Corporate Boards in OECD Countries: size, composition, functioning and effectiveness

Pablo de Andres, Valentin Azofra and Felix Lopez*

In recent years, the debate about the efficiency of corporate governance mechanisms has focused on the activity of the corporate boards of directors. This paper analyses the effect of the size of the board, its composition and internal functioning on firm value in a sample of 450 non-financial companies from ten countries in Western Europe and North America. The econometric method combines uniequational regression analysis with simultaneous equations in order to control for the possibility of board size and composition endogeneity. The results show a negative relationship between firm value and the size of the board of directors. This relation holds when we control for alternative definitions of firm size and for board composition, the board's internal functioning, country effect and industry effect. We find no significant relationship between the composition of the board and the value of the firm. These results are consistent with previous relevant papers and show that companies with oversized boards of directors have poorer performance both in countries where internal mechanisms of governance dominate and in countries where external mechanisms are predominant.

Keywords: Corporate governance, board of directors

Introduction

The increasing interest shown by both academics and practitioners in corporate governance can be inferred from the great deal of recent research providing details about the effects of some issues of corporate governance on managers’ decisions and firm value. In recent years, the debate has focused on the activity of the board of directors, the most outstanding governance mechanism of the internal control systems (Jensen, 1993). In fact, if other corporate governance mechanisms are weakened, the inefficiency of boards can be costly to companies and, in turn, to society as a whole. The interest of academics in boards has run parallel to the attention devoted to this topic by practitioners. In the main developed countries, board behaviour codes have been written as a demonstration of the concern to have effective means of monitoring to improve companies’ value creation. In the two groups (academics and practitioners) there is no doubt about the need for monitoring and control by boards of directors to improve corporate governance.

Recent literature on boards is basically empirical and focuses on three main questions (John and Senbet, 1998): the size of the board (Jensen, 1993; Yermack, 1996; Fernández et al., 1997; Huther, 1997; Eisenberg et al., 1998); its composition and independence (Baysinger and Butler, 1985; Hermalin and Weisbach, 1988, 1991; Weisbach, 1988; Rosenstein and Wyatt, 1990, 1997; Bhagat and Black, 1998); and its internal structure and functioning.

*Address for correspondence: Departamento de Economía Financiera y Contabilidad, Facultad de Ciencias y Empresariales, Avda. Valle Esquiva 6, 47011 Valladolid, Spain. E-mail: flopez@eco.uva.es
(Klein, 1998; Vafeas, 1999). Most of the research implies out-of-the-equilibrium evidence (Hermalin and Weisbach, 2003) and claims to have found empirical ties between some features of the board of directors and firm performance. These papers show the negative influence of board size on firm value, the uncertain effect of board independence on firm value and a certain endogenous relationship among director turnover, board features and firm performance. From a theoretical point of view, few papers have considered endogenous board structure in order to achieve the optimal corporate governance solution to the monitoring problem (Hermalin and Weisbach, 1998; Warther, 1998), while some other papers provide both a theoretical and empirical contribution to the question (Himmelberg et al., 2002).

This paper adds to this empirical literature by analysing the influence of the size of the board, its composition and functioning on firm value. We use a sample of 450 companies from ten countries, three of them from the Anglo-Saxon corporate system (Canada, the USA and the UK) and seven countries from the continental system (Germany, Belgium, Spain, France, Holland, Italy and Switzerland). The availability of data from a number of countries adds a special interest to our analysis. Firstly, it allows us to expand the analysis to a broader benchmark in comparison with the Anglo-Saxon corporate system on which most of the existing evidence has focused. Secondly, although corporate systems differ in a number of basic characteristics such as regulatory issues, the role played by markets and banks, investor protection or the market for corporate control (La Porta et al., 2000), there is a common desire that the corporate governance mechanisms be improved whatever the system.1 Thirdly, the board of directors is widely seen as being one of the most suitable mechanisms to improve corporate governance both in the market-based system and in the bank-based corporate one. Therefore, it is interesting to test if the hypothesis based on the efficiency/inefficiency of the board can be generalised further than the well-known institutional differences among countries. Fourthly, given that the research in the USA context reveals some inefficiency of the board of directors, we could ask if this situation also holds in those companies relying more on internal mechanisms of corporate governance than on external ones.

To deal properly with the problem of board size and composition endogeneity stressed by some authors, our econometric methodology combines the unequivocal empirical least squares regression (ols) with simultaneous equations analysis by using the three-stage least squares with instrumental variables method. Our main results are: (1) there is a negative relationship between firm value and board size – this relationship holds after controlling for alternative measures of firm size and for board composition, board internal functioning, country effect and industry effect, and it does not depend on the estimation method; (2) we do not find any consistent relationship between the proportion of outsider directors (a proxy for board independence) and firm value; (3) although the descriptive analysis shows there are relevant institutional differences between the corporate systems, these results hold even after taking into account the institutional differences at the country level; and (4) the results are robust to controls for the size of the firm, the governance setting and the measurement of performance, but are not robust to ROA as a measurement of firm performance. These results confirm, in an international framework, those suggested by Jensen (1993) and estimated by Yermack (1996) and Eisenberg et al. (1998).

The remainder of this paper is divided as follows. The second section surveys the theoretical foundations of the board of directors (size, composition and internal structure), its relationship with firm value, as well as presenting the hypothesis to be tested. The third section describes the database, the variables and some methodological issues. The next section presents and discusses the main empirical results and provides a sensitivity analysis of the results to different specifications of the model. The final section contains some conclusions and suggests directions for future research.

**Boards of directors and firm value: theoretical background**

The area of corporate governance and its link to firm value has been of increasing interest in recent years. One of the most plausible explanations is based on agency theory, so that given the separation of ownership and control, corporate governance becomes a way of reducing agency costs.

This paper focuses on the link between firm value and several corporate governance issues such as the size of the board, its composition and its structure. To answer this question, it is essential to clearly define the function and objectives of the board. According to Fama and Jensen (1983), the board of directors is seen as the instrument shareholders use to monitor top managers. Nonetheless, boards are not always able to play this role ade-
quite adequately, and their lack of effectiveness requires more in-depth analysis of, at least, three board issues (size, composition and internal functioning), along with the idea that the board itself can be the result of the interaction of other factors.

**Size of the board**

The number of directors is a relevant feature that can have much to do with board monitoring and control activity. Whereas the ability of the board to monitor can increase as more directors are added, the benefits can be outweighed by the costs in terms of the poorer communication and decision-making associated with larger groups (Lipton and Lorsch, 1992; Jensen, 1993), along with the fact that the CEO can be more likely to control the board of directors.

The empirical evidence supports this last assertion by showing an inverse relationship between firm value and the size of the board after controlling for the size of the firm, its age and growth opportunities (Yermack, 1996; Eisenberg et al., 1997). Yermack presents evidence that small boards of directors are more effective, and that companies with them achieve higher market value. Furthermore, financial markets react positively to announcements of board downsizing, while announcements of a higher number of directors usually reduce equity value. However, it is not a linear reaction. The larger the board, the smaller the negative effect of an additional director. In other words, the companies most affected by this problem are small and medium-sized firms, whereas large companies, in spite of its negative effect, do not suffer the problem to such an extent. There are even some papers setting out a non-monotonic relationship and thus estimating the optimal number of directors (Fernández et al., 1997). In turn, we hypothesise that oversized boards lead to worse performance.

**Composition of the board**

On the basis of their participation in firm management, directors are usually divided into insiders (those who are directors and managers at the same time) and outsiders (non-manager directors), since they can have quite different behaviour and incentives. Although both groups have some advantages and disadvantages, most authors are in favour of outsider-director dominated boards. In the opinion of these authors, non-manager directors provide superior performance benefits to the firm as a result of their independence from firm management (Baysinger and Butler, 1985).

However, insider directorship (directors being managers at the same time) has also been justified on the basis of the better knowledge this kind of director has about the company and the industry where the company operates, so that their experience can improve firm performance (Baysinger and Hoskisson, 1990; Bhagat and Black, 1998). There is also an intermediate position taken by some authors who have not found any conclusive evidence. For instance, Hermalin and Weisbach (1991) find no relationship between firm performance and board composition, despite having found a close relationship with ownership structure. Moreover, Rosenstein and Wyatt (1997) reveal that adding an insider director to an outsider-dominated board improves shareholder wealth, and so does adding an outsider director to an insider-dominated board. Finally, three recent studies suggest that firms with a high percentage of independent directors may perform worse (Yermack, 1996; Agrawal and Knoeber, 1996; Klein, 1998).

Although the empirical evidence is not conclusive, we propose the monitoring hypothesis in the sense that a higher proportion of outsider directors (proxying the independence of the board) should lead to better firm performance since it diminishes the conflict of interests and makes management more efficient.

**Internal functioning of the board**

An alternative explanation for the lack of relationship between firm value and board composition is based on the analysis of the board’s internal administrative structure. In fact, as the literature has stressed, there are a number of factors potentially affecting the way boards operate. We would like to underline two of these: the board committee structures (Klein, 1998) and the frequency of board meetings (Vafeas, 1999).

As far as committee structure is concerned, Klein (1998) suggests that the weak association between firm performance and overall board composition can be affected by committee structure omission. In fact, a positive and significant relationship between firm performance and how boards are structured can be detected. The committees are nominated by board delegation and represent a method of specifying the tasks for which directors are responsible, so that the larger the firm, the more important their role. Nevertheless, as will be explained subsequently, the inclusion of committee structure is, at least, a problematic issue given the scarcity of available information and the reduction of sample size it
imposes. It is an interesting question that warrants more attention in future research.

Another key point to identify the activity of the board is the number of meetings held. Parallel to the other characteristics of the board of directors previously mentioned, there are both explanations for and against a positive relationship between the frequency of meetings and firm efficiency. On the one hand, the meetings are the most usual occasion to discuss and exchange ideas in order to monitor managers (Conger et al., 1998). From this point of view, the more frequent the meetings, the more detailed the control of the managers, and the greater the shareholder wealth. On the other hand, the meetings of the board are not synonymous with efficiency. Given that the CEO is charged with fixing the agenda of the meeting, that the time of the outsider directors is scarce and that routine tasks take up a large proportion of the time, more meetings do not necessarily imply better monitoring. Moreover, the little empirical evidence there is (Vafeas, 1999) shows that the board of directors is a reactive institution rather than a proactive way of improving corporate governance.

Therefore, the hypothesis concerning the influence of the activity of the board on firm performance is again an empirical question, and results in both directions could make sense, although the results of Vafeas (1999) suggest a negative relationship.

Sample, variables and methodology

Data

Our concern is an international analysis of the role of the board of directors, and hence our sample includes data from large non-financial companies from ten countries: Belgium, Canada, France, Germany, Holland, Italy, Spain, Switzerland, the UK and the USA. The data were obtained from Spencer Stuart Board Index, a publication of Spencer Stuart Consulting. Although the index has been published in the USA annually since 1990, it was not until 1996 that it was available for the other countries. Thus, we examined cross-sectional data regarding the board of directors of large companies from ten developed countries for 1996. After eliminating financial and insurance companies, and those companies with too much missing data and outliers, our sample was reduced to 450 companies.

As Table 1 shows, there are big differences in terms of size and number of companies by country. However, there is no sample bias on our part since the observations correspond to the largest companies in each country. In addition, all the companies have a unitary board with the exception of Germany and Holland, where companies are obliged by law to have a two-tier board system with a Supervisory Board and a Management Board. We will later show some of the differences among the countries, after having first defined the variables we used.

In short, the Board Index provides information on board size and composition (number of insider and outsider directors), the number of meetings per year, and the compensation the members of the board receive. For some countries there is information available about directors’ average age and the number of committees to which the board delegates its authority and, for a few counties, the kind of committees.

The Global Vantage Database was also used in order to obtain financial statement information regarding both book and market value. That information concerns sales, equity market value, gross and net profit, debt, assets and number of employees. The method used by Standard & Poors also allows for homogeneity among different countries.

Variables and descriptive analysis

Firm value is proxied by the equity market-to-book ratio (MB). While some papers use the market-to-book ratio as the dependent variable (Barnhart et al., 1994), others use versions of Tobin’s q ratio (Agrawal and Knoeber, 1996; Yermack, 1996; Bahgat and Black, 1998; Bhagat and Jefferis, 2002; Weir et al., 2002). In order to test the sensitivity of our results we also built a version of Tobin’s q through the ratio market value of assets to book value of assets. MB is defined as the market value of equity divided between the book value of equity. Consequently, it does not take into account firm’s debt. The version of Tobin’s q we have built is usually called financial q and it is defined as the ratio of book value of debt plus the market value of equity to the book value of debt plus the book value of equity.

The average number of directors (BOASIZE) measures the size of the board. As Table 1 shows, mean and median board size are respectively 11.6 and 12 directors, which is consistent with the figure of 12 reported by Yermack (1996), Barnhat et al. (1994), Rosenstein and Wyatt (1997) and Klein (1998). The differences in board size shown in Table 1 are closely related to the firm size and to some country features.

As far as the differences among countries are concerned, the size of the board is useful for dividing the entire sample into three dif-
different groups: firms with large boards (German firms have 15 directors on average), firms with small boards (Swiss and Italian firms have 9 directors on average), and firms with a medium-sized board (American, British, Canadian, Spanish, French and Belgian companies have 12–13 directors on average). Nevertheless, this last group is heterogeneous in terms of market-to-book ratio, since US and UK companies have higher ratios, whereas Canadian and Spanish firms have lower ratios. In addition, the mean MB ratio in this group is quite similar to that of Switzerland, Italy and Germany.

The composition of the board of directors is measured by two variables: (i) the proportion of insiders, that is, the number of executive directors over the total number of directors (INSID); (ii) the proportion of outsiders in terms of the number of non-executive directors over the total number of directors (OUTSID). As far as the composition of the board is concerned, a comment is pertinent. Whereas the concept of insider is unequivocal (directors who are, at the same time, managers of the firm and who therefore have inside information and might provoke agency problems), the concept of outsider has a number of alternative meanings in the literature (independent, affiliated, unaffiliated, etc.). This non-specific meaning is closely related to the independence of these directors from the rest of the directors and from the managers of the firm. Sometimes a further distinction is made inside the general concept of independent directors: those with no family, business or ownership relation with the company. The benefit of this kind of director is often proposed because of the minimisation of conflicts of interests and because of their independence. At the same time, it is very difficult to determine which outsiders are truly independent or affiliated, even in spite of having available information about ownership, family links, etc. In our case, the infor-

<table>
<thead>
<tr>
<th>Country</th>
<th>MB</th>
<th>Q</th>
<th>ROA</th>
<th>BOASIZE</th>
<th>OUTSID</th>
<th>INSID</th>
<th>MEETYEA</th>
<th>COMDI</th>
<th>SALES</th>
<th>LTDTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium (12)</td>
<td>Mean</td>
<td>3.61</td>
<td>2.95</td>
<td>0.08</td>
<td>13.17</td>
<td>0.76</td>
<td>0.24</td>
<td>6.00</td>
<td>36,857</td>
<td>3,658</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>3.24</td>
<td>2.37</td>
<td>0.12</td>
<td>11.50</td>
<td>0.81</td>
<td>0.19</td>
<td>6.00</td>
<td>31,187</td>
<td>1,383</td>
</tr>
<tr>
<td>Canada (79)</td>
<td>Mean</td>
<td>1.85</td>
<td>1.47</td>
<td>0.02</td>
<td>12.34</td>
<td>0.74</td>
<td>0.26</td>
<td>6.61</td>
<td>17,073</td>
<td>3,048</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>1.44</td>
<td>1.22</td>
<td>0.10</td>
<td>12.00</td>
<td>0.79</td>
<td>0.21</td>
<td>6.00</td>
<td>14,712</td>
<td>1,552</td>
</tr>
<tr>
<td>Switzerland (17)</td>
<td>Mean</td>
<td>2.35</td>
<td>1.95</td>
<td>0.08</td>
<td>9.12</td>
<td>0.90</td>
<td>0.10</td>
<td>5.38</td>
<td>55,417</td>
<td>5,749</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>1.86</td>
<td>1.57</td>
<td>0.08</td>
<td>9.00</td>
<td>0.90</td>
<td>0.10</td>
<td>5.00</td>
<td>59,117</td>
<td>1,637</td>
</tr>
<tr>
<td>Germany (33)</td>
<td>Mean</td>
<td>2.58</td>
<td>2.13</td>
<td>0.11</td>
<td>15.06</td>
<td>0.60</td>
<td>0.40</td>
<td>3.91</td>
<td>16,431</td>
<td>12,261</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>2.41</td>
<td>2.02</td>
<td>0.12</td>
<td>16.00</td>
<td>0.58</td>
<td>0.42</td>
<td>4.00</td>
<td>9,638</td>
<td>2,462</td>
</tr>
<tr>
<td>Spain (28)</td>
<td>Mean</td>
<td>2.87</td>
<td>2.45</td>
<td>0.12</td>
<td>12.29</td>
<td>0.75</td>
<td>0.25</td>
<td>8.57</td>
<td>99,319</td>
<td>930</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>2.36</td>
<td>1.91</td>
<td>0.09</td>
<td>11.00</td>
<td>0.80</td>
<td>0.20</td>
<td>9.00</td>
<td>74,498</td>
<td>312</td>
</tr>
<tr>
<td>France (42)</td>
<td>Mean</td>
<td>3.07</td>
<td>2.42</td>
<td>0.10</td>
<td>12.93</td>
<td>0.81</td>
<td>0.14</td>
<td>4.52</td>
<td>19,212</td>
<td>11,301</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>2.27</td>
<td>1.73</td>
<td>0.11</td>
<td>13.00</td>
<td>0.82</td>
<td>0.10</td>
<td>4.00</td>
<td>15,247</td>
<td>6,243</td>
</tr>
<tr>
<td>UK (66)</td>
<td>Mean</td>
<td>4.19</td>
<td>3.01</td>
<td>0.22</td>
<td>12.03</td>
<td>0.48</td>
<td>0.52</td>
<td>7.32</td>
<td>38,745</td>
<td>9,498</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>2.70</td>
<td>2.31</td>
<td>0.19</td>
<td>12.00</td>
<td>0.50</td>
<td>0.50</td>
<td>9.00</td>
<td>35,593</td>
<td>6,230</td>
</tr>
<tr>
<td>Italy (56)</td>
<td>Mean</td>
<td>2.08</td>
<td>1.74</td>
<td>0.05</td>
<td>9.23</td>
<td>0.74</td>
<td>0.26</td>
<td>5.25</td>
<td>58,701</td>
<td>4,425</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>1.45</td>
<td>1.27</td>
<td>0.06</td>
<td>9.00</td>
<td>0.81</td>
<td>0.19</td>
<td>5.00</td>
<td>33,742</td>
<td>518</td>
</tr>
<tr>
<td>Netherlands (37)</td>
<td>Mean</td>
<td>5.18</td>
<td>1.93</td>
<td>0.20</td>
<td>6.84</td>
<td>6.00</td>
<td>6.00</td>
<td>31,593</td>
<td>6,164</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>3.33</td>
<td>3.24</td>
<td>0.16</td>
<td>7.00</td>
<td>6.00</td>
<td>6.00</td>
<td>27,482</td>
<td>2,635</td>
<td>0.13</td>
</tr>
<tr>
<td>USA (80)</td>
<td>Mean</td>
<td>4.90</td>
<td>2.96</td>
<td>0.20</td>
<td>12.74</td>
<td>0.79</td>
<td>0.21</td>
<td>8.93</td>
<td>54,607</td>
<td>25,532</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>3.66</td>
<td>2.24</td>
<td>0.19</td>
<td>13.00</td>
<td>0.81</td>
<td>0.19</td>
<td>8.50</td>
<td>53,105</td>
<td>14,502</td>
</tr>
<tr>
<td>Sample (450)</td>
<td>Mean</td>
<td>3.33</td>
<td>2.57</td>
<td>0.05</td>
<td>11.67</td>
<td>0.70</td>
<td>0.28</td>
<td>6.60</td>
<td>40,465</td>
<td>12,771</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>2.29</td>
<td>1.76</td>
<td>0.04</td>
<td>12.00</td>
<td>0.75</td>
<td>0.24</td>
<td>6.00</td>
<td>32,884</td>
<td>3,226</td>
</tr>
<tr>
<td>Max.</td>
<td>28.73</td>
<td>25.7</td>
<td>0.82</td>
<td>26</td>
<td>1</td>
<td>1</td>
<td>19</td>
<td>511,861</td>
<td>269,036</td>
<td>0.92</td>
</tr>
<tr>
<td>Min.</td>
<td>0.10</td>
<td>0.24</td>
<td>-0.42</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2,859</td>
<td>2.13</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Basic descriptive statistics sorted by country. In brackets the number of firms from each country in the sample. Sales in millions of US dollars and compensation in US dollars. MB is the market-to-book ratio, Q is a proxy of Tobin’s q, ROA is the return on assets, BOASIZE is the size of the board, OUTSID the proportion of outside directors, INSID the proportion of inside directors, MEETYEA the number of meetings held every year, COMDI is the compensation of each director, LTDTA is the leverage and SALES is informative about the size of the firm.
is conditioned by the governance setting, we have interacted some variables. Specifically, we have defined INTOBASIZE as board size times ANGLO, INTOUTSID as the proportion of outsiders times ANGLO and INTSALES as the log of sales times ANGLO. We have further divided the 450 data base companies into three groups according to total assets and created a dummy variable that assumes a value of 1 for the upper third and 0 otherwise. We also define an additional variable (DUMBOASIZE) by multiplying the dummy variable by the logarithm of the number of directors. The purpose of this variable is to introduce a distinction into the explanatory variables set on the basis of firm size. By doing so we can, on the one hand, obtain all the estimated coefficients after controlling for the firm size and, on the other hand, decide whether board size has a different impact on firm value depending on firm size.

Some variables to control for the ownership percentage of each director, the presence of institutional investors, R&D expenses or corporate diversification would have been helpful, but were unavailable.

**Empirical specification**

In this section we describe the specification of the model to be tested. After testing the simplest version of the model, which includes just the effect of board size, we introduced additional variables to take into account the composition of the board and its functioning.

We used regression analysis, which requires the identification of one or more variables to be explained as a function of the others. Since we are interested in board efficiency, in the sense of firm value creation, we used MB as the dependent variable, which is consistent with previous studies. This variable is made to depend first on board size under the hypothesis that larger board size can make coordination and communication more difficult.

This basic model is completed by introducing some additional variables. We began by including board composition through the proportion of outsiders (OUTSID) and later the monitoring board activity (measured by MEETYEA) and directors’ incentives (through COMDI) were incorporated.

Other control variables were added to the right hand side of the equation including: (1) financial leverage (LTDTA), since debt is supposed to discipline managers; (2) return on assets (ROA), because financial performance should improve equity value; (3) the ANGLO dummy, in case the features of the financial system provide some explanation; (4) firm size (log SALES), given that it usually plays a sig-
significant role, although its sign cannot be forecasted; and (5) dummy variables taking into account industry (INDUSTRY) and country effects (COUNTRY). As suggested by Table 1, country effects could be relevant as long as firms and boards can be substantially affected by the institutional setting, which is heterogeneous among countries.

We used ordinary least squares (OLS) in the first part of our analysis. A priori, there is nothing wrong in using this method, and it is worth stressing that most of the papers on the role of the board of directors make use of it. Nevertheless, uniequational models such as OLS can suffer from endogeneity and some precautions must be taken. This is why a sensitivity analysis is reported when we test alternative estimations in order to test the robustness of our results. As a final point in this section, Table 2 presents the correlation matrix in order to show that multicollinearity is not a big problem in our sample.

**Table 2: Correlation matrix**

<table>
<thead>
<tr>
<th></th>
<th>MB</th>
<th>BOASIZE</th>
<th>ROA</th>
<th>OUTSID</th>
<th>MEETYEA</th>
<th>SALES</th>
<th>LTDTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOASIZE</td>
<td>-0.031</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.249</td>
<td>0.005</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OUTSID</td>
<td>-0.102</td>
<td>-0.037</td>
<td>-0.068</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEETYEA</td>
<td>0.100</td>
<td>-0.017</td>
<td>0.138</td>
<td>0.008</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SALES</td>
<td>0.468</td>
<td>0.147</td>
<td>0.190</td>
<td>0.025</td>
<td>0.166</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>LTDTA</td>
<td>-0.059</td>
<td>0.129</td>
<td>-0.107</td>
<td>0.128</td>
<td>0.240</td>
<td>0.079</td>
<td>1.000</td>
</tr>
</tbody>
</table>

**Results**

**Basic results**

The results of the basic model analysis are displayed in Table 3: a regression was run where MB was made to depend on several explanatory variables. All the estimations include industry dummy variables, and country membership dummy variables have been added in column B.

The most remarkable result is the negative impact of board size on firm performance. We identified this issue in the descriptive analysis. A priori, there is nothing wrong in using this method, and it is worth stressing that most of the papers on the role of the board of directors make use of it. Nevertheless, uniequational models such as OLS can suffer from endogeneity and some precautions must be taken. This is why a sensitivity analysis is reported when we test alternative estimations in order to test the robustness of our results. As a final point in this section, Table 2 presents the correlation matrix in order to show that multicollinearity is not a big problem in our sample.

The results of the basic model analysis are displayed in Table 3: a regression was run where MB was made to depend on several explanatory variables. All the estimations include industry dummy variables, and country membership dummy variables have been added in column B.

The most remarkable result is the negative impact of board size on firm performance. We identified this issue in the descriptive analysis and our impressions are now confirmed. This result appears in all the estimations with a very high confidence level and does not depend on the specification of the model.

To interpret this result we should remember the discussion on the influence of board size (Yermack, 1996; Fernández et al., 1997; Huther, 1997), where the shortcomings of large boards were exposed. The benefits of more detailed monitoring that large boards enjoy seem to be outweighed by the problems of poorer coordination, communication and flexibility that are associated with large boards. At the same time, the log form implies a convex relationship, and thus the negative impact of the board size on firm performance decreases as boards become larger (Eisenberg et al., 1998).

In addition, country-effect inclusion by dummy variables (column B) confirms these conclusions, and the main variables keep their sign and level of confidence.

This is perhaps the most outstanding result but it can be complemented by a set of additional results. Return on assets (ROA) has a clear and obvious positive effect, whereas leverage (LTDTA) – a variable traditionally related to the discipline of managers – and ANGLO (to account for country effect) were not significant. Despite the lack of significance of these two variables, they should not be excluded from the equations because of the risk of omission bias.

In order to test the second hypothesis regarding the positive influence of board independence on firm value, we introduced OUTSID as an explanatory variable (Column C in Table 3). The results are virtually identical with board size displaying a significant negative coefficient, and both firm size and ROA remaining significantly positive. OUTSID itself has no significant effect and, more importantly, the model-adjusted significance worsens when OUTSID is included. Thus, firm value seems to be insensitive to board composition. These results are again consistent with some of the available empirical evidence (Hermalin and Weisbach, 1991; Bhagat and Black, 1998), showing that independent monitoring and control by outsiders does not necessarily imply efficiency improvements.

An indicator of board activity (MEETYEA) was also added to the set of explanatory variables (Column D). This variable was found to be significant initially, suggesting that more
detailed monitoring of managers in the form of additional board meetings was likely to improve firm value. However, it is not a robust result, because when the model is broadened to include the combined effect of \textsc{outsid} and \textsc{comdi}, \textsc{meetyea} is no longer significant (Column F). This fact may suggest that \textsc{meetyea} itself is not relevant to firm value, but it can sometimes incorporate the effect of other initially excluded variables. \textsc{comdi}, a variable dealing with directors' incentives to protect shareholders, is not always significant (Column E). To sum up this last group of results, the most evident conclusion is that the variable which is supposed to induce directors to act efficiently (frequency of meetings) does not appear to play that role, and thus we cannot verify our third hypothesis.\footnote{7}

In short, our results for an international sample of firms are consistent with the most frequent findings in the literature, with regards to the important influence of the size of the board on firm value, and the positive relationship between the value and the size of the firm. Nevertheless, the size of the board, the size of the company, the presence of outsiders and the value of the firm may be mutually related in a number of different ways, so it makes sense to test alternative model specifications in order to check the robustness of our results.

\textbf{Sensitivity analysis}

As seen above, the board of directors' impact on firm performance can be affected by the

\begin{table}[h]
\centering
\caption{Firm value and boards of directors (OLS)}
\begin{tabular}{lcccccc}
\hline
 & \multicolumn{2}{c}{(A)} & \multicolumn{2}{c}{(B)} & \multicolumn{2}{c}{(C)} \\
\hline
\textsc{c} & $-4.5485^{**}$ & $-0.6316$ & $-3.3643$ & $-4.5680^{**}$ & $-4.3972^{*}$ & $-4.2568^{*}$ \\
 & $-2.047$ & $-0.228$ & $-1.439$ & $-1.954$ & $-1.795$ & $-1.686$ \\
\textsc{boasize(log)} & $-1.4812^{***}$ & $-1.3464^{**}$ & $-1.4359^{**}$ & $-1.6386^{***}$ & $-1.4082^{**}$ & $-1.4667^{**}$ \\
\textsc{outsid} & & & $-0.7454$ & $-0.870$ & & \\
\textsc{meetyea} & & & & & $0.1134^{**}$ & $0.0609$ \\
 & & & & & $1.999$ & $1.024$ \\
\textsc{comdi} & & & & & & 0.00005 \\
 & & & & & & 0.000074* \textbf{0.00005} \textbf{0.000074*} \\
\textsc{roa} & 11.2029^{***} & 9.7635^{***} & 10.3856^{***} & 8.4346^{***} & 9.5635^{***} & 9.7054^{***} \\
\textsc{anglo} & 0.0598 & 0.5933 & 0.1176 & 0.1851 & 0.4998 & 0.4496 \\
 & 0.155 & 0.430 & $-0.285$ & 0.455 & 1.212 & 0.100 \\
\textsc{ltdta} & 0.4377 & 0.7372 & $-0.0253$ & $-1.3410$ & $-1.1114$ & $-0.3005$ \\
 & 0.331 & 1.217 & $-0.018$ & $-0.993$ & $-0.804$ & $-0.208$ \\
\textsc{sales(log)} & 0.4887^{***} & 0.3129^{***} & 0.4640^{***} & 0.5136^{***} & 0.4952^{***} & 0.4902^{***} \\
\textsc{industry ef.} & yes & yes & yes & yes & yes & yes \\
\textsc{country ef.} & yes & yes & yes & yes & yes & yes \\
\hline
\text{obs.} & 445 & 445 & 404 & 433 & 422 & 378 \\
\text{r}$^2$ & 0.1918 & 0.2218 & 0.1778 & 0.1510 & 0.1413 & 0.1892 \\
\text{adj.-r}$^2$ & 0.1616 & 0.1832 & 0.1416 & 0.1183 & 0.1070 & 0.1462 \\
\text{f-ratio} & 6.3516 & 5.742 & 4.9113 & 4.6247 & 4.117 & 4.400 \\
\hline
\end{tabular}
\end{table}

\textit{Ordinary least squares coefficients and t-statistics are shown. The dependent variable is always MB (market-to-book ratio). C is the intercept, BOASIZE is the size of the board, OUTSID the proportion of outsider directors, MEETYEA the number of meetings held every year, COMDI is the compensation of each director, LTDTA is the leverage and ROA the return on assets. SALES is informative about the size of the firm. All the estimations include industry dummy variables (see Note no. 6 for a list of the industries). Column B also incorporates country dummies.}
problem of endogeneity. This is why, in addition to the basic model, we have estimated an alternative model of simultaneous equations comprising two equations. The first equation is described above, whereas the second presents board size as a function of the proportion of outsiders (OUTSID), the size of the firm (SALES), the market-to-book ratio (MB) and the ANGLO dummy variable. In order to improve the efficiency of the estimators and to avoid any bias we used the so-called three-stage least squares (or instrumental variables) method over the whole system of equations.

When the plausibility of endogenous board size is taken into account, the choice of the variables to be used as instruments becomes a key point. We have used as instruments those predetermined variables whose exogeneity offers no doubt, along with industry dummies. In any case, the estimation is robust and the choice of the method scarcely modifies the results we achieved.

Table 4 shows the result of the estimation of the set of simultaneous equations that are very consistent with those reported in Table 3. The size of the board is again the most outstanding variable, with the results confirming the negative relationship between board size and the performance of the firm. The composition of the board, as in the basic model, has no sig-

\begin{table}[h]
\centering
\caption{Firm value and boards of directors (3SLS)}
\begin{tabular}{l*{5}{c}}
\hline
 & \textbf{(A)} & \textbf{(B)} & \textbf{(C)} & \textbf{(D)} & \textbf{(E)} \\
\hline
Dep.: MB & & & & & \\
 & \(-3.994\) & \(-4.150\) & \(-2.830\) & \(-4.365\) & \(-2.676\) \\
OUTSID & 6.3564 & 1.572 & & & \\
MEETYEA & & & -0.0648 & & -0.4303 \\
 & & & -0.281 & & -0.980 \\
COMDI & & & & 0.000040 & 0.000060 \\
ROA & 0.0870 & 0.0920 & 0.2109 & 0.2456 & 0.1342 \\
 & 1.101 & 0.751 & 0.622 & 1.342 & 0.975 \\
ANGLO & 0.1402 & 1.7540 & 0.7253 & 0.7092 & 1.0410 \\
 & 0.252 & 0.899 & 1.241 & 1.414 & 0.870 \\
LTDTA & \(-0.3014\) & 0.9353 & \(-1.8555\) & \(-1.5116\) & 1.5226 \\
 & \(-0.156\) & 0.300 & \(-1.261\) & \(-1.040\) & 0.473 \\
SALES(log) & 0.9128^{***} & 0.9237^{***} & 0.0641^{***} & 0.8337^{***} & 0.9041^{***} \\
 & 4.784 & 3.309 & 3.995 & 5.243 & 3.575 \\
Obs. & 404 & 404 & 401 & 378 & 378 \\
R\(^2\) & 0.0737 & 0.0242 & 0.0474 & 0.0612 & 0.0700 \\
Dep.:BOASIZE & & & & & \\
OUTSID & 0.1185 & 0.0790 & 0.0211 & 0.0211 & 0.0938 \\
 & 0.483 & 0.258 & 0.070 & 0.070 & 0.287 \\
SALES(log) & 0.1050^{***} & 0.075^{***} & 0.075^{***} & 0.075^{***} & 0.0693^{***} \\
ANGLO & \(-0.0099\) & 0.0390 & 0.0358 & 0.0358 & 0.0245 \\
 & \(-0.277\) & 1.125 & 1.035 & 1.035 & 0.694 \\
MB & \(-0.0771^{***}\) & \(-0.0485^{***}\) & \(-0.0501^{***}\) & \(-0.0501^{***}\) & \(-0.0400^{**}\) \\
 & \(-5.771\) & \(-2.994\) & \(-3.063\) & \(-3.063\) & \(-2.270\) \\
R\(^2\) & 0.0909 & 0.0900 & 0.0876 & 0.0704 & 0.0884 \\
Likelihood ratio test & 6.918* & 7.482* & 7.865** & 8.043** & 8.693** \\
\hline
\end{tabular}
\end{table}

p-values: \(^{***}\)<1%; \(^{*}\)<5%; \(<\)<10%.

Three-stage least squares coefficients and t-statistics are shown. The dependent variable is MB in the first regression and board size in the second. BOASIZE is the size of the board, OUTSID the proportion of outsider directors, MEETYEA the number of meetings held every year, COMDI is the compensation of each director, LTDTA is the leverage and ROA the return on assets. SALES is informative about the size of the firm. Industry dummies, firm size, debt-to-asset ratio and ANGLO are used as instruments.
significant impact and even diminishes the model-adjusted significance. Analogously, the frequency of meetings and the compensation of the directors do not show any significant role. Another relevant feature of the analysis is the effect of firm size. Our results point strongly to the positive influence of firm size on value and performance. Table 4 emphasises that firm size is not only relevant for firm value, but also for the number of directors on the board. This result is consistent with the findings of previous authors (Yermack, 1996; Fernández et al., 1997; Eisenberg et al., 1998; Huther, 1998), where a positive firm size coefficient is achieved when included as a control variable.

In spite of the advantages of the simultaneous equation model, we should also mention two shortcomings. First, firm performance (ROA) has no noticeable impact on firm performance. Table 4 emphasises that firm size is not only relevant for firm value, but also for the number of directors on the board. This result is consistent with the findings of previous authors (Yermack, 1996; Fernández et al., 1997; Eisenberg et al., 1998; Huther, 1998), where a positive firm size coefficient is achieved when included as a control variable.

In order to test the relationship is conditioned by the governance setting, some interacted variables were added to the set of explanatory variables (columns A, B, C and D in Table 5). Although the interactions of the kind of governance setting with board size (INTBOASIZE), with board composition (INTOUTSID) and with firm size (INTSALES), and the interaction of firm size with board size (DUMBOASIZE) are not significant, these results are informative about the fact that there are no differential effects among countries and that an international approach may be suitable. Furthermore, we have run independent estimations for each country, and the results (which are not reported) remained broadly unchanged.

In order to test the sensibility of our results to the dependent variable, we have introduced two changes. Firstly, we have substituted MB for ROA, an accounting-based measure of performance. Market-based measures such as MB or q have been sometimes criticised since they can be affected by market “moods”, suffer from anticipation problems or deal with other issues such as market power in addition to firm performance. The accounting-based measures of performance are not affected either by the anticipation problem (therefore, our accounting measures of performance for 1996 will reflect only the performance for 1996) or by market “moods”, though they present other drawbacks. This is why we have run new regressions with ROA and checked the sensitivity of the results in Table 5, column F. The most outstanding results are the lack of a significant relationship between the size of the board and ROA, and the positive correlation between ROA and ANGLO, the variable through which we introduce the corporate system. The first result is inconsistent with the previous ones since a negative relationship between q and the size of the board can be found. Consequently, and consistent with previous literature, the lower market value of oversized boards of directors is corroborated.

The results are insensitive to the positive influence of firm size on value and performance. Table 4 emphasises that firm size is not only relevant for firm value, but also for the number of directors on the board. This result is consistent with the findings of previous authors (Yermack, 1996; Fernández et al., 1997; Eisenberg et al., 1998; Huther, 1998), where a positive firm size coefficient is achieved when included as a control variable.

In order to test the sensibility of our results to the dependent variable, we have introduced two changes. Firstly, we have substituted MB for ROA, an accounting-based measure of performance. Market-based measures such as MB or q have been sometimes criticised since they can be affected by market “moods”, suffer from anticipation problems or deal with other issues such as market power in addition to firm performance. The accounting-based measures of performance are not affected either by the anticipation problem (therefore, our accounting measures of performance for 1996 will reflect only the performance for 1996) or by market “moods”, though they present other drawbacks. This is why we have run new regressions with ROA and checked the sensitivity of the results in Table 5, column F. The most outstanding results are the lack of a significant relationship between the size of the board and ROA, and the positive correlation between ROA and ANGLO, the variable through which we introduce the corporate system. The first result is inconsistent with the previous ones since a negative relationship between q and the size of the board can be found. Consequently, and consistent with previous literature, the lower market value of oversized boards of directors is corroborated.

Secondly, we have substituted MB for ROA, an accounting-based measure of performance. Market-based measures such as MB or q have been sometimes criticised since they can be affected by market “moods”, suffer from anticipation problems or deal with other issues such as market power in addition to firm performance. The accounting-based measures of performance are not affected either by the anticipation problem (therefore, our accounting measures of performance for 1996 will reflect only the performance for 1996) or by market “moods”, though they present other drawbacks. This is why we have run new regressions with ROA and checked the sensitivity of the results in Table 5, column F. The most outstanding results are the lack of a significant relationship between the size of the board and ROA, and the positive correlation between ROA and ANGLO, the variable through which we introduce the corporate system. The first result is inconsistent with the previous ones since a negative relationship between q and the size of the board can be found. Consequently, and consistent with previous literature, the lower market value of oversized boards of directors is corroborated.

Nevertheless, the lack of significant correlation between the board of directors and ROA leads to ask if the board of directors has been optimally ex-ante chosen, so that no relationship should be found. This means having achieved an equilibrium situation that does not match with the underlying rationale in the paper based on market value measurements and econometric techniques. Anyway, this new approach is useful for directions of new research.

A number of additional sensitivity analyses were run too. Board size, company size and firm value can be correlated in complicated ways, so we checked the robustness of our analysis to different definitions of firm size. For instance, we tried using different measures of firm size: total asset value and equity market value. The results are insensitive to
We also tested an alternative simultaneous equations system in which the composition of the board is made to depend on the firm efficiency as seen in Weisbach (1988), Yermack (1996), Rosenstein and Wyatt (1997) and Hermalin and Weisbach (1998). Thirdly, we checked a possible differentiated impact of the size of the board conditional on the size of the firm. We also ran analogous estimations by using another econometric procedure (maximum likelihood estimation). Finally, we were also concerned with the possibility of a bias in our sample due to an overweight of US, North American or Anglo-Saxon companies. The results of these analyses have not been reported for the sake of brevity, but they are available from the authors on request. In any case, these results ultimately prove the nega-

### Table 5: Firm value and boards of directors (OLS). Sensitivity analysis

<table>
<thead>
<tr>
<th></th>
<th>(A)</th>
<th>(B)</th>
<th>(C)</th>
<th>(D)</th>
<th>(E)</th>
<th>(F)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dep.: MB</td>
<td>Dep.: MB</td>
<td>Dep.: MB</td>
<td>Dep.: MB</td>
<td>Dep.: Q</td>
<td>Dep.: ROA</td>
</tr>
<tr>
<td>Intercept</td>
<td>–9.0928***</td>
<td>–4.1125</td>
<td>–2.1320</td>
<td>–3.0707</td>
<td>2.9866**</td>
<td>0.0261</td>
</tr>
<tr>
<td>BOASIZE(log)</td>
<td>–1.5118**</td>
<td>–1.4778**</td>
<td>–1.4365**</td>
<td>–1.4006**</td>
<td>–1.2401***</td>
<td>0.0110</td>
</tr>
<tr>
<td>OUTFSD</td>
<td>–0.6885</td>
<td>–0.8387</td>
<td>–0.9110</td>
<td>–2.3613*</td>
<td>–1.4010</td>
<td>–0.0173</td>
</tr>
<tr>
<td>MEETYEA</td>
<td>0.0794</td>
<td>0.0586</td>
<td>0.0502</td>
<td>0.0597</td>
<td>0.0331</td>
<td>0.0082</td>
</tr>
<tr>
<td>COMDI</td>
<td>1.331</td>
<td>0.985</td>
<td>0.833</td>
<td>1.003</td>
<td>0.860</td>
<td>0.932</td>
</tr>
<tr>
<td>ANGLO</td>
<td>–0.2928</td>
<td>–0.4118</td>
<td>–0.4179</td>
<td>–1.479</td>
<td>5.242</td>
<td></td>
</tr>
<tr>
<td>LTDATA</td>
<td>0.1205</td>
<td>–0.4024</td>
<td>–0.3839</td>
<td>–0.5324</td>
<td>–0.0747***</td>
<td>1.592</td>
</tr>
<tr>
<td>SALES(log)</td>
<td>0.6853***</td>
<td>0.4834***</td>
<td>0.3940***</td>
<td>0.4802***</td>
<td>0.1420***</td>
<td>0.016–3</td>
</tr>
<tr>
<td>DLTNBOASIZE</td>
<td>4.808</td>
<td>4.205</td>
<td>2.776</td>
<td>4.167</td>
<td>2.021</td>
<td>–0.094</td>
</tr>
<tr>
<td>INTBOASIZE</td>
<td>0.4634</td>
<td>2.301</td>
<td>0.0495</td>
<td>0.274</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTOUTSID</td>
<td>0.2761</td>
<td>1.1616</td>
<td>2.8826</td>
<td>1.584</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTSALES</td>
<td>378</td>
<td>378</td>
<td>378</td>
<td>378</td>
<td>378</td>
<td>371</td>
</tr>
<tr>
<td>Obs.</td>
<td>378</td>
<td>378</td>
<td>378</td>
<td>378</td>
<td>387</td>
<td>371</td>
</tr>
<tr>
<td>R²</td>
<td>0.2011</td>
<td>0.1894</td>
<td>0.1923</td>
<td>0.1949</td>
<td>0.1040</td>
<td>0.2659</td>
</tr>
<tr>
<td>Adj.-R²</td>
<td>0.1563</td>
<td>0.1464</td>
<td>0.1470</td>
<td>0.1498</td>
<td>0.0870</td>
<td>0.2283</td>
</tr>
<tr>
<td>F-Ratio</td>
<td>4.494***</td>
<td>4.403***</td>
<td>4.251***</td>
<td>4.322***</td>
<td>6.280***</td>
<td>7.084***</td>
</tr>
</tbody>
</table>

p-values: *** < 1%; ** < 5%; * < 10%.

Ordinary least squares coefficients and t-statistics are shown. The dependent variable is MB (market-to-book ratio) in the first four columns, Q in the fifth column and ROA in the sixth column. C is the intercept, BOASIZE is the size of the board, OUTFSD the proportion of outsider directors, MEETYEA the number of meetings held every year, COMDI is the compensation of each director, LTDATA is the leverage and ROA the return on assets. SALES is informative about the size of the firm. INTBOASIZE, INTOUTSID and INTSALES are interacted variables to test if the effect of board size, board composition or firm size is conditioned by the governance setting. All the estimations include industry dummy variables (see note 5 for a list of the industries).

alternative definitions and the firm size variable is always highly significant.

We also tested an alternative simultaneous equations system in which the composition of the board is made to depend on the firm efficiency as seen in Weisbach (1988), Yermack (1996), Rosenstein and Wyatt (1997) and Hermalin and Weisbach (1998). Thirdly, we checked a possible differentiated impact of the size of the board conditional on the size of the firm. We also ran analogous estimations by using another econometric procedure (maximum likelihood estimation). Finally, we were also concerned with the possibility of a bias in our sample due to an overweight of US, North American or Anglo-Saxon companies. The results of these analyses have not been reported for the sake of brevity, but they are available from the authors on request. In any case, these results ultimately prove the nega-
tive influence of the size of the board on firm efficiency. The underlying rationality can be found in poorer communication and coordination inside the board. At the same time there is a lack of conclusive evidence regarding the effect of some of the other features of the board such as composition or incentive scheme.

Conclusions

The recent debate on the efficiency of corporate governance mechanisms has focused on the activity and functioning of the board of directors. The literature suggests that board effectiveness relies on three main issues: board size, composition and internal structure. The results of previous research (primarily using US samples) stress the negative effect of board size on firm value, the uncertain role of board independence and, to some extent, an endogenous relationship between board size, composition and firm performance.

Our work analyses the effect of board size, composition and functioning on firm value in an international setting. We used a sample of 450 non-financial companies from ten Western European and North American countries: Belgium, Canada, France, Germany, Holland, Italy, Spain, Switzerland, the UK and the USA. The availability of data for a number of countries allowed us to broaden our analysis to a wider basis than the Anglo-Saxon area to which most of the previous research is limited. We also considered it appropriate to test the pertinence of the universal claim for a better performance of the internal mechanisms of corporate governance irrespective of country membership, and to understand to what extent the (in)efficiency of the board of directors can be generalised in a framework where national differences are prominent. In addition, our paper contributes to the existing literature by explicitly taking into account the board size endogeneity through the combination of unequational analysis with simultaneous equations analysis.

Our main empirical result is the negative impact of board size on firm value. This effect persists after controlling for alternative definitions of firm size, board composition and internal functioning, country effect, industry effect and measurements of performance (except ROA). The disadvantages of worse coordination, flexibility and communication inside large boards seem to be more important than the benefits of better manager control by the board of directors. At the same time, the convex relation implied by the log form of the board size variable suggests that costs of larger boards accumulate at a decreasing rate as board size grows, with the small- and medium-sized boards being the most affected. In an international framework, this result agrees with that of Yermack (1996), whose pioneering work has been confirmed by more recent papers (Fernández et al., 1997; Huther, 1997; Eisenberg et al., 1998).

The relationship between board size and firm value is also affected by firm size, as the simultaneous equations system reveals. Firm size not only influences firm value, but also relates positively to the number of directors on the board. This relationship holds in all estimations, is insensitive to the set of explanatory variables and sheds light on the plausibility of endogeneity.

We do not find any robust relationship between the percentage of outside directors (a proxy for board independence) and firm value. This result runs parallel to the lack of conclusive evidence about the effect of the composition of the board in previous studies. Indeed, many papers support a balanced board composition, matching insider expertise and specific information with outsider independence. We find no evidence regarding the expected positive effect of some features of directors’ behaviour (number of meetings per year) linked to directors’ incentives to protect shareholder interests.

Interestingly, the results hold even after including the institutional differences among countries. We infer that companies with oversized boards of directors have poorer performance both in countries where internal mechanisms of governance dominate and in countries where external mechanisms are predominant. The underlying intuition is the need to improve the boards of directors so that boards perform their duties even though some other governance mechanisms (such as ownership concentration, the market for corporate control, the alignment of interests, banking control, etc.) could also be available. We should not forget that in accordance with most of the previous literature, our paper implies out-of-the-equilibrium evidence as long as it identifies some empirical relationship between the characteristics of the board of directors and firm performance. To some extent, this is due to the scarce research about the endogeneity of governance mechanisms in order to find optimal governance structures, although some recent papers do look at this question (Warther, 1998; Himmelberg et al., 2002; Hermelin and Weisbach, 2003).

To conclude, some ideas about future research are pertinent. The negative effect of board size on firm value suggests some additional reflection about the way decisions are
being made inside the board (majority vs minority rights, power distribution among the directorship, etc.). According to the above mentioned problem of endogeneity, this deserves further research. But perhaps two of the most outstanding future research directions are as follows: first, since our sample contains only cross-sectional observations for the year 1996, an obvious extension would to incorporate data for subsequent years. This would allow the testing of dynamic responses to board characteristics or board reactions to past events. It would also provide a more suitable choice of lagged instrumental variables. Second, extended analysis of the influence of the committee structure seems warranted. It would be interesting to determine the impact of committees on firm efficiency, and the role both outsiders and insiders play in the committee structure. This agenda could benefit from an approach taking into account the endogeneous relationships among the variables.

Acknowledgements

The authors are grateful to Spencer Stuart for providing the comments and suggestions from two anonymous referees, S. Cleary, R. Crespi, A. I. Fernández, P. Fuertes, S. Gómez, C. Mayer, N. Rangan, D. Yermack and the seminar participants in Madrid (XV Jornadas de Economía Industrial), Segovia (III Workshop in Finance), Burgos (X Congreso de ACEDE), Lisbon (European Association of University Teachers of Banking and Finance Annual Conference), Sydney (XII Australasian Banking and Finance Conference) and Myrtle Beach (Eastern Finance Association Conference). All the remaining errors are our responsibility alone. This research has received financial support from the Spanish Dirección General de Enseñanza Superior e Investigación Científica (proyecto PB97-0594).

Notes

1. In fact, board behaviour codes have been written by country councils (Cadbury, Vienot, Peters, etc.) and international organisations such as the OECD or Basel Agreement have also published their recommendations.

2. Of course, this is not the only possible classification. In addition to these two groups, some authors also consider grey or affiliated directors (non-employee directors with personal or business relationships with the company) and blockholder directors (those with a peculiar status because of their ownership proportion).

3. For instance, most Canadian and US companies remunerate their directors depending on firm value, in addition to attendance fees, as a way of aligning directors’ interests with those of shareholders. In the other countries, performance-contingent remuneration is unusual and has been constrained (Cadbury report in UK, although it was later modified by the Hampel Committee) or even banned (France). There are still some countries such as Germany where directors are paid depending on the dividend the company pays. Unfortunately, our database does not provide us with this kind of information, so we have been forced to constrain our analysis to money-based payments. We are grateful to an anonymous referee for this comment.

4. This dummy variable definition may seem ad hoc, however alternative formulations (including the use of two dummies or the division of the sample into just two groups) gave similar but not so prominent results.

5. In addition, data regarding the number of committees each board includes was only available for four countries (France, the Netherlands, Spain and the UK). Since the available information significantly reduces the number of observations, we omitted this feature.

6. All the firms were classified into 15 industries, on which the definition of the dummy variables was based: Automobile, Building, Services, Communications, Chemical, Electrical, Energy, Food, Metal, Pharmacy, Steel & Mining, Trade & Retailing, Transportation, Pulp & Paper and Water.

7. Data on board committee structure would complete the previous estimations. We have taken into account, on the one hand, the mere existence of committees and, on the other hand, the type of committees (nominations, auditing, etc.) and their composition (in terms of insiders and outsiders). In all cases committee variables were insignificant, whereas the remaining variables displayed the expected signs and significance. Nonetheless, the lack of data about committees reduces the reliance of these estimations, and therefore we do not report them.

8. Share market value poses a methodological problem since it is also the numerator of the dependent variable. Despite this fact, we decided to run the estimations in order to underline their consistency with previous estimations.

References


Baysinger, R. D. and Butler, H. N. (1985) Corporate Governance and the Board of Directors: Performance Effects of Changes in Board Composition,
210

CORPORATE GOVERNANCE

Baysinger, R. D. and Hoskisson, R. E. (1990) The
Jensen, M. C. (1993) The Modern Industrial Revo-
Hermalin, B. E. and Weisbach, M. S. (1998) Endog-
Klein, A. (1998) Firm Performance and Board Com-
John, K. and Senbet, L. W. (1998) Corporate Gover-
Huther, J. (1997) An Empirical Test of the Effect of
Himmelberg, C. P ., Hubbard, R. G. and Love, I.
Hermalin, B. E. and Weisbach, M. S. (1991) The
Baysinger, R. D. and Hoskisson, R. E. (1990) The
John, K. and Senbet, L. W. (1998) Corporate Gover-
Jensen, M. C. (1993) The Modern Industrial Revo-
Rosenstein, S. and Wyatt, J. G. (1990) Outside Direc-
Rosenstein, S. and Wyatt, J. G. (1990) Outside Direc-
Weir, C., Laing, D. and McKnight, P. J. (2002) Intern-
Weisbach, M. S. (1988) Outside Directors and CEO
Weisbach, M. S. (1988) Outside Directors and CEO
Vafeas, N. (1999) Board Meeting Frequency and
Rosenstein, S. and Wyatt, J. G. (1990) Inside Direc-
Vafeas, N. (1999) Board Meeting Frequency and
Rosenstein, S. and Wyatt, J. G. (1990) Inside Direc-
Weir, C., Laing, D. and McKnight, P. J. (2002) Intern-
Hermalin, B. E. and Weisbach, M. S. (1991) The
governance and capital investment in OECD
countries: Some stylized facts” (with Prof.
López-Iturriaga). His research interests range
between corporate governance, corporate
governance and real options.

Pablo de Andrés Alonso (PhD in Business
Administration, 1995) is Associate Professor of
Finance at the University of Valladolid (Spain).
He was awarded the European Investment Bank Prize for young researchers (1997) for
his work “Financial system models, corporate
governance and capital investment in OECD
countries: Some stylized facts” (with Prof.
López-Iturriaga). His research interests range
between corporate governance, corporate
governance and real options.

Valentin Azofra-Palenzuela is Full Professor of
Finance at the University of Valladolid (Spain).
He has a number of papers in presti-
gigious Spanish and international Journals.
At present he is Head of the Department of
Finance and Accounting at the University of
Valladolid. He specialises in corporate gov-
rance, corporate finance, real options, earn-
ings management and financial systems.

Félix J. López-Iturriaga graduated in Business
Administration at the University of Valladolid
(Spain) and received his PhD at the same uni-
versity. He has been visiting scholar at Boston
College and John Hopkins University (Balti-
more). He has taught at the University of Exeter, the Innsbruck Universität (Austria) and
the Université de Mons (Belgium). At present he is an Associate Professor of Financial Econo-
emics at the University of Valladolid. His main research topics are related to economics of
information, business investment, corporate
finance and corporate governance.