



BOARD COMPOSITION, SHARE OWNERSHIP, AND 'UNDERPRICING' OF U.K. IPO FIRMS

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Using a sample of 251 IPOs in the United Kingdom, this paper examines interlinks between executive and nonexecutive characteristics, share ownership, and short-term performance measured in terms of share offer 'underpricing.' It argues that executives' power and previous experience directly affect ex ante choice of nonexecutive directors and their ownership interests in the firm. These endogenously developed governance factors may be used by IPO teams strategically to reduce the extent of underpricing. However, there is a selective response of investors to different board characteristics and share ownership structure. Copyright © 2002 John Wiley & Sons, Ltd.

INTRODUCTION

Despite the growing awareness of the importance of initial public offerings (IPOs) among both academics and the investor community, the process by which a privately held firm transforms itself into a publicly traded company is still not well understood. While numerous studies have investigated the determinants of the going public decision (e.g., Booth and Smith, 1986; Jain and Kini, 1999; Ritter, 1987) and postissue performance (e.g., Beatty and Ritter, 1986; Brav, Geczy, and Gompers, 2000; Espenlaub and Tonks, 1998; Michaely and Shaw, 1994), there is relatively little research on the related but equally important issue of what factors influence the corporate governance mechanism of a firm at IPO stage, and how the specific characteristics of this mechanism such as board composition and ownership interests may affect the IPO's performance.

Key words: board; ownership; IPO; underpricing

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Organizational theorists have increasingly drawn on agency theory (e.g., Beatty and Zajac, 1994; Brennan and Franks, 1997; Mikkelson, Partch, and Shah, 1997) and upper echelon research (e.g., Certo *et al.*, 2001; Hambrick and Mason, 1984; Higgins and Gulati, 1999) to generate a body of conceptual and empirical research that is focused on corporate governance problems of IPOs. A major underlying assumption of this research is that of an information asymmetry between the IPO's team, underwriters, and external investors that may create agency costs and lead to 'underpricing' when the initial offer price is less than the first-day closing price of the IPO's shares (see Certo *et al.*, 2001; and Michaely and Shaw, 1994). Underpricing presents a direct wealth transfer from the founders and initial shareholders to new investors, but its extent can be reduced by a number of governance-related 'signals' that may potentially enhance firm value, such as retained share ownership by IPO insiders (McBain and Krause, 1989; Mikkelson *et al.*, 1997), and board structure and characteristics (Certo *et al.*, 2001; Higgins and Gulati, 1999). That research, however, considered governance factors to be exogenous firm characteristics, whereas in the context

of initial public offerings it would be natural to suggest that the governance system may be an outcome of the IPO's strategic decisions (Beatty and Zajac, 1994). More recent studies (e.g., Arthur, 2001; Mak and Li, 2001) suggest that board characteristics and ownership structure are endogenous factors that may be driven by organizational outcomes. As Hermalin and Weisbach (1998: 96) point out, 'the previous literature is focused on what boards do, without asking how they get to be the way they are ... To understand corporate governance, the question of directors choice and director function must be answered simultaneously.'

This paper extends previous work in several ways. First, we provide a contribution to upper echelon research by considering how executives' characteristics may influence board selection strategy and share ownership. Second, we further extend governance research by moving away from mature and well-established organizations, and suggest that IPOs provide a unique context to study interrelationships between governance and performance. Specifically, we argue that *ex ante* board selection and financial interests may play a strategic role by affecting the extent of underpricing. Finally, we provide empirical support for our conceptual framework using a sample of 251 IPOs in the United Kingdom during the period of 1999–2000.

THEORETICAL BACKGROUND AND HYPOTHESES

IPO firms are organizations that offer their stock to the public market for the first time, when they are moving from private to public ownership. This move requires a substantial effort, particularly on the part of a company's top management team, to prepare the IPO firm for the scrutiny of the regulator and investment community. One important aspect of these activities is to establish a corporate governance system. In addition, when it comes to approaching investment banks and considering flotation, the directors may find that the composition and competence of the board is crucial for a successful flotation (Certo *et al.*, 2001; Higgins and Gulati, 1999; Useem, 1993). Therefore, we suggest that there may be a complex and dynamic interrelationship between executive characteristics, board member selection, and IPO performance.

More specifically, we argue that board composition and financial interests are not exogenous factors. Rather, they are linked to top executives' characteristics such as power and experience. In the process of an IPO, the firm is subjected to a set of agency relationships which are related to information asymmetry concerning the 'true' value of the firm. These agency relationships create costs that manifest themselves in terms of underpricing, and we suggest that board diversity and nonexecutive directors' ownership interests can help the IPO's team reduce agency costs. These arguments are consistent with the assumption that corporate governance factors may be used strategically to affect the short-term performance of the IPO.

Executive experience, power, and board selection

Both agency and upper echelon research indicate that the ability of executives to formulate and implement strategic initiatives which capitalize on environmental opportunities is vital to organizational success (Geletkanycz and Hambrick, 1997; Hambrick and Mason, 1984; Shivdasani, 1993; Tosi, Katz, and Gomez-Mejia, 1997). Particular importance is attributed to executives' experience and external ties, i.e., the past and present outside directorships of executives. Outside directorships may provide information, resources, and important social interactions that help develop and implement successful strategies. Executives' boundary spanning activities and their associated interactions with external entities may also encourage assistance from social and political elites, and may provide a young firm with legitimacy from identification with organizations and social circles that already have legitimacy (D'Aveni and Kesner, 1993; Higgins and Gulati, 1999).

However, upper echelon research focuses almost exclusively on executive directors' external linkages, whereas broader corporate governance factors may also be a source of competitive advantage (Barney, 2001). In both agency and strategic management research there is growing recognition that, in addition to control functions, the board may also play service/resource and strategic roles in the decision-making process (Pearce and Zahra, 1991; Zahra and Pearce, 1989). For example, outside nonexecutive directors serving on the focal firm's board, or 'received interlocks,' may be an important channel for the interfir-

exchange of strategic information and resources (Geletkanycz and Hambrick, 1997; Kesner, 1987; Pfeffer, 1972; Provan, 1980). Strategy research particularly emphasizes the importance of the board's service and strategic roles when the firm faces a highly uncertain environment (Chaganti, Mahajan, and Sharma, 1985; Daily and Dalton, 1994). The effectiveness of the resource and strategy functions of a board is associated with board diversity measured in terms of such factors as board leadership structure, the number of outside directors, and the number of outside directorships ('interlocks') each individual board member holds in other organizations (Dalton *et al.*, 1999; Pfeffer, 1972; Zahra and Pearce, 1989). Therefore, the IPO firm may strategically select nonexecutive directors to ensure that board diversity would compensate for a relative lack of its executives' experience and contacts (Shivdasani and Yermack, 1999; Wagner, Stimpert, and Fubara, 1998; Westphal, 1998). In particular, companies with greater growth opportunities are expected to gain most by having their nonexecutive directors serve on the boards of other companies (Beatty and Zajac, 1994). Higgins and Gulati (1999) in their study of U.S. biotechnology firms show that an IPO's board diversity is positively associated with the firm's ability to partner with a prestigious underwriter. Building on this research, we suggest:

Hypothesis 1: The IPO firm's board diversity is negatively associated with executives' experience.

When an organization encounters uncertain environmental conditions or is in its growth phase, the board of directors may provide a particularly important strategic contribution by direct and regular involvement in formulating the firm's mission and developing its strategy (Goodstein and Boeker, 1991; Zahra and Pearce, 1989). The board may shift emphasis from financial control and evaluation of managerial decisions to strategic control more focused on longer-term organizational outcomes (Baysinger and Hoskisson, 1990). A number of empirical studies on strategic restructuring (e.g., Hill and Snell, 1988; Hitt *et al.*, 1996; Hoskisson, Johnson, and Moesel, 1994) relate the choice of control to the composition of a company's board. However, some research links nonexecutive directors' involvement in strategy development and implementation with their

personal financial risk approximated by ownership interests in the firm (Kesner, 1987; Oswald and Jahera, 1991; Shivdasani and Yermack, 1999). Hambrick and Jackson (2000) indicate that nonexecutive share ownership not only creates a financial incentive for nonexecutives but also increases their identification with the company, making them more vigilant in their oversight and more generous in their time and attention. Therefore, it is possible to suggest that when the IPO's executive directors lack experience and external contacts, they would not only try to create more diverse boards, but also motivate nonexecutive directors through ownership in the firm (Beatty and Zajac, 1994). Hence:

Hypothesis 2: In the IPO firm, share ownership of nonexecutive directors is negatively associated with executives' experience.

A number of authors have suggested that the relationship between executive experience and board characteristics is moderated by the extent of executives' entrenchment, which, in turn, is directly related to the executives' power and prestige within the organization (D'Aveni and Kesner, 1993; Shivdasani and Yermack, 1999; Westphal, 1998). For example, Hermalin and Weisbach (1998) suggest a formal bargaining model that assumes that the board and CEO negotiate over the appointment and identity of new directors, and these negotiations determine board independence. Zajac and Westphal (1996) develop and test the theory of directorial appointments whereby powerful actors in the CEO–board relationship affect the diffusion of board independence thorough the selection process. As follows from this research, board diversity and the financial interests of nonexecutive directors may be directly affected by executive entrenchment. Both the agency perspective and strategic restructuring research suggest that executive entrenchment is associated with executive share ownership (Bethel and Liebeskind, 1993; Gibbs, 1993; Shivdasani, 1993; Shleifer and Vishny, 1997), although Morck, Shleifer, and Vishny (1988) indicate that this relationship is nonlinear. A number of recent empirical studies outside the United States provide evidence that executive share ownership is negatively associated with the level of independence of the board and the extent of board monitoring in Australia (Arthur, 2001) and Singapore (Mak and Li, 2001).

Extending this research, we argue that entrenched executives in the IPO firm may resist the creation of diverse boards, and providing nonexecutive directors with financial incentives to participate in the process of monitoring and control. Therefore, we suggest:

Hypothesis 3a: In the IPO firm, board diversity is negatively associated with share ownership of executive directors.

Hypothesis 3b: In the IPO firm, share ownership of nonexecutive directors is negatively associated with share ownership of executive directors.

Board characteristics and the IPO's performance

In the process of the IPO, the firm is engaged in a set of formal and informal relationships with the regulator, the share issue advisors and underwriters, and the broader investment community (see Brennan and Franks, 1997, for a detailed discussion of the IPO process in the U.K.). Therefore, the price at which the stock is marketed is the result of negotiations between the underwriter and the firm, as well as the general demand for the firm's stock (McBain and Krause, 1989). As acknowledged in previous research, underpricing in IPOs, i.e., the difference between a stock's offering price and the closing price on the first day the stock is offered for trading, is the norm and represents a direct transfer of wealth from the original owners to outside investors (e.g., Beatty and Ritter, 1986; Brav *et al.*, 2000; Ritter, 1987).

Most research on IPO underpricing revolves around problems of information asymmetries and adverse selection in the relationships between the IPO firm, the investment bankers who manage the issue, and outside investors (see, for example, Certo *et al.*, 2001; Espenlaub and Tonks, 1998; for an extensive literature review). For example, Rock (1986) suggests a theoretical model for the IPO market with 'informed' and 'uninformed' outside investors, the latter lacking knowledge about the firm's 'true' value. This information asymmetry causes a 'winner's curse' problem, where uninformed investors end up primarily with the less successful IPOs. Keeping them in the market requires an additional premium in terms of IPO underpricing. Similarly, signaling research suggests that initial owners underprice at the time

of the IPO to signal their favorable private information about firm value to uninformed investors. The greater is *ex ante* uncertainty about firm value, the greater is (expected) underpricing (Beatty and Ritter, 1986). The IPO firm may reduce underpricing by selecting an experienced and 'prestigious' underwriter, whose reputation would certify a high firm value to uninformed investors. However, having an intermediary in the IPO process creates its own set of agency problems associated with the multiple roles of investment banks as advisors to IPOs, providers of analytical information to their clients, and underwriters (see Beatty and Ritter, 1986; Booth and Smith, 1986; Carter and Manaster, 1990; for an extensive discussion of this issue).

To reduce these agency costs, IPO firms may seek mechanisms in order to communicate their (expected) value to underwriters and potential investors using signals that are difficult (costly) to imitate for lower quality firms (see Michaely and Shaw, 1994). These idiosyncratic signals may be associated with corporate governance characteristics of IPO firms. In particular, retained share ownership by IPO executives is widely acknowledged as a potent sign of the high quality of the firm (Certo *et al.*, 2001; McBain and Krause, 1989). According to signaling research, the managers of high-quality firms will try to retain shares since, when the private information is fully incorporated in the aftermarket share price, they can recoup their loss of wealth associated with underpricing at a later date. By retaining shares, the executive owners communicate private favorable information to investors, and, therefore, may allow less underpricing (Espenlaub and Tonks, 1998). Building on the theoretical framework suggested by Jensen and Meckling (1976), agency theorists indicate that the interests of executives and outside shareholders become less closely aligned as executives' stakes decrease, and this may be associated with inferior performance (Beatty and Zajac, 1994; Mikkelsen *et al.*, 1997). Again, by retaining equity, executive directors send positive signals to outside investors. Finally, Brennan and Franks (1997) examine how the separation of ownership and control evolves as a result of an IPO and suggest an entrenchment theory of underpricing. Their research shows that underpricing is used by incumbents to ensure oversubscription and rationing in the share allocation so as to allow managers to discriminate between outside investors and reduce

the probability of creating outside block holdings. Hence,

Hypothesis 4: Share ownership of the IPO's executive directors is negatively associated with underpricing.

More recent research suggests that, apart from executive directors' share ownership and personal characteristics, an additional factor in investors' evaluation of firm quality may be the experience and connections of nonexecutive directors (Certo *et al.*, 2001). In other words, board characteristics may play a strategic role in enabling firm owners to obtain a higher value when negotiating the offer price. For example, Higgins and Gulati (1999) suggest that the greater the collective number of outside links associated with the members of the board, the stronger the signal of the young firm's quality and the greater the likelihood that the firm will attract a prestigious investment bank. From the resource-based view, extraorganizational links of nonexecutive directors may provide the firm with additional bargaining power in its relationship with the underwriter and investors (Pfeffer, 1972; Provan, 1980). In addition, agency research suggests that good managers are sought after as nonexecutive directors because they are perceived to be better monitors of managerial discretion (Fama and Jensen, 1983; Shivdasani, 1993; Shleifer and Vishny, 1997). Again, through the presence of experienced nonexecutive directors on the board, the firm may signal to outside investors that it has an efficient corporate governance system in place and therefore will further differentiate itself from other IPOs. Hence,

Hypothesis 5: The IPO's board diversity is negatively associated with underpricing.

Finally, providing nonexecutive directors with an ownership stake in the firm may be a clear signal to outside investors that the young firm not only complies with the principles of 'good corporate governance,' but also creates the incentives for nonexecutive directors to take an active role in the decision-making process. In addition, nonexecutive directors' equity may be associated with superior private information about the (expected) value of the firm, reducing, therefore, the need for underpricing as a signal of high firm quality.

Hence, we extend previous research by proposing the following hypothesis:

Hypothesis 6: Share ownership of the IPO's nonexecutive directors is negatively associated with underpricing.

METHODS

The data

To verify these theoretical propositions, the authors collected data on all IPOs that have been floated on the London Stock Exchange (LSE) and the Alternative Investment Market (AIM) from 1 December 1999 to 31 December 2000. Our primary list of IPOs was obtained from the LSE New Issues files. Further information was provided by AIM Market Statistics publications and the *Financial Times* New Issues columns. From the original sample of 360 companies we excluded readmissions and transfers from the main market to AIM. We also excluded demergers, reorganizations, and flotations of unit and investment trusts. Our main variables of interest were obtained from information provided in the IPO listing prospectuses, which contain detailed information on the career histories and pre- and post-IPO ownership of managing officers and other board members. The IPO prospectuses were obtained from the 'Global Access' database, which provides comprehensive coverage of companies' files for publicly quoted firms in the United Kingdom. The missing listing prospectuses were collected directly from the firms and/or their advisors by sending written requests. The final sample included 251 IPOs. Share prices were obtained from the LSE Share Monitoring Service and Datastream.

Measures

Board diversity is a focal point of our analysis. However, measuring board diversity has been subject to considerable debate (see, for example, Dalton *et al.*, 1999; Daily and Dalton, 1994; Daily *et al.*, 1999). The governance literature relies on such indicators as the proportion of nonexecutive directors and board leadership structure (e.g., Chaganti *et al.*, 1985; Shivdasani, 1993; Shleifer and Vishny, 1997; Tosi *et al.*, 1997; Wagner *et al.*, 1998; Useem, 1993). In addition, the strategy

and upper echelon literatures suggest that various operationalizations of board diversity should also be taken into account when researching board effects on organizational outcomes (Baysinger and Hoskisson, 1990; Ford, 1985; Geletkanycz and Hambrick, 1997; Goodstein and Boeker, 1991; Higgins and Gulati, 1999). The measurement of board diversity may include, in addition to membership of webs of board directorships, elements of director prestige such as membership of political elites (e.g., former and present Members of Parliament and/or government), and present or former partnerships in an accounting, law, or management consultancy firm (D'Aveni, 1990; D'Aveni and Kesner, 1993).

In our research, we attempted to accommodate these various perspectives by constructing five different variables to represent board diversity. The first variable, SUMDIR, is the simplest measurement of board diversity in terms of the sum of directorships in financial institutions and industrial companies held by nonexecutive directors. Next, from the listing prospectuses, we identified the number of partnerships nonexecutives have in professional firms, as well as high-level positions in 'stakeholder' organizations, such as political elites, government, and business support organizations (i.e., the Institute of Directors, professional associations, etc.). The board diversity variable NEO represents an 'intensity' of outside links of nonexecutive directors measured by the total number of nonexecutives' directorships in financial institutions and industrial companies, and partnerships/memberships in professions, firms, and 'stakeholder' organizations divided by the total number of nonexecutives. In addition to the operationalizations of board diversity that were widely used in previous research, we also constructed the entropy measure ENT to provide a direct evaluation of the diversification of board composition by using the following formula:

$$\text{ENT} = \sum_{i=1}^4 P_i \log 1/P_i \text{ where } P_i = \frac{\text{Dir}_i}{\sum_{i=1}^4 \text{Dir}_i}$$

where Dir_i , $i = 1, \dots, 4$, represents the number of outside directorship in financial, industrial, and professional firms and 'stakeholder' organizations respectively held by nonexecutive directors.

Finally, to verify the firm's compliance with the LSE's 'Combined Code on Corporate Governance' principles, we constructed two board structure variables: NEB > 33 percent and NECHAIR. NEB > 33 percent is a dummy variable that was assigned a value of one if the percentage of board members which are nonexecutives is greater than 33 percent, and zero otherwise. Similarly, the NECHAIR variable is a dummy variable that was assigned a value of one if a company has a nonexecutive chairman, and zero otherwise.

We defined executives' experience as the management positions and board memberships held over the last 5 years before the IPO, which derive from the career histories of the CEO and other executive directors of the young firm. In our subsequent analysis, we use CEO and other executives' experience both separately and in combination. The latter provides us with a measure of a 'collective experience' of the top management team (see Higgins and Gulati, 1999, for a justification of this methodology).

Board interests were measured in terms of the percentage of the total number of ordinary shares retained by executive and nonexecutive board members after the IPO, as reported in the listing prospectus. The ESHAR and NESHAR variables represent executive and nonexecutive share ownership stakes respectively. We measured the size of underpricing as the percentage difference between the offer price and the price at the end of the first day of trading adjusted for market movements (see Certo *et al.*, 2001, for a discussion of this measurement).

We used multiple regression analysis to verify our research propositions. To prevent the occurrence of spurious correlation, several controls were used. Previous research acknowledges the importance of firm size and age in terms of their effects on organizational outcomes, including performance (Bethel and Liebeskind, 1993; Gibbs, 1993; Hoskisson *et al.*, 1994; Mikkelsen *et al.*, 1997). The IPO's size was measured in terms of firm's capitalization at the offer price, and age was measured by the number of years between the firm's founding date and its IPO date.

Although firm-specific factors are traditionally considered as the major drivers of strategic change according to the resource-based view (Barney, 2001), a growing body of research suggests that organizational outcomes may also be influenced by external, industry-level factors (see Mauri and

Michaels, 1998, for discussion). To control for possible industry effects, three industry dummy variables were used for cyclical services, financial sector, and information technology firms.

Finally, a number of researchers indicate that stock market conditions may vary with time, and there are periods when IPO investors exhibit overoptimism (Espenlaub and Tonks, 1998; Ibbotson and Jaffe, 1975; McBain and Krause, 1989). These periods may be characterized by large positive short-run stock returns and a large number of new issues. Since the U.K. stock market resembled this environment until the crash of technology share prices in the Spring of 2000, we introduced a dummy variable A2000 that is equal to one if the IPO took place before April 2000, and zero otherwise.

RESULTS

Table 1 provides the correlation matrix and descriptive statistics for all variables used in our study. In terms of the general characteristics of firms in our sample, the average firm size and age are £1.4 million and 5.4 years respectively, which clearly indicates that our firms are relatively small and young. Approximately 30 percent of the sample underwent the IPO process before April 2000. Over a third of firms are from (cyclical) services sector (SIC code 50), with firms from the financial and information technology sectors accounting for 30 and 20 percent of our sample respectively.

With regard to board structure, 60 percent of firms in the sample have a nonexecutive chairman, and 70 percent of firms have a board structure with at least a third of members being nonexecutive directors. On average, nonexecutive directors jointly have almost 18 directorships in outside financial and business organizations. The average number of outside directorships (excluding professional partnerships and 'stakeholder' organizations) per individual nonexecutive director in our sample is 5, which is much higher than the numbers reported in other studies focused on larger and more mature organizations. In particular, in a study of *Fortune* 500 firms in 1994–96 by Shivedasani and Yermack (1999), the average number of additional directorships by nonexecutives is equal to 2. In his study of the 175 largest quoted companies in the United Kingdom in 1995, O'Sullivan (2000) provides a figure of 1.27 as the average

number of outside directorships held by nonexecutives. Clearly, this measure of board diversity is much higher in IPO firms than in their larger and more mature counterparts.

Table 1 also shows that, on average, executive directors have a substantial level of experience measured in terms of outside directorships held over 5 years before the IPO. The CEO on average has almost nine directorships, whereas other members of the top executive team are directors of more than 13 outside firms.

In terms of board financial interests, our analysis shows that executive and nonexecutive directors on average retain 25.7 and 7.5 percent of the total number of shares respectively. Again, these figures are substantially higher than board ownership in the largest companies. For example, O'Sullivan (2000) estimates the average executive share ownership in his sample at 1.83 percent, whereas in a study of U.S. firms by Hambrick and Jackson (2000) the mean share ownership of nonexecutive directors amounts to 1.35 percent. However, Brennan and Franks (1997) in their study of U.K. IPOs estimate combined directors' share ownership at 35.3 percent level, this figure being closer to our results.

According to Table 1, the average level of underpricing in our sample is 29.6 percent. This is much higher than 17 percent of underpricing reported in the study of 1990–98 IPOs in the United States by Certo *et al.* (2001), or 9.42 percent in the study of 1986–89 IPOs in the United Kingdom by Brennan and Franks (1997). Our data show that IPO underpricing is increasing, and this may be a reflection of growing uncertainty and speculative trends in the U.K. stock market in the late 1990s.

The results of formal tests of our hypotheses are provided in Tables 2(a), 2(b), and 3. The first stage of the data analysis was to examine the effects of executives' experience and ownership on board diversity and nonexecutive share ownership. We used the ordinary least squares regression technique, in addition to logistic regression for the two dichotomous dependent variables. While Table 1 suggests that there may be some collinearity between industrial dummies, multicollinearity diagnostics show that the highest variance inflation factors are for the cyclical and financial sector dummies (VIFs of 2.3 and 2.0, respectively). These figures are all well below the threshold value of 10, indicating insignificant levels of multicollinearity.

Table 1. Descriptive statistics and correlations

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. IPO before April 2000	0.29	0.52															
2. Capitalization	1.41	0.71	-0.09														
3. Age	5.44	13.83	-0.02	-0.21													
4. Cyclical services	0.37	0.54	-0.02	0.07	0.14												
5. Financial sector	0.30	0.40	0.21	-0.33	-0.09	-0.5											
6. Information technology	0.22	0.42	-0.22	0.08	-0.06	-0.4	-0.30										
7. Nonexecutive chairman	0.63	0.53	0.00	-0.09	-0.08	0.05	-0.11	0.08									
8. Proportion nonexecutives >33%	0.84	0.41	0.01	0.09	0.02	0.02	-0.00	0.09	0.23								
9. Board entropy	2.21	3.53	0.06	-0.09	-0.02	0.18	-0.05	-0.03	0.20	0.24							
10. Outside directorships per nonexecutive director ^a	8.42	6.82	0.07	-0.12	0.02	0.21	-0.05	0.00	0.11	0.05	0.83						
11. Outside directorships, total ^b	17.91	16.92	0.00	0.09	0.07	0.22	-0.09	-0.04	0.22	0.31	0.91	0.33					
12. Combined CEO and executives' experience	22.23	23.64	-0.06	-0.03	-0.07	0.03	0.14	-0.09	-0.31	-0.19	-0.03	0.06	-0.02				
13. CEO's experience	8.92	10.90	0.02	-0.09	0.18	0.03	0.20	-0.12	-0.43	-0.03	-0.05	0.00	-0.09	0.72			
14. Executives' share ownership	25.74	21.71	0.05	0.09	-0.03	0.32	-0.22	0.02	-0.20	-0.20	-0.09	-0.04	-0.19	-0.04	0.03		
15. Nonexecutives' share ownership	7.47	12.43	0.05	-0.02	-0.08	-0.04	0.01	0.02	0.24	0.23	0.20	0.18	0.22	-0.10	-0.20	-0.22	
16. Underpricing	29.61	87.40	0.41	-0.21	-0.07	-0.20	0.24	0.07	-0.03	-0.04	0.03	-0.03	-0.01	0.06	0.00	-0.10	0.06

^a Including partnerships in professional organizations and membership of political bodies and business support organizations.

^b Financial and industrial organizations only.

Pearson's correlation coefficients were used for continuous variables, point biserial correlation coefficients were used for dichotomous variables. N = 251; correlation coefficients greater than 0.18 or less than -0.18 are significant at the 0.05 level.

Hypothesis 1 suggests that executives' experience should be negatively associated with board diversity. As Tables 2(a) and 2(b) clearly show, although there is a negative association between the combined executive experience and board diversity proxies, the regression coefficients are significant only in the regressions for the board structure variables (Models 5 and 6). However, there is a negative association between diversity proxies on the one hand, and CEO experience on the other: apart from the Logit regression with NEB > 33 percent as the dependent variable (Model 5), all the regression coefficients for CEO experience are negative and significant, in line with Hypothesis 1. These findings indicate that the CEO's experience may be of crucial importance in the board selection process.

The regression results for nonexecutive directors' ownership as a dependent variable (Model 4) strongly support Hypothesis 2 that relates nonexecutive interests with executive experience: both the combined executive and the CEO experiences have predicted negative sign.

As Tables 2(a) and 2(b) indicate, executive power approximated by retained share ownership has a significant impact on board selection and nonexecutive share interests (Hypotheses 3a and 3b). More specifically, apart from the regression with the number of outside directorships per nonexecutive director as the dependent variable (Model 2), executive ownership is negatively and significantly associated with the board diversity proxies. These results support Hypothesis 3a. The regressions with NESHAR as the dependent variable (Model 4) also provide a negative and significant relationship between nonexecutives' and executives' ownership stakes, as suggested by Hypothesis 3b.

In terms of the control variables, the regression coefficients for market capitalization are significant (at $p \leq 0.05$) and negative in the regressions for the NEO variable (Model 2) and positive in the regressions for the NEB > 33 percent variable (Model 5). In other words, larger IPOs are more likely to have more than a third of their directors as nonexecutives, but they have less diverse boards in terms of outside directorships per nonexecutive. The regression coefficients for the firm's age are significant only in the regressions for the SUMDIR (Model 1), suggesting that older firms have a relatively larger number of external 'interlocks' held by nonexecutive directors. In terms of

sector dummies, our results show that firms from the (cyclical) services sector are more likely to have diverse boards. Interestingly, firms from the services and IT sectors are less likely to comply with 'good corporate governance' principles compared to the rest of the sample, which mainly includes 'old economy' firms: the regression coefficients for these sector dummies are negative and significant in the Logit regression for NEB > 33 percent (Models 5 and 6).

The second stage of the analysis involved examining the stock market response to board characteristics and interests. Following Certo *et al.* (2001) we used hierarchical multiple regression analysis to explore possible effects of board selection and ownership on underpricing. Table 3 provides the results of these tests.

As Table 3 shows, retained share ownership by executives is negatively associated with underpricing, but the regression coefficients are insignificant in all models. Contrary to a number of previous studies (e.g., Brennan and Franks, 1997; Espenlaub and Tonks, 1998), our findings do not support Hypothesis 4, which suggests that executive share ownership may be a signal of the quality of the firm.

The regression results, however, do show that some board characteristics strongly affect the extent of underpricing, as suggested by Hypothesis 5. In particular, the number of outside directorships per nonexecutive, as well as the NEB > 33 percent ('more than a third of directors are nonexecutives') dummy are negatively and significantly associated with underpricing. The regression coefficients for the total number of nonexecutive directorships in outside financial and industrial organizations are positive, but significant only in Models 2, 3, and 4. It seems that investors attribute high quality to firms with a larger proportion of nonexecutive directors, as well as to firms whose nonexecutive extraorganizational links, including professional partnerships and membership in 'stakeholder' organizations, are relatively more intensive. However, the *absolute number* of external directorships in financial and industrial organizations held by nonexecutive directors provides an opposite effect on investors' assessment of the firm quality. A more detailed analysis indicates that the total number of external directorships is significantly correlated with the total number of nonexecutive directors. Therefore, our results may

Table 2(a). OLS regression analysis of effects of the executives' experience and ownership on the board's diversity and nonexecutive share ownership

	Model 1						Model 2						Model 3						Model 4						
	SUMDIR			SUMDIR			NEO			NEO			ENTR			ENTR			NESHAR			NESHAR			
	SUMDIR	SUMDIR	SUMDIR	NEO	NEO	NEO	NEO	NEO	NEO	ENTR	ENTR	ENTR	ENTR	ENTR	ENTR	ENTR	ENTR	NESHAR	NESHAR	NESHAR	NESHAR	NESHAR	NESHAR		
<i>Controls</i>																									
Capitalization	0.07	0.06	0.06	-0.11	-0.14*	-0.15*	-0.09	-0.10	-0.10	-0.02	0.02	0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03		
Age	0.11	0.13*	0.13*	0.07	0.20	0.11	-0.01	-0.02	-0.03	-0.07	-0.07	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04		
Cyclical services	0.22*	0.28**	0.29**	0.24***	0.27***	0.28**	0.19*	0.26**	0.27**	0.10	0.10	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17		
Financial sector	0.06	0.09	0.11	0.07	0.11	0.13	0.03	0.06	0.06	0.06	0.06	0.17	0.20*	0.20*	0.20*	0.20*	0.20*	0.21*	0.21*	0.21*	0.21*	0.21*	0.21*		
Information technology	0.07	0.10	0.10	0.11	0.15*	0.15*	0.06	0.11	0.10	0.10	0.10	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14		
<i>Executive characteristics</i>																									
Executives' share ownership	-0.21**	-0.20***	-0.20***	-0.11	-0.11	-0.11	-0.15*	-0.14*	-0.14*	-0.10	-0.10	-0.19**	-0.19**	-0.19**	-0.19**	-0.19**	-0.19**	-0.19**	-0.19**	-0.19**	-0.19**	-0.19**	-0.19**		
Combined experience	-0.10	-0.03	-0.03	-0.14*	-0.14*	-0.14*	-0.10	-0.10	-0.10	-0.13*	-0.13*	-0.16*	-0.16*	-0.16*	-0.16*	-0.16*	-0.16*	-0.16*	-0.16*	-0.16*	-0.16*	-0.16*	-0.16*		
CEO's experience		-0.18*	-0.18*																						
Adjusted R^2	0.03	0.105	0.11	0.03	0.095	0.10	0.01	0.085	0.09	0.01	0.01	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11		
F	2.35	2.68*	2.89*	2.34	2.46	2.61*	1.62	1.75	1.76	0.64	0.64	2.4*	2.4*	2.4*	2.4*	2.4*	2.4*	2.4*	2.4*	2.4*	2.4*	2.4*	2.4*	2.4*	

Notes: Coefficients are standardized beta estimates. All regressions contain an unreported constant. SUMDIR is a sum of outside directorships of all nonexecutive directors; NEO is the number of outside directorships per nonexecutive director; ENTR is an entropy measure of board diversity; NESHAR is the total number of shares owned by nonexecutive directors after IPO.

$N = 251$; * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

Table 2(b). Logit analysis of effects of the executives' experience and ownership on the board structure

	Model 5			Model 6		
	NEB > 33%	NEB > 33%	NEB > 33%	NECHAIR	NECHAIR	NECHAIR
<i>Controls</i>						
Capitalization	0.45	0.66*	0.66*	-0.38	-0.21	-0.26
Age	-0.001	-0.001	-0.001	-0.02	-0.01	-0.33
Cyclical services	-0.73	-1.66***	-1.66***	-0.20	-0.62	-0.80
Financial sector	-0.85	-1.26	-1.20	0.52	0.60	0.08
Information technology	-3.4	-1.67**	-1.67**	3.70	-0.71	-0.72
<i>Executive characteristics</i>						
Executives' share ownership		-0.03***	-0.03***		-0.02***	-0.02***
Combined experience		-0.01*			-0.02***	
CEO's experience			0.01			-0.09***
Pseudo R^2	0.04	0.17	0.16	0.04	0.17	0.20
-2 log likelihood	253.49	225.14	225.13	314.66	292.54	292.54

Notes: All regressions contain an unreported constant. NEB 30% is a dummy variable that is equal to 1 if the proportion of nonexecutive directors on the board is more than 33%, and 0 otherwise; NECHAIR is a dummy variable that is equal to 1 if the firm has a nonexecutive chairman, and 0 otherwise.

$N = 251$; * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

Table 3. The effects of board ownership structure and diversity on underpricing (hierarchical regression results)

	Models				
	1	2	3	4	5
Capitalization	-0.12	-0.14*	-0.13*	-0.14*	-0.12
Age	-0.07	-0.07	-0.07	-0.09	-0.07
Financial sector	0.10	0.12	0.11	0.10	0.10
Information technology	0.12*	0.15*	0.14*	0.14*	0.15*
IPO before April 2000	0.34***	0.34***	0.34***	0.35***	0.35***
Executive share ownership	-0.09	-0.10	-0.10	-0.10	-0.11
Outside directorships, total		0.21**	0.21*	0.21*	0.19
Proportion of nonexecutives >33%		-0.11	-0.13*	-0.13*	-0.13*
Outside directorships per nonexecutive			-0.23**	-0.23**	-0.26**
Nonexecutive chairman				-0.07	-0.07
Nonexecutives' share ownership					0.02
Adjusted R^2	0.13	0.164	0.175	0.18	0.183
ΔR^2		0.034	0.011	0.005	0.03
ΔF		2.45	2.13	1.29	0.711

Notes: The dependent variable is the underpricing ratio. Coefficients are standardized beta estimates. All regressions contain an unreported constant.

$N = 251$; * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

be linked to investors' evaluation of board efficiency in relation to the number of nonexecutives, suggesting that beyond a certain threshold additional directors can compromise a board's efficiency (see Daily *et al.*, 1999; Shivdasani and Yermack, 1999; Yermack, 1996; for a discussion).

Since the board entropy measure is highly correlated with both the number of outside directorships

held by nonexecutives and the intensity of their external links, which may create a multicollinearity problem, we reran our analysis using the board entropy, executive share ownership and controls as the only regressors. In this regression, the board entropy coefficient was positive, but insignificant. This regression also did not have an improvement in explanatory power compared to Model 1,

and, therefore, we did not include it in Table 3. The presence of a nonexecutive chairman provides a negative, but insignificant effect on underpricing (Models 5 and 6). Overall, Hypothesis 5 is only partially supported. The regression coefficient for the nonexecutive share ownership variable is insignificant, and Hypothesis 6 does not receive support.

Finally, in terms of the control variables, the regression coefficients for the firm's capitalization are negative and strongly significant in Models 2, 3, and 4, suggesting that larger firms tend to be less underpriced. The regression coefficients for the information technology dummy are positive and significant (at least at $p \leq 0.05$). In addition, the dummy variable for IPOs undertaken before April 2000 is also positively and very significantly associated with underpricing. These findings provide further evidence that the U.K. stock market conditions may vary with time and from sector to sector following IPO investors' periodic overoptimism (Espenlaub and Tonks, 1998; Ibbotson and Jaffe, 1975).

DISCUSSION

Research findings

The main objective of this research was to analyze an integrated model of the *ex ante* corporate governance development process in an IPO firm and its subsequent effect on short-term stock market response. Our findings indicate that executives' experience and share ownership are negatively associated with board diversity and nonexecutive share ownership. This is consistent with a model of strategic selection of nonexecutive directors suggested in previous research. Therefore, our research contributes to the current debate in the academic and business press related to corporate governance effects on restructuring and performance. In particular, at the center of these debates is an analysis of possible antecedent roles of governance factors in the strategy and performance context. With respect to emerging public limited companies, our results indicate that board characteristics may be endogenous factors affected by executives' experience and ownership. The study also represents an important step in our understanding of the financial dependence perspective

(Hambrick and Jackson, 2000; Kesner, 1987), providing strong evidence of links between the financial commitment of nonexecutive directors and executives' experience and power.

Our study further provides a contribution to IPO signaling research. We extend previous analyses of board characteristics by taking into consideration not only nonexecutives' directorships in financial and business organizations, but also partnerships in professional firms and memberships in a wider body of political and business support organizations. Our empirical analysis demonstrates the potential importance of board characteristics at the time of the IPO. Specifically, a high proportion of nonexecutive directors and the intensity of their extraorganizational links reduce the extent of underpricing of the share issue. These findings are consistent with the notion that these governance factors may have been strategically used to attract financial resources during the initial flotation. Our research also provides evidence of outside investors' selectivity in terms of board characteristics. The absolute number of nonexecutives and their external directorships in financial and industrial organizations seems to have a negative effect on investors' assessment of firm quality. This finding is in line with studies that focus on investors' evaluation of board efficiency in relation to the board size and the external links of non-executives in mature companies (Daily *et al.*, 1999; Shivedasani and Yermack, 1999; Yermack, 1996).

Limitations and future research

There are several limitations of our findings. The variance of the dependent variables explained by each model is modest, indicating that many factors which may potentially impact on board selection and underpricing are not included in our analysis. In particular, the presence of venture capital firms among the IPO original shareholders, the underwriter reputation, firm-related risk factors, etc., have been identified as factors that may affect the extent of underpricing (Certo *et al.*, 2001). Future research should also attempt to examine the impact of contextual factors on the interaction between corporate governance and performance of the IPO firm by controlling for interindustry differences, and other extraorganizational factors (Zahra and Pearce, 1989).

Other research extensions can be suggested. Our analysis indicates that corporate governance is not an exogenous mechanism which solely provides checks and controls over the efficiency with which companies are run. In other words, a firm's governance system may be an equilibrium response to an individual firm's strategic needs and its competitive environment (Demsetz and Lehn, 1985). For example, Demsetz and Villalonga (2001: 210) argue that the ownership structure of a firm 'should be thought of as an endogenous outcome of decisions that reflect the influence of shareholders and of trading on the market for shares.' Therefore, the corporate governance properties that we have identified in our sample of IPO firms may be just one of several stages in the IPO firm's 'corporate governance life-cycle.' These arguments map out two possible lines of further analysis.

First, the development of the governance mechanism at the IPO may be directly affected and/or moderated by ownership and control systems created at the pre-IPO stage. At that stage, the firm's governance system is limited to entrepreneurs, friends and family, the parent firm, and other 'relational' owners of residual claims. In particular, venture capital firms may play a very important role in setting up monitoring systems and imposing direct control on managerial discretion in the young firm (e.g., Jain and Kini, 1999; Mikkelsen *et al.*, 1997). When the firm is evolving along its corporate governance life cycle, control is transferred in steps from original owners and monitors to a new (and larger) group of outside investors. Thus, the corporate governance characteristics observed at the IPO stage may be partially an outcome of the pre-IPO control mechanism.

Similarly, an IPO is not the final stage in the corporate governance life cycle. From a dynamic perspective, corporate governance factors may be affected by strategic actions and outcomes, and the choice of the various governance options could be associated with changes in organizational strategy and firm performance. In this context, problems with the long-term performance of IPOs have a particularly important dimension. Here we focused on governance effects on the short-term performance of IPOs. However, it has been noted in previous research that, in most cases, the operating income of the IPO firm scaled by assets or sales after going public on average declines to a level that is below the performance of matched firms

from the same industry (Mikkelsen *et al.*, 1997), and the performance of IPOs in the aftermarket continues to be considerably lower than the performance of comparable companies (Brav *et al.*, 2000; Espenlaub and Tonks, 1998; Hensler, 1998; Jain and Kini, 1999). This performance decline is typically accompanied by a significant reduction in incumbents' share ownership, and the interests of managers and other stockholders become less closely aligned after an owner/manager's stake has been diluted by an IPO (Jensen and Meckling, 1976). As a result, post-IPO board composition and ownership structure may subsequently be adjusted to accommodate new strategic challenges that the young firm is confronted with, and longitudinal studies of post-IPO board evolution can be important.

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