

Does Board Independence Influence Financial Performance in IPO Firms?

The Moderating Role of the National Business System

ABSTRACT

Prior evidence suggests that board independence may enhance financial performance, but this relationship has been tested almost exclusively for Anglo-American countries. To explore the boundary conditions of this prominent governance mechanism, we examine the impact of the formal and information institutions of 18 national business systems (Whitley, 1999) on the board independence-financial performance relationship. Our results show that while the direct effect of independence is weak, national-level institutions significantly moderate the independence-performance relationship. Our findings suggest that the efficacy of board structures is likely to be contingent on the specific national context, but the type of legal system is insignificant.

Word count: 100

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1. Introduction

Scholars and regulators emphasize the crucial importance of adopting an “independent” board of directors, i.e., one with a majority of nonexecutive directors (Bell, Moore, & Filatotchev, 2012). The underlying assumption is that independent boards are essential for preventing self-serving behavior by top management or controlling shareholders and for providing objective oversight of strategy formation and execution (Hillman & Dalziel, 2003; Zattoni & Cuomo, 2010). Due to the conceptual power of agency theory and the growing influence of institutional investors, this “board independence norm” (BIN) has become enshrined in corporate governance regulations and codes throughout the global economy (Johanson & Ostergren, 2010) and is shaping board characteristics of many companies going public through initial public offerings (IPOs).

Previous studies on corporate governance of IPOs have explored the impact of board independence on a number of IPO outcomes (e.g., Bell, Moore, & Filatotchev, 2012; Chahine & Filatotchev, 2008; Chahine & Goergen, 2013; Chancharat, Krisnamurthi, & Tian, 2012; Filatotchev & Bishop, 2002). Most of these studies have analyzed the independence-performance relationship in single countries, typically developed economies such as the U.S. or, to a lesser extent, the U.K. In this fairly unique Anglo-American governance environment characterized by liquid markets, dispersed ownership, an entrepreneurial social culture, and relatively strong investor protections, these studies generally find that board independence may decrease underpricing (Chahine & Filatotchev, 2008; Filatotchev & Bishop, 2002), increase the likelihood of corporate survival (Chancharat, Krisnamurthi, & Tian, 2012), and support IPO success (Bell, Moore, & Filatotchev, 2012).

However, very little is known about the board independence-financial performance relationship outside the Anglo-American institutional context. Only recently has research extended the investigation of this relationship to other economies (e.g., Bertoni, Meoli, & Vismara, 2014; Lin & Chuang, 2011), revealing different results from prior studies using U.S. samples. Moreover, while we do know that the quality of the legal system appears to influence IPO underpricing (e.g., Boulton, Smart, & Zutter, 2010)

and may interact with board independence to affect IPO firm success (e.g., Bell, Moore, & Filatotchev, 2012; Chahine & Saade, 2011), there is no study that we are aware of that has used a cross-national sample to explore systematically how the wider national institutional context moderates the board independence-financial performance relationship. As a result, we still do not know how and under what conditions the BIN affects financial performance more generally (Peng, Buck, & Filatotchev, 2003).

To help answer these questions, we examine the relationship between board independence and market-based measures of financial performance for a global sample of domestic IPO firms based in eighteen different developed and emerging economies. Our central theoretical premise is that the board independence-financial performance relationship can be understood only after considering the embedded nature of the IPO firm within a wider national institutional system. Specifically, we argue that formal and informal national institutions may amplify or attenuate the effect of BIN on financial performance for IPO firms. Consistent with that premise, our empirical findings reveal that there is a weak positive relationship between board independence and financial performance after the IPO event. However, when we consider the moderating effects of the four dimensions of the national business system (NBS) highlighted by Whitley (1999), the effect is much clearer and more compelling.

These findings provide significant contributions to the literature on IPO firms, comparative institutional analysis, and corporate governance. First, we extend previous studies on IPO board independence and financial performance developed within Anglo-American countries by showing the significant moderating role of national institutions in multiple governance environments. In doing so, we help shed light on the boundary conditions of the efficacy of the BIN in particular and of agency theory in general. Second, our findings have important implications for comparative institutional analysis, as they direct researchers' attention to a more holistic and nuanced understanding of the overall national business system by including a large and theoretically comprehensive set of both formal and informal institutions. Third, we demonstrate that complementarity and substitution effects do not involve only the various governance mechanisms developed at firm-level (e.g., board monitoring versus managers' incentives), but

characterize also the interaction between firm-level governance mechanisms and country-level institutions.

2. Theoretical development

2.1. The contribution of nonexecutive directors to IPO financial performance

Boards of directors of entrepreneurial firms play a crucial role in helping firms pursue their growth prospects and overcome the complexities associated with their transition from private to public ownership (e.g., Bruton et al., 2010; Certo, Holcomb, & Holmes, 2009). Based on this premise, and consistent with good governance codes' recommendations, firms going public usually increase board independence and appoint new nonexecutive directors in order to acquire additional knowledge and skills and increase legitimacy among external shareholders and stakeholders (Certo, 2003). More specifically, nonexecutive directors are expected to support post-IPO results by actively contributing to the board monitoring role and/or to the board service role (e.g., Chahine & Filatotchev, 2008; Kor, Mahoney, & Watson, 2008; Melkumov, 2009).

With regard to board monitoring, nonexecutive directors may mitigate agency costs by aligning the interests of powerful actors (e.g., full-time executives or controlling shareholders) with the interests of the firm (Jensen & Meckling, 1976). First, nonexecutives can improve the ability of the board to monitor firm performance or to assess top management's or controlling shareholders' behavior, e.g., by determining if they are diverting corporate resources through self-dealing transactions or by deciding a fair compensation for board members (e.g., Hillman & Dalziel, 2003; Zattoni & Cuomo, 2010). Moreover, nonexecutive directors can improve IPO board accountability and reputation by guaranteeing its independence from powerful actors, and in doing so may contribute to firm performance in a critical phase of the company life-cycle (e.g., Chahine & Goergen, 2013; Lin & Chuang, 2011).

Nonexecutive directors can also provide valuable services to boards by offering additional expertise and competencies, broadening their knowledge base for key decisions, contributing actively to

the strategic decision-making process, and securing access to critical resources (e.g., Hillman & Dalziel, 2003; Min & Smyth, 2014; Pfeffer & Salancik, 1978). In the context of IPOs, by bringing different perspectives and experiences to board decision making (Hillman & Dalziel, 2003), nonexecutive directors can help company insiders to lead the firm strategically in the aftermath of the IPO and to deal successfully with the complexities associated with the transition to public company status (Filatotchev & Bishop, 2002). Beyond this, nonexecutive directors can provide access to critical resources (like financial capital, political influence or critical information), which may help IPO firms deliver expected results (Hillman & Dalziel, 2003; Kor, Mahoney, & Watson, 2008).

2.2. National institutions, corporate governance and firm performance

Scholars recognize that governance mechanisms, such as the board, are strongly influenced by national institutions (e.g., Aguilera and Jackson, 2003; Redding, 2005). Institutions are defined as “the rule of the game in a society” or, more formally, as “the humanly devised constraints that shape human interaction” (North, 1990: 3). Institutions play an important role in our societies, as they provide the stability and predictability necessary for market and social exchanges among individuals and organizations.

Institutions may be either formal or informal (e.g., North, 1990; Peng, Wang, & Jiang, 2008). Formal institutions are codified rules, such as laws and regulations. Informal institutions are intangible values, customs, and traditions related to culture. International business literature recognizes that institutions affect national business systems as they reduce uncertainty, shape human interactions, and favor the diffusion of cooperative relationships (e.g., Redding, 2005; Whitley, 1999).

As a consequence, governance scholars are increasingly exploring how formal institutions – e.g., investors protection (La Porta et al., 1998) – and, to a lesser extent, informal institutions – e.g., national culture (Hofstede, 1985) – affect and interact with other governance mechanisms, such as ownership structure (e.g., Cuomo, Zattoni, & Valentini, 2013; Hearn, Oxelheim, & Randoy, 2016), boards of

directors (e.g., Hearn, 2015; Kim & Ozdemir, 2014), business groups (e.g., Choi, Yoshikawa, Zahra, & Han, 2014; Zattoni, Pedersen, & Kumar, 2009), and executive compensation (e.g., Liu, Lu, & Chizema, 2014; van Essen et al., 2012). Collectively, these studies support the idea that national institutions influence firm-level governance mechanisms, and may either support or impede their impact on firm-level outcomes (e.g., Aguilera & Jackson, 2003; Lubatkin, Lane, Collin, & Very, 2005). With respect to the present study, this literature suggests that the influence of board composition on IPO outcomes will vary depending on its institutional context.

However, while corporate governance scholars tend to agree *that* institutions matter for understanding governance across countries, there is no consensus about *which* institutions matter, nor do we fully understand *how* they matter (Aguilera & Jackson, 2010). Consequently, our study draws from the literature on comparative institutional analysis to identify the set of institutions likely to affect corporate governance outcomes in different national contexts.

2.3. The embedded nature of the relationship between board independence and IPO financial performance

Much of the comparative institutional literature has crystallized around two comprehensive frameworks: the Varieties of Capitalism (VOC) approach by Hall and Soskice (2001) and the National Business Systems (NBS) approach by Whitley (1999). Both approaches have been widely used in the international business literature and have contributed to advance our understanding of how national institutions affect corporate behaviors and outcomes. However, recent research (Witt & Redding, 2014) suggests that while the VOC model works fairly well within the advanced industrialized countries, the more comprehensive NBS approach is more suitable for capturing differences among advanced and emerging economies. Since our research question extends beyond the advanced industrialized countries, we develop our theoretical framework using the NBS approach.

Previous comparative studies based on Whitley's framework enabled scholars to accumulate insights around the influence of NBS on several firm outcomes like international diversification (Whitley, 1998), innovation (Whitley, 2000), entrepreneurial effort (Bowen & DeClerk, 2008), socially responsible investing (Waring & Edwards, 2008), employment practices (Dobbin & Boychuck, 2009), CSR practices (Ioannou & Serafeim, 2012), M&A activities (Riad, Vaaro, & Zhang, 2013), and equitable wealth creation (Judge, Fainshmidt, & Brown, 2014). In this study, we draw on the NBS literature to identify the set of institutions likely to affect the relationship between board independence and IPO financial performance in different national contexts.

In the Whitley framework, institutions in four areas are key for understanding cross-national variations in firm-level behaviors and outcomes: (1) the financial system, (2) the skills development and control system, (3) the role of the state in the economy, and (4) trust and authority relations (Whitley, 1999: 48). According to Whitley (1999), financial systems are either equity market-based where firms obtain most of their external finances through direct financing, or credit-based where intermediary organizations such as banks are the major sources of funding. Skill formation and control systems relate mainly to education and training in the economy. The role of the state is visible in direct intervention in the economy – e.g., through state expenditures and hostility toward private-sector intermediary associations – as well as in the quality of the regulatory framework of business. Beyond these formal institutions, Whitley's (1999) model includes trust and authority as informal cultural norms. In the sections below, we use the NBS approach to develop hypotheses on how these four key institutional areas may influence the relationship between board independence and financial performance.

Financial system. According to Whitley (1999), the key issue surrounding financial system institutions is how capital is allocated to firms. In equity market-based financial systems, firms are more dependent on, and hence sensitive to, the stock market. In credit-based financial systems, firms are more responsive to the financial intermediaries who provide credit. Equity market-based systems are typically characterized by large and liquid financial markets that have developed with strong regulations and laws

aimed at guaranteeing transparency and liquidity of exchanges (La Porta et al., 1998). In this context, financial markets exert strong pressure for firm performance and shareholder value creation (Allen, 1993; Porter & Wayland, 1992). First, securities are considered commodities, and investors put pressure on managers and boards in search for short term results. In addition, the market for corporate control is typically active and represents a credible threat that underperforming firms will be taken over and their managers and directors penalized, which increases pressure on listed companies to perform (Whitley, 2003).

Credit-based systems have instead relatively weak and small equity markets (La Porta et al., 1998). In these financial systems, financial resources tend to be allocated by intermediaries through a joint decision-making process (Porter & Wayland, 1992). As a result, lenders and borrowers of financial resources are locked in a relationship and in some way released from the market forces typical of market-based systems (Allen, 1993; Whitley, 2003). Large shareholders, such as founding families, are common. Consequently, firms are less sensitive to their current market valuation and tend to serve a range of stakeholders instead of focusing on shareholder value maximization (e.g., Redding, 2005).

Based on the above, we argue that nonexecutive directors serving on boards for IPO firms will emphasize the board monitoring and service roles – and so will contribute to financial performance – more within equity market-based systems than in credit-based financial systems. First, the representation among board members of nonfinancial stakeholders – whose interests deviate from shareholders' value maximization – is much less common in equity market-based systems than in credit-based systems (Aguilera & Jackson, 2003). Second, governance codes issued in equity-market based systems encourage companies to create more financially competent audit committees and to provide nonexecutive directors with equity-based incentives (Zattoni & Cuomo, 2010). Third, the metric of success within equity market-based financial systems is less ambiguous and more clearly linked to financial performance, while in credit-based systems decision makers seek to balance various stakeholder claims (Aguilera & Jackson, 2003; Porter & Weyland, 1992). In sum, we suggest the following moderating relationship:

Hypothesis 1: The more the financial system is equity market-based, the stronger the relationship between board independence and financial performance after the IPO event.

Skill development and control. Whitley's second key dimension within the NBS is the skill development and control system. While this dimension covers a wide variety of inter-related institutions, he described the essence of this institutional bundle as the "extent to which there is a strong, collaborative public training system that develops broad, cumulating, publicly examined, and certified skills" (Whitley, 1999: 50). Hence, the relative sophistication of the national education system is the underlying determinant of collective skill development initiatives, their certification, and the degree to which labor is given a voice.

Previous research has shown that the level of formal education helps individuals to process information more quickly, to consider multiple perspectives, and to develop new ideas (Becker, 1975; Turvani, 2001). Consistently, the knowledge based-view argues that the interaction of high levels of internal and external knowledge positively affects firm performance as "more knowledge is better" (Zahra & George, 2002). Following this view, we would expect that in more educated societies board members have, *ceteris paribus*, a higher absorptive capacity, i.e., a higher ability to assimilate and use a rich flow of knowledge coming from the external environment. In such national contexts, more educated directors will improve board monitoring and service roles by taking advantage of, assimilating and using richer external knowledge generated by more educated analysts, bankers, investors, and other stakeholders.

However, contrary to the prediction of the knowledge based-view, studies show that higher external knowledge can actually undermine the influence of internal knowledge on firm performance (e.g., Fernhaber et al., 2009; Xu, Wu, & Cavusgil, 2013). With respect to IPO firms, a recent study (Judge et al., 2015) indicates that the more knowledge and skills possessed by external stakeholders, the lower is the impact of board knowledge on IPO underpricing. Taken together, these studies show that the substitution effect between internal and external knowledge is common when firms are facing complex

and non-routine decision-making – e.g., creating new venture abroad, pursuing radical innovations or going public. In other words, this empirical evidence suggests a higher level of education within an economy may reduce the board’s influence on firm performance as sophisticated and well-informed external stakeholders (e.g., analysts, bankers, consultants, investors) can both actively monitor and advise IPO firms.

Based on the above, we argue that within more educated societies nonexecutive directors’ contribution to board monitoring and service roles, and consequently to firm performance, will be likely substituted for or lessened by the contribution provided by more knowledgeable external stakeholders. Therefore, the general educational context in which the nonexecutive directors operate may negatively moderate the board independence-financial performance relationship. In formal terms:

Hypothesis 2: The higher the level of education within a national economy, the weaker the relationship between board independence and financial performance after the IPO event.

The role of the state. According to Whitley (1999), business systems vary widely with respect to the role of the state within each economy. In some countries, the state is directly involved in the economy and attempts to share risks with the private sector. In other countries, the state is indirectly involved with the economy as it attempts to specify the boundaries in which business operates, but does not share risks associated with business enterprises. As Whitley (1999: 48) argues: “Where the state is both ‘strong’ and actively risk-sharing, then private firms have to invest considerable resources in managing relationships with the executive and bureaucracy.” In such national contexts, creating political connections can help firms lessen financing constraints (Chan, Dang, & Yan, 2012), decrease the cost of equity (Boubakri, Guedhami, Mishra, & Saffar, 2012), and ultimately increase their performance (Li, Meng, Wang, & Zhou, 2008).

Previous studies show that in industries in which the state can have a great impact on the profitability of the firm – e.g., through regulation or as main customer or supplier – boards include more often nonexecutive directors with connections and relationships with the state like, for instance, retired government officials (e.g., Lester et al., 2008). This tendency is common to all NBS, including the U.S., but it is more pronounced in some countries – like Israel and France – where the state is a central actor (Maman, 2000). Consistent with this view, empirical evidence shows that directors with political experience are more common in regulated industries, and can significantly contribute to firm performance, especially in heavily regulated industries (Hillman, 2005).

Based on the above, we argue that the degree of state intervention is likely to increase nonexecutive directors' service role (Melkumov, 2009) – and partially also their monitoring role by favoring government control on firm's key decisions – and this allows the board to secure state's resources and to increase IPO firm's financial performance through these actions. In more formal terms:

Hypothesis 3: The greater the government intervention within a national economy, the stronger the relationship between board independence and financial performance after the IPO event.

Cultural norms. Beyond the formal institutions discussed above, informal institutions may also have a significant impact on the structuring of, and the outcomes associated with, the business system. According to Whitley (1999: 51), “the norms governing trust and authority relations are crucial because they structure exchange relationships between business partners and between employers and employees.” In particular, while social norms related to trust influence the degree of horizontal cooperative interaction among business actors, social norms regarding authority relations affect vertical patterns of social interaction.

Systemic trust. Legal protection and enforcement of property rights are key institutions for creating and sustaining systemic trust and thus for enabling economic exchanges among strangers (Whitley, 2003).

At one extreme, in countries with legal institutions supporting high trust among economic actors, there is a larger tendency to delegate economic activities to others on a contractual or arms-length basis and to rely on legal mechanisms to control and sanction improper behavior. On the other hand, when systemic trust is not adequately supported by legal institutions, there is a lower tendency to delegate authority over economic activities on contractual bases, and interpersonal trust as expressed in reciprocal obligations and personal connections plays a much bigger role in the organization of economic activity (Whitley, 2003; Whitley, 1999).

In societies where systemic trust is relatively low, firms are less dependent on the rule of law and regulatory enforcement than on informal relationships (Li & Filer, 2007). In these societies, legal protection does not adequately support the creation of systemic trust and the economic success of organizations depends more often on personal relationships (Whitley, 2003). As such, in these environments nonexecutive directors are likely to be individuals who have close relationships with key decision-makers and that, for this reason, can strengthen the ability of the firm to have access to critical resources and to focus its attention on strategic issues (e.g., Ding & Pukthuanthong, 2013). In other words, in the presence of institutional voids (Khanna & Palepu, 2000; Puffer, McCarthy, & Boisot, 2010), nonexecutive directors are likely to add considerable value to the board service and monitoring roles, and ultimately to IPO financial performance.

On the other hand, in high trust societies, the rule of law is often paramount and personal relationships are (relatively speaking) less important (Whitley, 2003). In such business contexts, social rules and enforced regulations both favor proper behavior of business actors (within and between firms) and ease the access to external resources. Therefore, we expect that high trust norms within a society will reduce (i.e., substitute for) the board service and monitoring roles, and so will negatively moderate the board independence-financial performance in IPO firms. In formal terms:

Hypothesis 4a: The greater the extent of systemic trust among actors operating within a national economy, the weaker the relationship between board independence and financial performance after the IPO event.

Authority relations. In terms of authority relations within the firm, Whitley (1999) points to the importance of power distance, i.e., “the extent to which the members of a society accept that power in institutions and organizations is distributed unequally” (Hofstede, 1985: 347). This construct has been shown to have a strong impact on leadership styles and to affect the behavior of both leaders and subordinates (e.g., Hofstede, 1985). At one extreme, in societies with low power distance, people at the top of the firm are seen as “mere facilitators or figureheads and less as empowered decision-makers” (Crossland & Hambrick, 2011: 801) and, consequently, their discretion is limited. On the other hand, in societies with high power distance, top managers and directors are seen with great respect and legitimacy, and subordinates tend to acquiesce to their decisions. As a result, power distance tends to enhance discretion of people at the top of the firm.

The board of directors is both the apex of internal controls and the most important decision-making body of the firm (Zattoni & Cuomo, 2010). We would expect nonexecutive directors to have more influence in relatively high power distance than in low power distance societies because of fewer checks and balances constraining company elites in the former case (Crossland & Hambrick, 2011). Specifically, in high power distance societies, stakeholders provide the nonexecutive directors with the legitimation and the discretion to contribute actively to board monitoring and service role, and so to improve financial performance. Conversely, in low power distance societies, stakeholders will be less likely to leave far-reaching discretion to, and more likely to question decisions of, the board of directors, so limiting the latitude of action available to the key decision making body of the firm (Crossland & Hambrick, 2011).

In sum, theory and research suggests that the power distance norms within an economy are likely to facilitate (i.e., complement) the monitoring and service roles of the board, and so to moderate positively the board independence-financial performance relationship. In formal terms:

Hypothesis 4b: The greater the extent of power distance within a national economy, the stronger the relationship between board independence and financial performance after the IPO event.

3. Research design

3.1. Sample construction

To manually code the IPOs of our sample, the project leaders first identified country experts, i.e., governance scholars who were willing and capable to collect and code IPO data from their country of expertise. Country experts were identified through personal contacts and two Academy of Management (AOM) developmental workshops. This selection process yielded 18 country experts.

Then, we identified all common-share IPOs between 2006 and 2008 using the annual editions of the *EURIPO Fact Books*. These *Fact Books* provide an annual review of firms that carried out “real” IPOs throughout the world, that is, they list only common-share new issues and exclude introductions (admissions with no initial offer), re-admissions and cross-listings on a second stock exchange.

After this, we constructed a data collection template and distributed it to the country experts to ensure consistency of data collection. Data stemmed from IPO prospectuses and stock exchange archives. We were able to collect complete firm-level data for 1,024 domestically-listed IPO companies in the period 2006-2008, covering upward and downward equity market trends, in eighteen countries. Table 1 contains summary statistics of the IPOs in our sample. These countries collectively represent about 62 percent of global GDP in 2008 and reflect both developed and emerging economies.

INSERT TABLE 1 ABOUT HERE

3.2. *Dependent variable*

IPO financial performance. Within strategy and finance, the dominant financial performance measure used is shareholder returns (Richard, Devinney, Yip, & Johnson, 2009). In their review of IPO research, Certo and associates (2009) indicate that shareholder returns is also the most common market-based measure of IPO performance, as it captures stock price changes over time relative to the first day of trading (Draho, 2004; Loughran & Ritter, 1995). In line with previous IPO research (e.g., Filatotchev & Piesse, 2009; Howton, Howton, & Olsen, 2001), we selected a one-year time horizon, since the first-year of being listed is crucial to future survival (Loughran & Ritter, 1995).

To control for returns caused by overall market movements rather than firm-specific factors, we calculated a one-year buy-and-hold abnormal market return for each IPO (BHAR_{*i*}) according to the following formula (Westerholm, 2006):

$$BHAR_i = \frac{Closing\ Price_{i,t+1\ year} - Closing\ Price_{i,t}}{Closing\ Price_{i,t}} - \frac{Market\ Index_{i,t+1\ year} - Market\ Index_{i,t}}{Market\ Index_{i,t}}$$

To reduce skewness, we transformed this variable by taking the natural logarithm after adding the constant of 3 to each BHAR to force all values to be greater than zero.

3.3. *Independent variables*

Board independence. Following Sanders and Boivie (2004) and Kor, Mahoney and Watson (2008), *board independence* was measured as the ratio of nonexecutive directors serving on the board divided by the total number of board members. As stated above, we obtained this data from corporate prospectuses.

Following Whitley (1999), we collected data measuring the four institutional components of national business systems. Our measures closely follow, but are not identical with, those employed by

Judge, Fainshmidt and Brown (2014) as well as Witt and Redding (2013). Since these measures represent structural variables that change little over short periods of time such as the 3 years studied here, we use the 2008 measures unless indicated otherwise.

Equity market-based financial system. According to Whitley (1999), the key distinction in the nature of financial systems is the extent to which it is equity market- or credit-based. To derive a single measure of this construct, we obtained the ratio of private credit to GDP as well as the ratio of stock market capitalization to GDP from the World Bank's World Development Indicators. Since these measures tend to fluctuate a bit, we use average values over the years of our study (2006-2008). We then used principal component analysis to extract a single factor for a country's position along the market-credit dimension. The two variables load on a single factor with an eigenvalue of 1.68 that accounts for 84 percent of the variance in the variables. Lower values indicate a more credit-based system, while higher values a more market-based one.

Education level. In line with Witt and Redding (2013), we operationalized this construct as the 2008 education sub-index of the Human Development Index of the United Nations Development Program (UNDP, 2014). The index combines the mean number of schooling received by adults with the expected number of years of schooling for children at school entering age. It provides an estimate of the stock of skills and knowledge available in a given national business system.

Government intervention. Following and improving on Judge et al. (2014) and Witt and Redding (2013), we obtained a single measure of this construct through principal component analysis of three different variables: the limited government pillar of the Heritage Foundation Economic Freedom Index for 2008 (Heritage Foundation, 2014) as a measure of state economic activity; the ITUC Global Rights Index for labor unions (ITUC, 2014) as a measure of hostility to intermediary associations; and the regulatory efficiency pillar of the Economic Freedom Index for 2008 (Heritage Foundation, 2014) as a measure of regulatory frameworks. We chose the 2014 ITUC Global Rights Index because this was the first year of its availability; to our knowledge, there is no alternative comprehensive comparative measure

available covering all economies in our sample for 2008. Since structural variables usually change slowly over time, we believe it to have reasonable construct validity for 2008. All three variables load on a single factor with an eigenvalue of 1.96, accounting for 65 percent of the variance in the variables.

Systemic trust. Following Witt and Redding (2013), we used the rule of law index of the World Bank's World Governance Indicators for 2008 (World Bank, 2014) to operationalize Whitley's construct of systemic trust within the national business system. This index measures the extent to which people have confidence in the national rules, such as the quality of property rights or the legal enforcement of contracts (World Bank, 2014).

Power distance. Following Judge et al. (2014), we used Hofstede's power distance measure (Hofstede, 2014) to operationalize Whitley's construct of authority relations. Power distance is considered to be a key driver of national cultures and authority relations. In societies with high power distance people are more deferential to authority and accept an unequal distribution of power, while in societies with low power distance they may challenge authority and expect to be involved in the decision making (Crossland & Hambrick, 2011).

3.4. Control variables

Ownership controls. Previous theory and research has shown that ownership stakes can influence governance behaviors and outcomes (e.g., Bruton et al., 2010; Sanders & Boivie, 2004). Therefore, we controlled for four different ownership stakes: (1) *Family ownership*, (2) *VC (Venture Capital) ownership*, (3) *Bank ownership*, and (4) *Government ownership* levels.

Board controls. Consistent with governance studies on IPOs, we controlled for: (i) *Board ownership*, as higher levels of director ownership will incentivize directors to increase firm performance (Howton, Howton, & Olsen, 2001); (ii) *Board size*, as some studies have shown that larger boards can have a positive impact on firm performance (e.g., Certo, Daily, & Dalton, 2001); (iii) *CEO founder*, as (s)he may have a direct positive influence on IPO performance (Gao & Jain, 2011); (iv) *CEO duality*, as

when the same person holds the CEO and board chair roles, there is a higher risk of self-dealing and a weaker board monitoring (Certo, Daily, & Dalton, 2001); (v) *Board audit, nomination, and remuneration committees* as they may play a relevant governance role, e.g. audit committee may contribute to reduce earnings management, and so indirectly affect IPO results (Bedard, Coulombe, & Courteau, 2008).

Firm controls. As larger IPOs – measured through the number of shares – are usually offered by more established firms, their risks and returns should be smaller (Beatty & Ritter, 1986; Boulton, Smart, & Zutter, 2010). Therefore, to control for *Issue size* we accounted for total IPO proceeds (ln-transformed to reduce skewness) from the initial public offering data provided in EURIPO database.

The companies in the sample varied considerably in terms of length of operation at the time of their IPO. In general, we would expect younger firms to struggle more due to their liability of newness (Ritter, 1991). Therefore, consistent with prior IPO studies, we controlled for *IPO age* by taking the difference in years between the IPO date and the IPO firm's founding date (Filatotchev & Piesse, 2009). To correct for non-normality, we transformed this variable by taking the ln transformation.

Scholars contend that leverage is a signal that investors consider when contemplating investment levels in firms (Eckbo & Norli, 2005). Therefore, we controlled for *IPO leverage* by computing the debt-to-equity ratio and ln-transforming it. In addition, we also controlled for the firm's historical growth and profitability, since these metrics reduce uncertainty for fast-growing and/or profitable firms at the time of the IPO (Florin, Lubatkin, & Schulze, 2003). Hence, we measured *IPO growth*, as the previous three years of sales growth registered by the pre-IPO firm, and *IPO profitability*, as the average three years of return-on-assets by the pre-IPO firm.

National controls. Because equity markets are influenced by general market fluctuations in addition to firm characteristics, it is important to control for aspects of the overall stock market for the country in which the IPO is listed (Ritter, 1991). Specifically, we included control measures for *Market capitalization*, *Market volatility*, and *IPO activity* (number of IPOs) for the year in which the IPO occurred.

At the country-level, we controlled also for legal tradition and corruption. Legal tradition may affect investors' protection, ownership concentration and board independence (e.g., Kim, Kitsabunnarat-Chatjuthamard & Nofsinger, 2007) and is measured with a dummy variable: *Common law* = 1. *Corruption* may affect the benefits of political connections (e.g., Infante & Piazza, 2014) and is operationalized using the Corruption Perception Index (Transparency International, 2014), with higher values indicating less corruption.

Timing controls. Gulati and Higgins (2003) suggest that it is important to consider the timing of the IPO when considering subsequent outcomes. Following previous cross-national IPO research (e.g., Engelen & van Essen, 2010), we included year dummies to account for the remaining effects of general market fluctuations on IPO outcomes for each year in this study.

Industry controls. Research suggests that IPO outcomes may also be influenced by external industry-level factors. While the vast majority of previous research has just distinguished between high- and low-tech sectors (Bell et al., 2012; Bruton et al., 2010), recent cross-national research has begun to use two-digit SIC dummies (Engelen & van Essen, 2010). Therefore, we dummy-coded 62 separate industries for our dataset in accordance with the ISIC 4 scheme to control for industry effects that could distort our findings.

3.5. Analytical method

We tested our hypotheses using hierarchical linear modeling (HLM) and ordinary least squares (OLS) regression as implemented in Stata 14.2 (Stata, 2015). Nested data such as ours, with firms embedded in industries and countries, call for hierarchical linear modelling to compensate for clustering at each level (industries, countries) and attendant violations of the OLS assumption of independent and identical distribution (Bliese, 2000; Raudenbush & Bryk, 2002). In the present case, ICC(1) intra-class correlations (Bliese, 2000) of 0.06 for countries and 0.04 for industries suggest the presence of some clustering. Consequently, even though both model specifications, HLM and OLS, yield qualitatively

similar results, we focus our discussion on the HLM results due to its superior robustness. We employed 3-level HLM with firms nested in industries nested in countries. We used robust standard errors to account for possible heteroskedasticity and additional cluster correction of standard errors at the highest level of clustering (countries). The method calculates random intercepts for each nesting level, which in effect control for industry and country effects not captured by the controls specified earlier.

4. Empirical results

Table 2 contains descriptive statistics and bivariate correlations for the variables in our sample. The mean of ln-transformed buy-and-hold returns across all the IPOs was 1.09, equivalent to 0.068 in actual numbers. The observed range in actual numbers was from -2.54 to 9.59 by firms and from -0.59 (Israel) to 0.44 (Nigeria) by countries. Board independence was on average 65.6 percent, ranging from 0 to 100 percent by firms and a low of 41.2 percent (Singapore) to a high of 92.3 percent (Mexico) by countries.

INSERT TABLE 2 ABOUT HERE

Table 3 contains the hierarchical regression results testing our hypotheses using HLM. For all cases, the χ^2 test is statistically significant, suggesting that the models have explanatory power.

INSERT TABLE 3 ABOUT HERE

In Model 1, we regressed the twenty-three control variables on our dependent variable and found that they have some influence on *IPO financial performance*. In particular, *VC ownership*, *Board size*, *IPO profitability*, *Market volatility*, and *Year 2007* were positively associated with BHAR, while *Issue size*, *IPO leverage*, *IPO growth*, and *Market capitalization* were negatively associated.

Model 2 adds the direct effect of *Board independence*. Model fit improves, as indicated by the drop in the AIC (Akaike Information Criterion) and the increase in the log likelihood. The coefficient estimate is positive and marginally significant at the 0.1 level. While this supports the general notion that increasing the number of nonexecutive directors on the board improves financial performance, the relatively weak explanatory power suggests that there might be other factors at work.

Models 3 through 7 introduce interaction effects with the NBS. Model 3 investigates how the type of *financial system* moderates the impact of board independence. The interaction coefficient estimate is positive and statistically significant ($\beta = 0.02, p < 0.001$). This suggests that the positive impact of nonexecutive directors increases with the degree to which a national financial system is equity market-based (as opposed to credit-based). This supports Hypothesis 1.

Model 4 explores the interaction of board independence and *national education levels*. The interaction coefficient estimate is negative and statistically significant ($\beta = -0.03, p < 0.001$). Our data suggest that board independence has a lower impact on IPO performance when education levels are higher. This result supports Hypothesis 2.

Model 5 tests the interaction between board independence and *government intervention*. The interaction coefficient estimate is positive and statistically significant ($\beta = 0.03, p < 0.001$). This suggests that the more interventionist a government in the economy, the more positive the impact of nonexecutive directors on company results. Hypothesis 3 is thus supported.

Model 6 explores how the degree of *systemic trust* moderates the impact of board independence. This regression testing does not control for corruption as the corruption measure is highly correlated (0.97) with the rule of law measure, which creates collinearity problems and attendant variance inflation. The interaction coefficient is negative and statistically significant ($\beta = -0.03, p < 0.001$). Supporting Hypothesis 4a, this implies that nonexecutives on the board have a lower impact when a national context follows a higher degree of systemic trust.

Finally, Model 7 investigates the interaction between *power distance* and board independence. The coefficient estimate is positive and significant ($\beta = 0.03, p < 0.001$), which means that nonexecutive directors appear to have a more positive impact in countries with greater power distance. Hypothesis 4b is thus supported.

Overall, our results lend support to all hypotheses.

5. Robustness

We conducted a series of robustness tests and diagnostics to increase confidence in our findings.ⁱ First, we investigated the hypothesized relationships using a three-year BHAR to provide an alternative measure of firm performance. As we could not obtain data for India and for some IPOs in other countries that had been delisted or had failed within three years, the sample size for 3-years BHAR was 795 cases across 17 countries. Using the same 3-level HLM specification as for our main model reported in this paper yielded qualitatively identical results.

Second, to reduce the risk that our results are an artifact of model specification, we re-ran our regressions using 3-level HLM with the same nesting and random slopes in addition to the random intercepts used, 3-level HLM with the same nesting and dummies for industries and countries included, 3-level HLM with inverse nesting (firms nested in countries nested in industries), 2-level HLM with firms nested in countries and industry dummies as controls, 2-level HLM with firms nested in industries and country dummies as controls, and OLS with cluster-corrected standard errors. All of these specifications produced consistent results for the variables of interest.

Third, to guard against the possible impact of outliers, we computed the main model with the dependent variable, IPO financial performance, winsorized to exclude the top and bottom 1 percent. The results remain consistent. To address possible concerns that the U.S. and the U.K. may unduly influence our results because of the large number of cases contributed by them, we ran out our main model without either. The results are again consistent.

As specified earlier, we used robust standard errors to guard against heteroskedasticity. We further found that variance inflation (multicollinearity) is unlikely to have affected our analyses, with maximum mean VIF values for Models 1-7 of 4.26. VIF values for our individual variables of interest remained below 6.1 across Models 2-7. Individual control variables with VIF values higher than the critical threshold of 10 were the year dummies and *Market volatility*. These three control variables may consequently have inflated estimates of their standard errors, which would reduce their levels of statistical significance (but not that of our measures of interest).

6. Discussion

Following calls for narrowing the gap between organizational and institutional research (e.g., Jackson & Deeg, 2008; Peng et al., 2003) and for more multilevel governance studies (e.g., Dalton & Dalton, 2011; Kumar & Zattoni, 2013), this study aimed to improve understanding of IPO returns in a global, institutionally diverse context. As such our study provides a significant contribution to the literature on IPO firms, comparative institutional analysis, and corporate governance.

First, our study contributes to the literature on IPO governance and performance (e.g., Certo, 2003; Sanders & Bovie, 2004). Studies developed in Anglo-American countries support the idea that board independence is an important governance mechanism with positive effects on underpricing (Chahine & Filatotchev, 2008; Filatotchev & Bishop, 2002), corporate survival (Chancharat, Krisnamurthi, & Tian, 2012), and IPO success (Bell, Moore, & Filatotchev, 2012). In addition, previous studies have shown that the board independence effect may be contingent on some variables like firm age (Kroll et al., 2007), industry-specific uncertainty (Kor et al., 2008), and management-board ties (Chahine & Goergen, 2013).

While these studies have provided relevant knowledge for understanding IPOs in Anglo-American countries, the past two decades have shown a dramatic change in global IPO activity due to the significant growth of IPOs outside of the U.S. (Doidge, Karolyi, & Stultz, 2011). Despite the radical increase of firms going public in several emerging economies, scholarly investigations into IPO governance behavior

and outcomes external to the U.S. is still limited (Certo et al., 2009). This raises a concern as generalizing the insights from studies developed in the relatively unique Anglo-American institutional setting to other national environments can be questionable because of the institutional differences across countries (Peng et al., 2003; Whitley, 1999).

One way to address this issue is to develop studies exploring the IPO board independence-firm performance relationship outside Anglo-American governance environments (e.g., Bertoni, Meoli, & Vismara, 2014; Lin & Chuang, 2011). A more promising alternative is to explore IPOs in multiple governance environments rather than in single-country examinations. To the best of our knowledge, ours is the first study examining the interaction effects between board independence and national institutions in IPO firms for more than two countries. As we move toward a global economy that is less centered on the U.S., our findings on the multidimensional impact of the NBS on the effectiveness of IPO boards in eighteen different economies are theoretically and managerially important (Kumar & Zattoni, 2013).

Second, our research extends and complements recent studies developed on the premise of the law and finance view (La Porta et al., 1998). According to this, formal legal norms, and particularly investor protection, are key national institutions affecting several important variables, like the size of agency costs and of financial markets. Drawing on the NBS literature (Whitley, 1999), our study examines the impact of a larger and more coherent set of both formal and informal national institutions on the relationship between board independence and IPO returns. Consistent with this view, we investigate if and how different country settings may affect nonexecutive directors' contribution to board monitoring and service roles, and ultimately influence IPO performance. More specifically, we argue that the characteristics of the national business system in which the firm operates moderate the BIN-financial performance relationship in IPO companies (e.g., Judge, Naumova, & Koutzevol, 2003; McCarthy & Puffer, 2003).

Consistent with the NBS literature, our results highlight that institutions in four areas – the financial system, the skills development and control system, the role of the state in the economy, and trust and authority relations – contribute to explain cross-national variations of firm behaviors and results

(Whitley, 1999: 48), and specifically moderate the influence of nonexecutive directors on IPO financial performance. At the same time, we find that the difference in legal systems does not seem to matter for IPO financial performance, as the coefficient estimate for our common law variable is significant only in one of seven models. Our study thus departs from the law and finance view and its strong emphasis on formal legal norms, and underlines that both the formal and informal institutions of the national business system may affect the effectiveness of firm-level governance mechanisms (e.g., Redding, 2005). In this way, our study contributes to the development of a fine-grained analysis of the national institutional context and emphasizes the importance to focus on the links between a coherent set of national institutions and the firms' governance (Peng et al., 2003).

Third, our results challenge the traditional corporate governance literature that promotes the search for universal best practices. A typical recommendation developed by governance scholars and practitioners is that boards of directors should be independent from top managers, i.e., an increase of the number of nonexecutive directors will improve firm performance. This precept is mainly based on the idea that nonexecutive board members are crucial to monitoring top managers and providing external oversight of strategic decisions (Hillman & Dalziel, 2003). Due to the influence of agency theory and the financial support of institutional investors, the call for board independence has become a pillar of good governance codes all over the world (Zattoni & Cuomo, 2010).

Our results show that board independence alone has a weak positive direct impact on IPO financial performance in our global sample. In this way, this finding supports the idea that an increase of nonexecutive directors can improve board effectiveness and, consequently, IPO performance (Hillman & Dalziel, 2003). More interestingly, we show that this relationship is significantly moderated by the NBS. As such our findings challenge the idea that good corporate governance practices – like board independence – may universally have the same effect on IPO firm financial performance and indicate that their effectiveness is contingent on the national institutional environment (Judge, Naumova, & Koutzevol, 2003; McCarthy & Puffer, 2003; Melkumov, 2009; Peng et al., 2003). In other words, we provide

empirical support for the idea that corporate governance practices, and their related effects, are embedded within a specific institutional environment (Aguilera & Jackson, 2003; Buck, 2003; Judge, 2012).

The existence of both complementary and substitution effects between board independence and characteristics of the NBS is particularly intriguing. Our results show that while some institutions – equity market-based finance, high government involvement and high power distance – tend to increase the impact of board independence on IPO financial performance, other institutions – high levels of education or systemic trust – tend to reduce the influence of board independence on IPO financial performance. Our study thus extends previous works that have underlined the complementary and substitution effects of governance mechanisms developed at firm-level (e.g., Rediker & Seth, 1995; Ward, Brown, & Rodriguez, 2009), and supports a new stream of research emphasizing that complementary and substitution effects are at work between firm-level governance mechanisms and country-level institutions (e.g., Schiehl, Ahmadjian, & Filatotchev, 2014).

7. Study limitations and future research

Our study has a number of limitations. While we examine 1,024 IPOs in eighteen countries across three years (2006-08), this period is relatively short and centered around the recent financial crisis, which may prevent more definitive causal analysis (Ritter & Welch, 2002). Longitudinal studies focused on a longer time period may help governance scholars to understand better how firm-level and national-level variables evolve and jointly influence the nature of governance practices, and ultimately IPO performance. Furthermore, as IPOs may amplify the potential contribution of nonexecutive directors to firm results, future studies can extend our results by exploring the same relationships in more mature or unlisted companies.

Second, we explore the influence of a well-established proxy (i.e., board independence) on IPO board roles and IPO results. While this proxy is well developed both in corporate governance literature and practice (Zattoni & Cuomo, 2010), it may not be able to capture if and how the role of nonexecutive

directors varies based on their individual characteristics or on features of the national contexts. Future studies may so explore the interaction of national institutions with, for example, the human and social capital of the nonexecutive directors (e.g., Johnson, Schnatterly, & Hill, 2013) or the social and family ties between executives and board members (e.g., Chahine & Goergen, 2013). In addition, scholars may get a more fine-grained understanding of the interaction between national- and firm-level variables using more qualitative research methods (Zattoni, Douglas, Judge, 2013), such as multiple cases and direct interviews with directors (e.g. Ravasi & Zattoni, 2006), or questionnaire surveys targeted to measure board internal processes and effectiveness (e.g. Zattoni, Gnan, & Huse, 2015). Finally, future studies may extend our results by considering the moderating role of NBS on another governance mechanism (e.g., ownership structure or executive compensation) or on bundles of governance mechanisms (e.g., Rediker & Seth, 1995; Schiehl, Ahmadjian, & Filatotchev, 2014; Ward, Brown, & Rodriguez, 2009).

Third, our study uses 1-year BHAR as a performance measure. While we adjusted the BHAR for returns caused by overall national market movements and we did robustness tests with 3-year adjusted BHAR, the use of IPO financial performance in a period characterized by the global financial crisis and the high volatility of financial markets may lead to unrepresentative results. Future studies may contribute to address this issue by using accounting measures (e.g., ROA or ROI), as they load on separate dimensions than those based on markets (Richard et al., 2009), or by exploring the same relationships in a period of relative stability of financial markets, as the financial crisis may have amplified the impact of board independence on IPO financial performance (Dowell, Shackell, & Stuart, 2011).

8. Conclusions

This study examined the effect of the national institutional context on the board independence-IPO financial performance relationship. Our results show that while board independence has a marginally positive but limited impact on firm performance, its effect is significantly moderated by national-level institutions. These findings advance our understanding of the board independence norm in an IPO context

and provide further support to the idea that nonexecutive directors' contribution to board roles is embedded within the NBS. As such, this study contributes to a broader and deeper understanding of societal systems of capitalism (Redding, 2005) and their relations to corporate governance and IPO firm financial performance. We encourage other international business and corporate governance scholars to refine and extend these insights so that we can begin to develop a truly global perspective on how this governance mechanism influences firm-level outcomes within a situated context.

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TABLE 1:**Number of IPOs in the Sample by National Business Environment**

Governance Environment	2008 GDP Rank	2008 Global GDP%	Sample IPO Rank	Number of IPOs in Sample
United States	1	23%	1	228
United Kingdom	6	4%	2	227
China	3	6%	3	173
India	12	2%	4	93
Singapore	43	<1%	5	51
Australia	14	2%	7	48
Italy	7	4%	6	43
Germany	4	6%	8	33
Sweden	22	1%	9	32
Russia	9	3%	10	18
Canada	11	2%	11	16
Spain	10	3%	12	14
Nigeria	39	<1%	13	12
Belgium	20	1%	14	11
Israel	41	<1%	15	8
Turkey	17	1%	16	8
Mexico	13	2%	17	6
Netherlands	16	1%	18	3
TOTAL		~62%		1,024

Sources: World Bank (2008) for GDP statistics.

TABLE 2:

Descriptive Statistics for IPO Returns and Their Antecedents in 18 Countries, 2006-08

	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12
1 IPO fin. performance ^a	1.09	0.26	-0.78	2.53												
2 BOD independence	65.59	20.24	0.00	100.00	0.08											
3 Equity market-based system	0.04	1.02	-1.29	1.83	0.08	0.11										
4 Education level	0.78	0.16	0.44	0.98	-0.01	0.16	-0.32									
5 Gov't intervention	-0.02	1.00	-2.28	1.38	0.07	0.05	0.54	-0.76								
6 Systemic trust	1.01	0.90	-1.06	1.91	-0.06	-0.06	-0.58	0.79	-0.75							
7 Power distance	52.61	20.18	13.00	93.00	0.05	-0.04	0.60	-0.81	0.81	-0.87						
8 Family ownership	16.11	24.17	0.00	90.00	-0.04	-0.23	0.12	-0.34	0.15	-0.18	0.29					
9 VC ownership	5.69	12.85	0.00	100.00	0.03	0.30	-0.09	0.36	-0.11	0.27	-0.22	-0.19				
10 Bank ownership	1.54	7.04	0.00	80.26	-0.02	0.07	-0.02	0.09	-0.14	0.05	-0.11	-0.09	-0.03			
11 Gov't ownership	1.34	8.77	0.00	77.86	0.06	0.08	0.20	-0.13	0.15	-0.19	0.17	-0.10	-0.06	-0.03		
12 BOD ownership	28.46	25.21	0.00	95.9	-0.02	-0.11	-0.04	0.1	-0.05	0.14	-0.05	0.35	0.18	-0.13	-0.16	
13 BOD size	7.32	2.67	1.00	20.00	0.09	0.21	0.34	-0.30	0.37	-0.46	0.43	0.03	0.03	-0.02	0.17	-0.07
14 CEO founder ^b	0.44	0.50	0.00	1.00	-0.02	-0.16	-0.02	-0.14	0.05	-0.01	0.11	0.40	-0.01	-0.08	-0.10	0.35
15 CEO duality ^b	0.38	0.49	0.00	1.00	0.01	-0.22	0.05	-0.10	0.14	-0.03	0.12	0.21	0.00	-0.07	-0.08	0.20
16 Audit committee ^b	0.76	0.43	0.00	1.00	0.05	-0.05	-0.35	0.06	0.00	0.22	-0.10	0.06	0.20	-0.08	-0.06	0.14
17 Nomination committee ^b	0.45	0.50	0.00	1.00	0.06	0.07	-0.05	0.32	-0.03	0.27	-0.11	-0.14	0.30	-0.06	-0.04	0.13
18 Compensation committee ^b	0.69	0.46	0.00	1.00	0.03	-0.09	-0.25	0.10	-0.04	0.24	-0.13	0.03	0.24	-0.11	-0.05	0.14
19 Issue size ^a	4.97	1.95	0.00	59.00	-0.05	0.15	0.02	0.05	0.01	-0.05	0.03	-0.06	0.07	-0.04	0.07	-0.04
20 IPO age ^a	1.89	1.09	0.00	5.08	-0.02	0.12	0.13	-0.07	0.08	-0.19	0.18	0.27	0.15	0.00	0.03	0.11
21 IPO leverage ^a	0.56	0.96	0.00	7.86	-0.09	-0.07	-0.07	-0.38	0.22	-0.31	0.30	0.20	-0.10	0.00	0.03	-0.03
22 IPO growth	4.53	0.98	0.00	13.09	-0.04	0.02	-0.02	-0.02	0.08	0.05	-0.01	0.12	0.06	-0.04	-0.04	0.03
23 IPO profitability	-0.18	5.81	-113.49	104.54	0.05	-0.03	0.04	-0.02	0.03	-0.03	0.04	0.04	-0.08	-0.05	-0.01	0.00
24 Market capitalization	0.14	0.49	-0.72	1.20	-0.16	0.04	0.08	-0.22	0.16	-0.22	0.18	-0.04	-0.06	-0.01	0.01	-0.06
25 Market volatility	0.13	0.12	0.03	0.49	0.15	-0.05	0.56	-0.51	0.55	-0.56	0.59	0.17	-0.28	-0.06	0.15	-0.12
26 IPO activity	60.39	47.35	1.00	141.00	-0.02	-0.01	-0.65	0.42	-0.34	0.61	-0.65	-0.31	0.22	-0.05	-0.15	0.08
27 Common law country ^b	0.67	0.47	0.00	1.00	-0.05	-0.12	-0.60	0.22	-0.12	0.58	-0.46	-0.03	0.21	-0.04	-0.19	0.13
28 Corruption	6.36	2.11	2.10	9.30	-0.05	-0.09	-0.47	0.78	-0.75	0.97	-0.80	-0.19	0.21	0.07	-0.18	0.12
29 IPO 2006 ^b	0.40	0.49	0.00	1.00	-0.13	0.03	-0.18	0.07	-0.12	0.07	-0.15	-0.10	0.07	-0.08	-0.02	-0.03
30 IPO 2007 ^b	0.38	0.49	0.00	1.00	0.03	0.00	-0.09	0.05	-0.09	0.08	-0.05	0.01	0.03	0.11	-0.05	0.08

	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
14 CEO founder ^b	0.02																
15 CEO duality ^b	-0.01	0.16															
16 Audit committee ^b	0.01	0.10	0.13														
17 Nomination committee ^b	0.04	0.01	0.09	0.48													
18 Compensation committee ^b	-0.02	0.10	0.15	0.77	0.49												
19 Issue size ^a	0.15	-0.06	-0.02	0.07	0.08	0.06											
20 IPO age ^a	0.25	0.11	0.10	0.04	-0.03	0.04	0.04										
21 IPO leverage ^a	0.14	0.09	0.04	0.05	-0.17	0.00	0.02	0.14									
22 IPO growth	-0.07	0.04	0.13	0.09	-0.05	0.03	-0.05	0.07	0.04								
23 IPO profitability	0.00	0.06	0.02	-0.02	0.01	-0.02	0.01	0.06	0.00	0.01							
24 Market capitalization	0.21	0.02	-0.10	-0.20	-0.15	-0.15	0.12	0.08	0.06	-0.12	0.01						
25 Market volatility	0.15	-0.02	0.06	-0.18	-0.16	-0.21	-0.12	-0.04	0.11	0.13	0.03	-0.45					
26 IPO activity	-0.35	-0.06	0.02	0.32	0.19	0.34	-0.01	-0.24	-0.16	0.00	-0.05	0.06	-0.61				
27 Common law country ^b	-0.35	0.04	0.13	0.48	0.22	0.44	-0.09	-0.16	-0.02	0.22	-0.03	-0.19	-0.34	0.67			
28 Corruption	-0.46	-0.03	-0.06	0.15	0.28	0.16	-0.06	-0.24	-0.33	0.00	-0.03	-0.24	-0.47	0.48	0.48		
29 IPO 2006 ^b	0.01	-0.01	-0.04	-0.09	-0.07	-0.06	0.12	-0.01	-0.03	-0.11	0.01	0.43	-0.39	0.37	0.00	0.03	
30 IPO 2007 ^b	0.01	0.02	-0.04	0.12	0.08	0.12	-0.02	0.08	0.02	-0.03	-0.03	0.20	-0.32	0.00	0.07	0.07	-0.65

Notes:

^a – To reduce skewness, these variables were ln-transformed.

^b – Dummy variable coded as 0 or 1.

Correlations larger than | 0.06 | significant at .05 level.

Table 3:**Regression Results for IPO Financial Performance, 3-Level HLM, Observations Nested in Industries and Countries**

	(1) Controls only	(2) Direct Effect BI	(3) BI * Equity market-based system	(4) BI * Education level	(5) BI * Government intervention	(6) BI * Systemic trust	(7) BI * Power distance
Board Independence (BI)		0.0167 [†] (0.00973)	0.0218** (0.00670)	0.0190** (0.00719)	0.0230*** (0.00484)	0.0203*** (0.00599)	0.0234*** (0.00613)
Equity market-based system			0.00267 (0.0124)				
BI * Equity market- based system			0.0217*** (0.00487)				
Education level				0.00324 (0.0283)			
BI * Education level				-0.0323*** (0.00945)			
Government intervention					-0.00134 (0.0201)		
BI * Government intervention					0.0300*** (0.00635)		
Systemic trust						-0.000887 (0.0170)	
BI * Systemic trust						-0.0254*** (0.00703)	
Power distance							0.00995 (0.0164)
BI * Power distance							0.0299*** (0.00681)

Family ownership	0.0116 (0.0103)	0.0107 (0.0111)	0.00683 (0.0112)	0.00721 (0.0114)	0.00738 (0.0109)	0.00682 (0.0108)	0.00769 (0.0106)
VC ownership	0.0126 [†] (0.00756)	0.0108 (0.00732)	0.0123 (0.00904)	0.0160 [†] (0.00956)	0.0140 (0.0101)	0.0148 (0.00921)	0.0144 (0.00887)
Bank ownership	0.000512 (0.00430)	-0.000885 (0.00474)	-0.00243 (0.00516)	-0.00153 (0.00453)	-0.00118 (0.00464)	-0.00211 (0.00474)	-0.00104 (0.00380)
Gov't ownership	0.00722 (0.00813)	0.00696 (0.00808)	0.00556 (0.00796)	0.00609 (0.00707)	0.00533 (0.00751)	0.00516 (0.00778)	0.00552 (0.00754)
BOD ownership	-0.00865 (0.00938)	-0.00646 (0.00940)	-0.00392 (0.00904)	-0.00438 (0.00882)	-0.00594 (0.00859)	-0.00474 (0.00870)	-0.00469 (0.00866)
BOD size	0.0241 [†] (0.0134)	0.0228 [†] (0.0132)	0.0249 [†] (0.0130)	0.0258 [†] (0.0132)	0.0251 [†] (0.0136)	0.0254 [†] (0.0131)	0.0254 [†] (0.0135)
CEO founder	0.00486 (0.0131)	0.00599 (0.0127)	0.00238 (0.0122)	0.00233 (0.0112)	0.00152 (0.0117)	0.00181 (0.0121)	0.000718 (0.0120)
CEO duality	0.00497 (0.0139)	0.0117 (0.0113)	0.0153 (0.00985)	0.0180 [†] (0.00931)	0.0178 [†] (0.00922)	0.0156 [†] (0.00916)	0.0175 [†] (0.00939)
Audit comm.	0.0450 (0.0281)	0.0397 (0.0288)	0.0413 (0.0282)	0.0413 (0.0258)	0.0472 [†] (0.0266)	0.0415 (0.0269)	0.0386 (0.0258)
Nomination comm.	-0.0129 (0.0127)	-0.00925 (0.0123)	0.000590 (0.0109)	-0.000759 (0.0110)	-0.00535 (0.0126)	-0.00366 (0.0104)	-0.00238 (0.0117)
Comp. comm.	-0.0187 (0.0262)	-0.0138 (0.0266)	-0.0182 (0.0279)	-0.0115 (0.0259)	-0.0120 (0.0264)	-0.0150 (0.0266)	-0.0135 (0.0262)
Issue size	-0.0114 ^{***} (0.00290)	-0.0120 ^{***} (0.00272)	-0.0104 ^{**} (0.00319)	-0.0109 ^{***} (0.00241)	-0.0102 ^{***} (0.00292)	-0.0109 ^{***} (0.00279)	-0.0110 ^{***} (0.00286)
IPO age	0.000204 (0.0108)	-0.000711 (0.0109)	-0.00456 (0.0105)	-0.00102 (0.0107)	-0.00257 (0.0102)	-0.00136 (0.0104)	-0.00111 (0.0104)
IPO leverage	-0.0195 ^{***} (0.00553)	-0.0203 ^{***} (0.00582)	-0.0227 ^{***} (0.00677)	-0.0222 ^{**} (0.00772)	-0.0216 ^{***} (0.00655)	-0.0249 ^{**} (0.00759)	-0.0247 ^{**} (0.00787)
IPO growth	-0.00816 [*]	-0.00950 [*]	-0.0137 ^{**}	-0.0124 [*]	-0.0125 ^{**}	-0.0112 ^{**}	-0.0130 ^{**}

	(0.00366)	(0.00388)	(0.00459)	(0.00558)	(0.00449)	(0.00398)	(0.00460)
IPO profitability	0.0150*** (0.00169)	0.0153*** (0.00189)	0.0157*** (0.00195)	0.0158*** (0.00203)	0.0147*** (0.00225)	0.0158*** (0.00198)	0.0164*** (0.00192)
Market capitalization	-0.0598*** (0.0139)	-0.0589*** (0.0147)	-0.0621*** (0.0181)	-0.0574** (0.0178)	-0.0585** (0.0190)	-0.0587** (0.0183)	-0.0594** (0.0188)
Market volatility	0.0994 [†] (0.0558)	0.0968 [†] (0.0532)	0.0837 [†] (0.0428)	0.0902 [†] (0.0543)	0.0960 [†] (0.0514)	0.0854 [†] (0.0447)	0.0866 [†] (0.0443)
IPO activity	0.0242 (0.0236)	0.0297 (0.0236)	0.0415 [†] (0.0233)	0.0502* (0.0246)	0.0438 [†] (0.0225)	0.0527* (0.0240)	0.0464 [†] (0.0266)
Common law	-0.0291 (0.0377)	-0.0322 (0.0341)	-0.0476 (0.0306)	-0.0472 (0.0400)	-0.0525 (0.0383)	-0.0604* (0.0302)	-0.0448 (0.0315)
Corruption	0.00436 (0.0191)	0.00360 (0.0191)	0.00200 (0.0164)	-0.00219 (0.0130)	0.00675 (0.0153)		0.00928 (0.0144)
IPO 2006	0.181 (0.113)	0.172 (0.109)	0.145 (0.0968)	0.145 (0.119)	0.161 (0.103)	0.135 (0.104)	0.143 (0.103)
IPO 2007	0.226 [†] (0.127)	0.218 [†] (0.125)	0.198 [†] (0.118)	0.199 (0.135)	0.212 [†] (0.127)	0.188 (0.125)	0.196 (0.123)
Constant	0.909*** (0.0792)	0.919*** (0.0749)	0.956*** (0.0661)	0.957*** (0.0949)	0.941*** (0.0833)	0.972*** (0.0728)	0.959*** (0.0761)
<i>N</i>	1024	1024	1024	1024	1024	1024	1024
<i>AIC</i>	44.44	41.63	35.49	31.90	31.71	33.59	31.41
Log likelihood	-5.219	-3.815	-0.743	1.051	1.147	0.207	1.294
$p > \chi^2$	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses

[†] $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

ⁱ Supplemental robustness analyses were provided to the reviewers and are available from the authors upon request.