academic achievement and international background should satisfy requirements of both relevance and exogeneity. The instrument relevance requires that there is a strong fit between the endogenous regressor and instruments (Bascle, 2008). Using the Stock-Yogo test, we analysed whether the instruments were weak. The *F*-statistic is equal to 15.21 and thus we feel comfortable in rejecting the null hypothesis of weak instruments. The condition of exogeneity implies that instruments are not correlated with the error term of the structural equation. Three tests are available (Bascle, 2008): first, the Sargan (1958) or Hansen's (1982) *J*-statistic; second, the Basmann (1960) statistic; and finally, the difference-in-Sargan statistic (Hayashi, 2000). For all tests, the failure to reject each type of statistic means that the instruments can be considered to be exogenous. The Sargan test for over-identifying restrictions did not reject ($p < 0.10$) the null hypothesis of instrument exogeneity (Wooldridge, 2006) (p-value is 0.95). A difference-in-Sargan statistic was run on the different instruments (and their combinations) to test whether they violated the exogeneity condition. The statistic shows that all of the instruments can be considered exogenous, given that the null hypothesis is not rejected at the 10 per cent level. The instruments were tested separately and together. All tests show that the exogeneity of the instruments is respected in this context.

We reported the results of Lagrange Multiplier test for the null hypothesis that the equation is underidentified. We rejected the null hypothesis meaning that the selecting instruments are relevant (p-value < 0.001). Finally, we conducted the Durbin test and found evidence that board members' international background and high educational attainment are endogenous variables. The null hypothesis of the Durbin-Wu-Hausman χ^2 test is that the variable under consideration can be treated as exogenous. We reject the null of exogeneity (p-value < 0.05); so we must treat board members' international background and high educational attainment as endogenous.

We followed prior research recommendations, and lagged the dependent variable by one-year (degree of internationalisation in $t+1$) relative to the independent and IVs, as their effects are unlikely to be immediate (Cuervo-Cazurra and Dau, 2009; He and Huang, 2011; Tian *et al.*, 2011).

We ran the regression with 2SLS estimation (Table IV). In order to make the best comparison, the OLS results were also reproduced. When board members' international background and board members' high educational attainment are instrumented, the regression coefficients usually keep their sign, magnitude and significance with regard to the original OLS regression (even the instrumented equation shows a more significant effect of board members' international background on firm internationalisation). Finally, we confirmed that the results of the Hausman (1978) specification tests reject the null hypothesis that OLS is efficient compared to the alternative hypotheses that 2SLS is consistent, leading to the conclusion that 2SLS is more consistent than OLS. All of the models are robust to heteroscedasticity and autocorrelation.

	Model 4	
	OLS (column 1)	2SLS (column 2)
Variables		
Board members' international background	0.30**	0.69***
	(0.10)	(0.33)
Board members' high educational attainment	0.62***	0.43***
	(0.10)	(0.19)
Internal board density	0.13	0.09
	(9.6E-02)	(0.11)
Internal board density × board members' international background	1.26**	1.37**
	(0.48)	(0.49)
Internal board density × board members' high educational attainment	1.29**	1.46**
	(0.42)	(0.49)
Board size	2.27E-06***	2.25E-06***
	(4.86E-07)	(6.43E-07)
CEO/chair duality	−0.04	−0.04*
	(4.5E-02)	(4.6E-02)
% of outside directors	−0.24	−0.25
	(0.19)	(0.19)
Firm age	−1.2E-03	−1.6E-03*
	(6.7E-04)	(6.8E-04)
Industry 1	−0.13	−0.04****
	(0.17)	(0.21)
Industry 2	0.10	0.22
	(0.17)	(0.22)
Industry 3	0.02	0.14
	(0.17)	(0.22)
Annual effects	Yes	Yes
Instrumented variable		Board members' international background Board members' high educational attainment
Instruments		Foreign market entry Foreign ownership Subsidiaries Firm size
Regression specification	Pooled OLS	OLS-IV
Regression statistics		
Number of observations	468	467
Number of firms	78	78
R^2	26.66	31.25
F-statistic on fixed effects test	2.22 [0.132]	
Breusch-Pagan test for random effects	2.12 [0.158]	
Hausman specification test	30.29 [0.003]	

(*continued*)

Table IV.
Results of the OLS estimation and the 2SLS instrumental variable estimation

	Model 4	
	OLS (column 1)	2SLS (column 2)
Tests of weak identification		
First-stage *F*-statistic		15.21
		[0.000]
Test of instrument exogeneity		
Sargan or Hansen *J*-statistic		0.10
		[0.951]
Difference-in-Sargan statistic		0.09
		[0.753]
LM statistic		43.25
		[0.000]
Test of endogeneity		
Durbin-Wu-Hausman χ^2-test		9.27
		[0.021]

Notes: Robust standard errors are in parentheses, and *p*-values are in brackets. This table display OLS and IV-2SLS estimates. Column 2 shows the result of the IV-2SLS regression using an instrumented board members' international background and board members' high educational attainment. Column 2 take as instruments the foreign markets entry, the foreign ownership, subsidiaries and firm size. All the regression included year dummies and industry dummies and standard errors corrected by heterocedasticity. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; ****$p < 0.10$

Source: White (1980)

Table IV.

Robustness checks

A number of robustness checks were carried out. First, different instruments were used instead of the retained ones (Bascle, 2008). We also used dummy variables for the IVs *Foreign market entry* and *Foreign ownership*, assigning 1 when the firm undertakes a merger or acquisition or has a property that is in foreign hands during the year of the study, and 0 otherwise. The latter variable, *Foreign ownership*, was also used to consider only the direct (rather than total) ownership in the hands of foreign investors. Additionally, we tested other new variables, such as whether the firm was an exporter or importer, and the degree of geographical diversification. The results are unaffected, regardless of which IV method is used.

In addition, to make our results more robust to the choice of variables, we considered other ways to measure the dependent variable – internationalisation (Kor and Sundaramurthy, 2009; Wincent *et al.*, 2009). While this work has defended the use of a composite measure to calculate the degree of a firm's internationalisation, we also considered the use of international sales in isolation (Autio *et al.*, 2000; Chen, 2011; Jaw and Lin, 2009; Qian, 2002; Tallman and Li, 1996; Wolff and Pett, 2000), rather than with international assets [3]. By substituting these variables in each of the proposed models, our results lose their significativity (Table V, column 1). The R^2 is considerably reduced, which indicates that if we substitute the degree of internationalisation for the percentage of international sales, the significativity of the predictive capacity of the model will be reduced. The significance test of our explanatory variables will also lose significativity, along with some of the proposed hypotheses. All of this provides greater support for our choice of dependent variable.

Although firm internationalisation can be measured in a number of ways, we advocate the suitability of composite or multi-item measures, particularly in countries

	OLS (column 1)
Variables	
Board members' international background	0.07
	(0.05)
Board members' high educational attainment	0.32***
	(0.06)
Internal board density	0.12*
	(0.05)
Internal board density × board members' international background	0.55
	(0.27)
Internal board density × board members' high educational attainment	0.75**
	(0.22)
Board size	1.99e-07
	(3.13e-07)
CEO/chair duality	0.02
	(0.02)
% of outside directors	0.03
	(0.10)
Firm age	3.7E-05
	(3.5E-04)
Industry 1	−0.03
	(0.08)
Industry 2	0.10
	(0.08)
Industry 3	0.07
	(0.08)
Annual effects	Yes
Regression specification	Pooled OLS
Regression statistics	
Number of observations	468
Number of firms	78
R^2	18.96
F-statistic on fixed effects test	1.98
	[0.142]
Breusch-Pagan test for random effects	2.27
	[0.132]
Hausman specification test	19.18
	(0.082)

Notes: Robust standard errors are in parentheses and *p*-values are in brackets. Column 2 shows the result of the OLS regression using as dependent variable the international sales and as independent variables board members' international background and board members' high educational attainment. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; ****$p < 0.10$

Table V.
Other robustness checks

with more advanced internationalisation strategies. International sales are seen as the first step in the firm's internationalisation process; they use the fewest resources and the assumed risk is minimal. Unlike developing countries, Spain is a developed economy, whose firms already have a consolidated international strategy that depends not only on foreign sales, but also on established foreign assets and resources.

Discussion and conclusions

While it is acknowledged that boards play an important role in the strategic orientation of the firm (Datta *et al.*, 2009; Kosnik, 1990), their influence on firm strategy at

international level has been largely overlooked (Barroso *et al.*, 2011). Strategic decision making, such as internationalisation, requires time, effort and preparation. In order to succeed in such a venture, we believe that the firm needs to carry out this work in advance with its governing bodies (not just the TMT).

In this work, we have demonstrated the importance of the board's involvement in the principal international decisions of the firm, and have argued that a board is effective if it assists decision making in this respect. Adopting the RBV, we have shown that the attributes the members on a board define its potential, which could be exploited and used to produce unique results and achieve sustainable competitive advantages in the international context.

We have identified two elements of board potential: the international background and educational attainment of board members. Our results confirm that both will have a positive effect on the degree of firm internationalisation. Board members with an international background will be more open-minded towards other cultures, more aware of international problems and more inclined to look for international opportunities. Likewise, board members with high levels of education are more likely to participate in the firm's international strategies, since these require the directors to quickly assimilate large amounts of complex information, and they are better able to interpret and categorise this information if the knowledge structures are in place.

Keeping in mind studies on the internal dynamics of the board, we see the influence that relationships between board members – viewed as a group – have on the integration of the resources they bring and their willingness to work effectively with others in order to achieve common goals. In particular, we looked at the moderator effect of the board density variable on the individual relationships proposed earlier. High board density has a positive effect on both relations (international background and educational attainment) with regard to the degree of internationalisation. Given the characteristics of the board – which, unlike other groups, is larger, meets less frequently and is faced with complex tasks within strict time limits – the results attained for the positive influence of board density are particularly relevant. According to our results, greater density may create a higher level of trust and cohesion between board members, which in turn would help them gather and share multiple perspectives and knowledge stemming from their international background and educational attainment. As we have seen, this produces high-quality results in the international context (Kor and Sundaramurthy, 2009; Nicholson and Kiel, 2004b).

Internationalisation nowadays is a reality that the majority of firms will have to face. Recent financial scandals of high-profile firms (Enron, Tyco, WorldCom, Adelphia), alongside the economic recession brought about by the crisis (Love *et al.*, 2007; Francis *et al.*, 2012) mean that every governing mechanism, not only top management, needs to be adequately qualified to be fully involved with the firm's internationalisation process. The results of our investigation will help firms in two ways: first, they will assist firms when they have to select board members, as they can now understand how the resources that board members bring with them can affect the degree of firm internationalisation. In order to be more effective, the selection process must be guided by the search for intangible, inimitable and unique resources, which the board can exploit in order to achieve competitive advantages over its rivals.

Specifically, our results demonstrate that a firm should appoint board members with experience and education in foreign markets so that new information can be processed and creative solutions can be found in an unstable environment. Second, and building on the study by Barroso *et al.* (2011), our results will help firms understand how they should use board members' resources once they have been appointed. Encouraging

communication and trust between them through committee membership will promote the willingness to share knowledge and will therefore increase learning between board members. When a firm faces a highly uncertain situation such as internationalisation, it should build its capabilities on the foundation of the combined and integrated resources of its board members. Only then will it be able to produce unique results and create competitive advantage over its rivals.

We believe that it is necessary, and would be of great interest, to continue investigations in this field, incorporating information from other companies rather than just large companies quoted on the continuous market. The way in which they fulfil their functions and, by extension, the effectiveness of the board, might vary according to the type of organisation being studied. Although we have controlled for certain variables such as the industry, future investigations should seek a broader firm sample and include non-profit companies or family firms (e.g. Forbes and Milliken, 1999). Similarly, it would be very interesting in this context to expand the sample to include other countries, or even to carry out a comparative study.

With regard to the dependent variable, we need to continue our investigations, looking for new sources and ways to measure the degree of a firm's internationalisation. As we have access to the information, it would also be interesting to identify the destination markets of our foreign assets and sales. Not all markets are equally uncertain, and so to achieve the same results, board members need to build up different levels of human capital.

Finally, future lines of investigation might consider the board as a node in a network of inter-organisational relationships, often with ties to other boards through shared directorships or interlocks. Ties to other organisations through interlocking directorates are a source of expertise, information, external support and legitimacy (Carpenter and Westphal, 2001; Kor and Sundaramurthy, 2009; Tian *et al.*, 2011) that has not been considered in our study and which might increase the board's potential to deal with the complexities of internationalisation.

Notes

1. It is understood that there is no international activity when the total of assets and sales of the company are exclusively local, i.e. based in domestic markets. They have been included in the sample of companies that possess international assets but have no international sales or vice versa.
2. We have used the information from the database relating to the stock market industry classifications proposed by CNMV, coded as follows: (1) petroleum and energy; (2) basic materials, manufacturing and construction; (3) consumer goods; (4) consumer services; (5) financial services and real estate (in our study only real estate); and (6) technology and telecommunications. Given the differences in the frequency of the observations for each sector, we have assigned 1 to industries 1, 4, 5 and 6; 2 to industry 2; and 3 to industry 3. Finally, we created a dummy variable for each of the three industries for each year/firm.
3. We did not carry out the same test for this variable, given that not all of the firms in the sample have foreign assets. This would have considerably reduced the number of firms in the sample, from 78 to 63, and would have substantially reduced our statistical power.

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Appendix

Table AI.
Correlation matrix

	Mean	SD	Min.	Max.	1	2	3	4	5	6	7	8	9	10	11
1. Degree of internationalisation of a firm	0.7	0.47	0.012	1.91	1										
2. Board members' international background	0.39	0.22	0	1	0.21**	1									
3. Board members' high educational attainment	0.45	0.2	0	1	0.3**	0.39**	1								
4. Internal board density	0.33	0.22	0.03	1.42	0.11*	0.1*	0.01	1							
5. Board size	10.9	3.43	5	21	0.1*	−0.15**	−0.13*	−0.17**	1						
6. CEO/chair duality					0.00	0.04	0.03	0.11*	0.09***	1					
7. % of outside directors	0.81	0.12	0.33	1	0.02	−0.03	0.1*	−0.02	0.27**	−0.18**	1				
8. Firm age	50.91	34.25	2	164	−0.03	0.13**	0.06	−0.11*	−0.06	−0.08***	0.13**	1			
9. Industry 1					−0.06	0.09*	−0.01	0.15**	0.26**	0.01	0.07	−0.19**	1		
10. Industry 2					0.04	−0.14**	−0.14**	−0.17**	0.08***	0.02	0.07	0.09*	−0.49**	1	
11. Industry 3					0.04	0.03	0.2**	0.02	−0.3**	−0.06	−0.07	0.12**	−0.49**	−0.5**	1

Notes: $n = 468$. The above table shows the correlation coefficients of the variables used in our models, as well as the descriptive statistics of our variables. All of the VIFs are substantially lower than 2, with an average VIF of 1.15, therefore our model does not have any problems of multicolinearity. In order to avoid possible problems of multicolinearity between the principal effects and the interaction terms, we also centred the independent variables before creating the interaction variables. Correlations above 0.12 are significant at $p < 0.01$. *$p < 0.05$; **$p < 0.01$; ***$p < 0.10$

Source: Aiken and West (1991)

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