Corporate governance and life-cycles in emerging markets

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Abstract

Whereas the corporate life-cycle hypothesis posits that firms follow a structured set of goals along the life-cycle, some authors argue that corporate governance objectives vary independently of predetermined life-cycle stages. This study examines the impact of the corporate life-cycle on corporate governance in a special setting where firms can self-select into stricter rules by adopting an exchange listing level that fits the governance needs of the organization independently of the previously believed life-cycle requirements. Firms signal improvements in corporate governance by self-selecting into a more stringent listing level. The listing-level decision is a better predictor of corporate governance quality than corporate life-cycle. Firms indicate changes in corporate governance objectives by listing at the degree of regulation scrutiny that fits their current governance needs. The exchange listing level is a strong predictor of board structure quality, shareholder protection, disclosure requirements, and ownership structure. Firms determine the degree of regulation that matches the specific requirements at any point during their life-cycle.

Keywords: Bovespa, corporate governance, corporate life-cycle, emerging markets, Novo Mercado.
JEL Codes: G30, G32, G34.

1.   Introduction

The agency problems arising from the separation of ownership and control has been documented since at least Berle and Means (1932). The shareholder-manager relationship can be depicted primarily by a monitoring role that attempts to align interests between both parties utilizing a set of contracts that in equilibrium can serve to maximize utility for both. Fama (1980) describes the modern corporation as a collection of contracts among factors of production and motivated by self-interest; aiming at reducing agency costs for stakeholders and maximizing the benefits for managers. In this context, the potential agency costs carried by equity and debtholders are determined by the dynamic mix of corporate governance mechanisms, legal framework and enforcement (Shleifer and Vishny, 1997) and external market factors (Fama, 1980). Since firms only have direct control over their corporate governance, it is in their best interest to regulate the corporate governance qualities needed over time based on the combination of monitoring, resource, and strategic requirements along their corporate life-cycle (Filatotchev et al., 2006).

Contrary to the commonly prescribed universal approach to corporate governance[1], firms may maximize shareholders wealth by shifting investor protection according to their needs at each stage of the life-cycle. For instance, O'Connor and Byrne (2015a) find that the market assigns value to corporate governance only at certain points of the life-cycle rather than continuously along the life of the firm. Filatotchev et al. (2006) posit that the role of corporate governance serves different purposes along the life-cycle suggesting the existence of an optimal level of corporate governance. Specifically, after firm inception, various subsequent corporate life-cycles have been commonly identified and the agency relationship varies around each stage. For instance, Miller and Friesen (1984), Anthony and Ramesh (1992), DeAngelo et al. (2006), Filatotchev et al. (2006), Dickinson (2011), Faff et al. (2016), among others, have described different proxies for firm life-cycles.

It seems a logical step to analyse the evolution of corporate governance along the distinct life-cycles, however, only a few researchers have addressed this question. Filatotchev et al. (2006) note that monitoring, resource, and strategic needs inherent in each life-cycle entail specific corporate governance

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[1] The agency view of the firm portrays a narrow, static, corporate governance function. Under the principal-agent view, corporate governance exists solely to perform a monitoring role: shareholders (principles) appoint a board of directors (agents) to monitoring the behavior of self-serving managers. Filatotchev et al. (2006) suggest that corporate governance serves three functions, namely monitoring, resource, and strategy.

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qualities.[2] Wright et al. (2013) build upon the life-cycle model proposed by Filatotchev et al. (2006) adding financial and entrepreneurship firm characteristics along the life cycle. O'Connor and Byrne (2015b) analyse the strength of corporate governance on a cross-section of firms at different life-cycles; finding that the resource, strategy, and monitoring functions of corporate governance are relevant at different phases of the firm, consistent with Filatotchev et al. (2006). Perhaps, the limited amount of studies in this area is partly due to the limited amount of reliable firm-level longitudinal data on corporate governance.[3]

In this paper, we test whether the corporate life-cycle has an impact on corporate governance, as indicated by Filatotchev et al. (2006). In addition, we analyse whether firms self-select into stricter regulation independently of the life-cycle predictions by adopting an exchange listing level that fits the governance needs of the organization, consistent with the conjectures of Phelps et al. (2007). We find that the listing level decision conveys relevant information to the markets about the firm desire to bond to stricter regulations (bonding hypothesis) and hence this signal is a stronger predictor of corporate governance quality relative to the expectations based on the corporate life-cycle hypothesis.[4] Specifically, to our knowledge, this is the first paper testing a comparable research question.

Emerging markets offer unique characteristics as the difference in corporate governance practices within and across countries is large, as documented by Hugill and Siegel (2012). Corporate governance in emerging markets has progressed substantially in recent decades, particularly after firms became more integrated to global markets (Aggarwal et al., 2009; and Hugill and Siegel, 2012), for instance, through international cross-listings (Doidge et al. 2004). However, the average firm from emerging countries still has poorer governance relative to developed markets firms (Aggarwal et al., 2009; Claessens and Yurtoglu, 2013). An important reason is that firms from developing markets face stronger challenges to establish a reputation for protecting shareholder rights as domestic bylaws makes costly the enforcement of shareholder rights (La Porta et al., 2000; and Doidge et al., 2007). For example, whereas, *de jure* creditors

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[2] These predictions are consistent with related finance literature; such as the free cash flows theory (Jensen, 1986) as more mature firms require stronger monitoring corporate governance. Excess cash holdings increase the potential agency costs as managers may invest excess funds in wealth destroying projects.

[3] Loderer et al. (2012) show that governance quality deteriorates as firms' age. Franks et al. (2012) and Helwege et al. (2007) explore how ownership structure evolves as firms' age beyond their IPO.

[4] The bonding hypothesis suggests that firms self-select to stricter regulation and correspondingly improve their corporate governance. The bonding effects have been studied extensively, particularly regarding U.S. cross-listings, for example, Benos and Weisbach (2004), Doidge et al. (2004), King and Segal (2008), Ferris et al. (2009), Esqueda (2017), Foley et al. (2018), among others.

and shareholders rights appear similar in emerging and developed markets, the degree of law enforcement is twice as effective in developed markets compared to emerging markets (Claessens and Yurtoglu, 2013).

Our paper contributes to the current literature on corporate governance providing strong evidence in support of the bonding hypothesis employing a unique setting where firms have the choice to select an exchange in their domestic market that fits their corporate needs, hence firms share similar domestic rules and regulation *ex-ante* the listing decision. We provide consistent evidence that the listing level is a better predictor of corporate governance than the life-cycle approach, regardless of the proxy for the life-cycle employed. Overall, stricter listing levels are associated with stronger corporate governance whereas the life-cycle does not significantly affect corporate governance. The listing level is a more powerful predictor of the strength of disclosure, shareholder rights, and board structure. It appears that firms self-select to be regulated at a level that matches their specific requirements at any point in their life-cycle, consistent with Phelps et al. (2007). Firms seek to position themselves to satisfy their corporate needs; specifically, financing, monitoring, and strategy requirements.

Our paper proceeds as follows. The next section presents the literature review and the development of our primary hypothesis. Section 3 describes our life-cycle and exchange listing measures. Section 4 shows the sample description. In section 5, we proceed to estimate empirically the corporate governance life-cycle and present our findings. Section 6 presents a series of robustness tests. The final section concludes.

2.   Literature review and hypothesis development

Firms' ultimate goal to maximize shareholders wealth is challenged by agents who may act in their self-interest rather than in the interest of shareholders as put by Jensen and Meckling (1976) and Jensen (1986). During the last decades, research in the field of corporate governance has acknowledged the main venues that attempt to mitigate the agency problem such as the board of directors, executive compensation, the market for corporate control, concentrated holdings and monitoring by financial institutions, among others (Boubaker et al., 2012). Therefore, corporate governance studies largely concentrate around the aforementioned areas of research in corporate governance. In an attempt to expand our knowledge about the agency problem, researchers have studied extensively the factors influencing the overall quality of corporate governance. Altogether, government-prediction studies have identified a number of factors commonly affecting governance quality. At the firm-level, some variables commonly considered relevant

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predictors of corporate governance are firm size, growth opportunities, external financing need, asset tangibility, and cross-listing status. Somewhat less frequent, researchers employ R&D expenses, exports, cash holdings, and ownership structure. Black et al. (2006) use one of the richest set of firm-level attributes by including firm risk, leverage, profitability, market share, capital expenditures, and advertising. Overall, this stream of research suggests that large, growing and riskier firms, with external financing needs and large cash positions have better corporate governance.

Although extant corporate governance studies have expanded our knowledge about factors influencing corporate governance quality, this line of research has remained silent on the dynamic nature of firms' corporate governance needs. Specifically, whereas the agency theory suggests that corporate governance functions are static and perform solely in a monitoring role of the owner-agent relationship, Filatotchev et al. (2006) proposes a dynamic role of corporate governance shifting across varying life-stages and accomplishing monitoring, resource, and strategy functions. In the latter view, firms can maximize shareholder wealth by adapting corporate governance to the varying needs of the organization, rather than maintaining static governance mechanisms. The value of corporate governance varies across different life-cycle stages rather than maintaining a uniform pattern (O'Connor and Byrne, 2015a). Consistent with this conclusion, Filatotchev et al. (2006) suggest there is a varying optimal level of corporate governance along the corporate life-cycle.[5] Filatotchev et al. (2006) note that monitoring, resource, and strategic needs inherent in each life-cycle entail specific corporate governance qualities. Wright et al. (2013) extend Filatotchev et al. (2006) life-cycle model adding financial and entrepreneurship firm characteristics. Even though the overall proposition seems intuitive, research on the life-cycle stage evolution of corporate governance is scant.

The relationship between corporate governance and the life-cycle proposed by Filatotchev et al. (2006) is supported by O'Connor and Byrne's (2015b) findings as the resource, strategy, and monitoring functions of corporate governance are relevant at different phases of the firm. In addition, Loderer et al. (2012) conclude that governance quality tends to deteriorate as firms age. Franks et al. (2012) analyse the evolution of family firms regarding their ownership structure after an IPO using a cross-section of

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[5] A number of authors have suggested different proxies for the corporate life-cycle. For example, Miller and Friesen (1984), Anthony and Ramesh (1992), DeAngelo et al. (2006), Filatotchev et al. (2006), Dickinson (2011), Faff et al. (2016) have developed some widely-accepted life-cycle stages.

countries. Similarly, Helwege et al. (2007) explore the ownership structure among U.S. firms as they mature after becoming public. Other researchers have examined the relationship between financial variables and the corporate life-cycle. DeAngelo et al. (2006) find that the propensity to pay dividends increases as the proportion of earned to contributed capital grows; hence, mature firms are more likely to pay dividends. Faff et al. (2016) find that investments and equity issuance decrease along the firm life-cycle, while debt issuance and cash holdings increase (decrease) in early (mature) stages of the firm life-cycle.

Whereas the presumption that organizations follow a uniform pattern according to the life-cycle is attractive, certain firm transformation may occur at different phases and the requirements regarding corporate governance may be more diverse for firms in the same phase than previously believed. As described by Miller and Friesen (1984), firms may go through phases in different sequence; for instance, firms may decide to boost innovation after a period of maturity whereas other mature firms enter the decline stage. Since strategic goals can vary substantially, the need for monitoring, resource, and strategic governance shifts, does not follow the same pattern relative to comparable mature firms. Phelps et al. (2007) develop a multidimensional model of firm states where crises or issues can occur at different points during the life of the firm; suggesting this model is more consistent with the modern dynamic competitive environment than the view of a fixed sequence of life-cycles. Consistent with this view, Banyi and Kahle (2014) use the propensity to pay dividends to show that the life-cycle approach (using the earned/contributed capital ratio) does not explain payout policy universally as it depends on unique factors, such as the IPO year, firm age, and economic variables (such as the 2003 dividend tax cut). Hence, financial variables are not necessarily dependent on the firm life-cycle. Corporate governance objectives regarding monitoring, resource, and strategy may vary by specific firm condition at any point in time rather than by a specific life-cycle phase. In this situation, a cross-sectional comparison becomes potentially unfeasible as there may not be a common corporate life-cycle (Miller and Friesen, 1984).

In this paper, we hypothesize that firm pursue an optimum degree of corporate governance based on their unique corporate needs, namely monitoring, resource, and strategy, independently of the previously believed corporate governance life-cycle requirements. Specifically, we posit that a better predictor of corporate governance is firm self-selection to being regulated more strictly; comparable to the bonding

hypothesis (Doidge et al., 2004).[6] Firms in need of external capital will become more transparent and signal this improvement by listing in a stricter stock exchange.[7] To bond using a stock exchange listing, firms can either cross-list abroad on the stock exchange of a country with more stringent listing and regulatory requirements, the US for example, and/or choose to remain at home but migrate to a listing level on a local stock exchange, whose governance requirements are just as onerous as those required of firms listing abroad.[8] Examples of local stock exchanges which offers bonding benefits are Brazil and the listing levels on Bovespa, the now defunct Neuer Market in Germany, and KOSDAQ (versus KSE) in Korea, which merged to form Korea Exchange in 2005.[9] In this paper, we test whether the corporate life-cycle has an impact on corporate governance, as indicated by Filatotchev et al. (2006), using data on Brazilian firms from Black et al. (2014). In addition, we analyse whether firms self-select into stricter regulation independently of the life-cycle predictions by adopting an exchange listing level that fits the governance needs of the organization, consistent with the conjectures of Phelps et al. (2007). To our knowledge, this is the first paper testing a comparable research question.

We study firms in a unique country, Brazil, as it has a stock exchange that offers four different listing levels that are more likely to match the specific needs of each firm attempting to list in the domestic stock market.[10] As a response to the financial crisis in the late 1990's, Brazil attempted to improve corporate regulation and governance by creating new listing options for domestic firms, namely, Novo Mercado, Level 1, and Level 2, with different regulation requirements. Also, because Brazilian corporate regulation

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[6] The bonding hypothesis says that firms can commit to limit expropriation of minority shareholder by voluntarily adopting more stringent legal and regulatory requirements (Coffee, 1999, 2002). Goergen and Renneboog (2008) refer to any instance in which firms voluntarily enhance their corporate governance as "contractual corporate governance". In support of the bonding hypothesis and the view that firms opt-in and opt-out of governance depending on firm prospects, Foley et al. (2018) show that cross-listing firms with large growth opportunities are less likely to opt-out of exchange listing rules. Level 1 firms opt-in to better governance by voluntarily disclosing more (Kristian-Hope et al., 2013).

[7] The vast majority of international firms' cross-list in the U.S. using ADR programs. There are four ADR programs: unlisted Level 1 and Rule 144a, and stock exchange listed Level 2 and 3. Levels 3 and Rule 144a permit firms to raise new capital in the U.S: Level 3 through public offerings, Rule 144a through private placements. The governance requirements of firms are largest for Level 2 and 3 programs. Consequently, for firms cross-listing as Level 2/3 ADRS, controlling shareholders must trade-off the costs of relinquishing private benefits of control against the benefit of exercising growth opportunities (see Doidge et al., 2004; 2009).

[8] For example, the corporate governance requirements for Level 2 and Novo Mercado premium listings in Brazil are more onerous than those required of firms cross-listing in the United States.

[9] Siegel (2009) suggests that bonding can be achieved using cross-border strategic alliances. Ribstein (2002) discusses alternative bonding methods. Bonding relaxes firm-level financing constraints. Reese and Weisbach (20002) and Lins et al. (2005) shows that cross-listing firms issue more capital at home and abroad after they cross-list. Boubakri et al. (2010) show that it is capital raising Level 3 and Rule 144a firms which have the largest growth opportunities.

[10] An alternative approach to answer this research question would be to use international cross-listings in place of domestic listing levels. To the best of our knowledge, we are not aware of any research which explores the governance life-cycle of internationally cross-listed firms.

offers little shareholder protection, the Brazilian stock exchange is a viable alternative for firms that prefer to differentiate themselves or signal better protection to minority shareholders. The optional stricter governance rules in the Bovespa stock exchange go beyond the legal minimums and have become increasingly popular among domestic firms (Black et al., 2010). Overall, Brazil is a particularly good case to test our research question.[11]

3.   Life-cycle proxies and stock exchange listing levels

In this paper we explore whether differences in corporate governance practices exist across (a) the firm life-cycle, and (b) stock exchange listing levels. In this section, we describe our life-cycle measures and the different listing levels which exist for firms wishing to list on the Bovespa Stock Exchange.

Life-cycle proxies

There are many life-cycle proxies proposed in the extant literature. We use three life-cycle proxies because recent work suggests that different life-cycle proxies can conflict with one another (Von Eije and Megginson, 2008; and Banyi and Kahle, 2014).[12] First, we use the life-cycle measure of Anthony and Ramesh (1992, AR hereafter). It is a composite indicator based on four life-cycle descriptors, namely dividends[13], capital expenditures, one-year sales growth, and the age of the firm.[14] It is assumed that all four variables are monotonically related to firm maturity; increasing for dividends and firm age, and decreasing for sales growth and capital expenditures. Based on this indicator, firms are classified into one of four life-cycle stages; namely birth-stage, growth-stage, mature-stage, and decline-stage. Their approach is

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[11] Black et al. (2014) track the evolution of corporate governance in Brazil between 2004 and 2009. They find that corporate governance has improved after the creation of the Novo Mercado and, in turn, this has also increased firm value.

[12] DeAngelo et al. (2006) use the ratio of retained to total equity (RE/TE) as a proxy for firm life-cycle. We do not use RE/TE because we do not have access to it. Flavin and O'Connor (2017) test the life-cycle model of dividends in Korea using RE/TE, Dickinson (2011), and MLDA as life-cycle measures, and find that the life-cycle measures do not conflict with one another.

[13] Mandatory dividend rules apply in Brazil. In 1976 legislation decreed that profitable public firms pay dividends to the value of at least 25% of their annual income. However, new dividend rules passed in 2001 ("Nova Lei das S.A.") allowed public firms to pay dividends worth less than 25% of earnings. Because of mandatory dividend rules, we create a modified AR (1992) life-cycle measure, excluding dividends. Our main findings remain the same when we exclude dividend payout.

[14] Dividends is common dividends scaled by book assets. We use dividends-to-assets in place of dividends-to-income to keep our sample size as large as possible. Using dividends-to-income reduces our sample size because some firms have negative income. Capital expenditures is capital expenditures scaled by firm value. Sales growth is one-year sales growth, and firm age is current year less the listing year of the firm.

implemented as follows. First, calculate the value of each life-cycle descriptor annually for each firm. Second calculate the average value of each descriptor for each firm-year using the current year and the previous two years. Third, based on these averages, split the descriptors into quartiles for each industry and group the firms by life-cycle stage. A firm in quartile i is assigned a score of i for each life-cycle descriptor. The fourth step involves tallying the scores for each firm-year and then observations are once again split into quartiles. Finally, firm-years are categorized into one of the four life-cycle classifications based on the cut-off points of these quartiles. Since firms are assigned to a life-cycle stage annually, firms can and do gravitate across life-cycle stages over the sample period.

Second, we use the life-cycle proxy of Dickinson (2011). It classifies firms into one of five life-cycle stages, namely introduction-stage (birth), growth-stage, mature-stage, shake-out-stage and decline-stage based on the combined signs of net cash flows from operating, financing, and investing activities. Net cash flows can be positive or negative, resulting in eight possible cash flow combinations.[15] For example, firms in the mature stage invest more than they divest (net cash flows from investing activities is negative), generate more cash internally on operating activities than they spend (net cash flows from operating activities are positive), which permits mature firms to finance more of their activities using internally generated funds (net cash flow from financing activities is negative). In our empirical application, we follow Faff et al. (2016) in combining the shake-out and decline stages, resulting in four life-cycle stages.

Third, we use the multiclass linear discriminant analysis (MLDA) of Faff et al. (2016), to classify firms into one of four life-cycle stages. This approach initially follows Dickinson (2011) to allocate firms to a life-cycle stage but then refines the classification by performing linear discriminant analysis, such as:

$$\text{Group}_i = \alpha_0 + \alpha_1 \text{AGE}_i + \alpha_2 \text{PROFIT}_i + \alpha_3 \text{SGrowth}_i + \varepsilon_i$$

Where age is firm age, PROFIT is return on assets (EBIT/Assets), and SGrowth is one-year sales growth.[16] Using these variables, MLDA provides maximum separation between the groups. The MLDA overcomes

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[15] The eight cash flow combinations are as follows. NCF is net cash flow.

Dickinson (2011) life-cycle measure:								
Net cash flow and predicted sign:	Intro	Growth	Mature	Shake-out			Decline	
NCF from operating activities	-	+	+	-	+	+	-	-
NCF from investing activities	-	-	-	-	+	+	+	+
NCF from financing activities	+	+	-	-	+	-	+	-

[16] In unreported analysis, we find that our main conclusions are not sensitive to alternative MLDA specifications e.g., including firm size as a life-cycle predictor. Also, because firm age, profitability, and growth are used as life-

some of the problems inherent in the Dickinson (2011) approach and hence is expected to yield a more accurate method of allocating firms to a life-cycle stage.[17] MLDA is our preferred life-cycle indicator and is our main reference point.

Bovespa Listing Levels

There is four stock exchange listing levels on Bovespa (Brazil/Sao Paolo Stock Exchange). These are a Regular listing, Level 1, Level 2, and a premium or Novo Mercado listing. Level 1, Level 2, and Novo Mercado premium listings were established in 2001. Corporate governance standards differ by listing type. A Novo Mercado listing has the highest standards of governance, while a regular listing has minimal listing requirements. Each of these stock exchange listing levels are available to firms coming to the market for the first time via an IPO, or already-listed firms can self-select to abide by higher listing standards by migrating across listing levels.[18] Appendix 1 summarizes the main listing requirements for each listing level. Compared to a Regular listing, a Level 1, Level 2, and Novo Mercado listing requires firms to adhere to a suite of governance features. The demands of firms listing as either a Level 2 or Novo Mercado are largely the same: the difference is that Novo Mercado lists are not allowed to use preferred shares. Level 1 firms voluntarily adopt many of the mandatory Level 2/Novo Mercado disclosure requirements. Where these listing levels differ is in terms of shareholder rights (see row labelled "Corporate rules").

4. **Sample description**

Our sample is 116 Brazilian firms. Corporate governance scores are provided by Black et al. (2014) in the years 2004, 2006, and 2009. Black et al. (2014) calculate their corporate governance index as a simple weighted-average of six corporate governance attributes. These are board structure, board procedures, shareholder rights, disclosure, related party transactions, and ownership, which between them provide 41 individual corporate governance attributes in total. Corporate governance scores range from a low of zero

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cycle predictors, we exclude these individual firm-level measures from all governance regressions which use MLDA as a life-cycle indicator.

[17] Faff et al. (2016, pp. 98) provide a number of arguments as to why MLDA is a superior life-cycle classification system.

[18] Interestingly, over the period of our analysis, just two firms migrate to a stricter premium listing. Our analysis begins in 2004, three years after the introduction of the premium listing levels. De Carvalho and Pennacchi (2012) explore the benefits for firms who migrate to Bovespa premium listings. The majority of their sample of 42 migrations migrate prior to 2004.

to a high of 100. In appendix 2 we present the main Brazilian corporate governance index. Governance features which are required of a Level 2/Novo Mercado listing are denoted with an asterisk. The Brazilian corporate governance index captures the mandatory disclosure, shareholder rights, and ownership features required of a Level 2/Novo Mercado listing. The remaining governance features (board structure, board procedure, and related party transactions) are not a mandatory requirement of a Level 2/Novo Mercado listing, but can be voluntarily adopted by firms if they so wish.[19]

Table 1 shows the distribution of firms by year, listing type, and life-cycle, respectively. About 42% of the 116 firms are observed in multiple periods. Novo Mercado is the most popular Bovespa listing type with 73 firm/year observations, followed by a Regular listing (66), a Level 1 (32), and a Level 2 (9) (see Panel A, Table 1). Using MLDA life-cycle, we find that mature-stage and growth-stage are the most common life-cycle stages with 64 and 55 firm-year observations, respectively (see Panel B, Table 1). Regardless of life-cycle measure, the majority of firms remain in one life-cycle stage throughout the sample period (see Panel C, Table 1). Panel D compares life-cycle measures using MLDA life-cycle as the reference life-cycle measure. As expected, MLDA more closely resembles Dickinson (2011). Firm-years classified as either growth-stage, mature-stage, or shake-out/decline-stage by MLDA and AR (1992) bear little similarity. The majority of firms in the birth-stage choose to register in the least rigorous Regular listing, regardless of the life-cycle proxy used (see Panel E, Table 1). Similarly, on average, roughly 40% of firms in the growth- and mature-stages opt for Novo Mercado. These findings are consistent with the bonding hypothesis which says growth firms voluntarily choose to adhere to stricter listing requirements in order to reduce the cost of raising external capital (Coffee 1999, 2002).[20] De Carvalho and Pennacchi (2012) find that premium listings in Brazil deliver bonding benefits for firms but at lower cost when compared to an international cross-listing in the U.S.

[Insert Table 1 about here]

In Table 2, we describe firms by life-cycle stage and stock exchange listing level using a number of financial characteristics. Smaller firms tend to be classified within the birth-stage, however, beyond that

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[19] Black et al. (2014) show that it is only governance elements required of a L2/NM listing which are related to firm value. Chhaochharia and Laeven (2009) show that it only firms which voluntarily choose to adopt governance provisions beyond minimally accepted governance in a country that are worth more.
[20] See Benos and Weisbach (2004), Ferris et al. (2009), Karolyi (2012), and O'Connor and Phylaktis (2013) for comprehensive reviews of the legal bonding hypothesis.

cycle, there is not a clear size effect. As expected, mature-stage firms have more operating cash flows and less need for financing than firms in any other life-cycle stage. On average, mature-stage firms are more profitable, and consistent with the life-cycle model of dividends, tend to pay the largest dividends. Yet, firms in the decline-stage generate the most cash from their investments and have more cash holdings. Firms in the growth-stage appear to be the riskiest, using the volatility of stock prices as a proxy. The bottom rows compare Regular/Level 1 (hereafter Reg/L1) to Level 2/Novo Mercado (hereafter L2/NM) listing. The latter group of firms are larger, more profitable, pay larger dividends, but are riskier.

In Table 3 we summarize our measures of corporate governance. Also, we present the correlations between our corporate governance and firm-life cycle measures. Average governance is 60.67 with a standard deviation of 14.05, and a range of 70. Brazilian firms tend to perform better in disclosure quality (78.38) and worst in shareholder rights (49.68) and board structure (51.11). As expected, the aggregate measure of corporate governance has a statistically significant correlation with each of the components of corporate governance. In addition, each independent corporate governance attribute has a statistically significant correlation with each other, except related party transactions, which has no significant correlation with the remaining attributes. Whereas the three proxies of life-cycle stage are significantly correlated with each other, only the MLDA proxy has a significant positive correlation (at a 5% level) with the aggregate measure of corporate governance. In addition, the MLDA life-cycle proxy has a statistically significant correlation with board procedure and disclosure quality.

[Insert Table 2 and Table 3 about here]

Table 4 reports the distribution of corporate governance quality scores by life-cycle category. Using our main proxy for life cycle stage (MLDA), firms in the growth-stage appear to have the strongest overall corporate governance score (65.07), albeit in close proximity to the corporate governance of mature firms (62.29). Growth-stage and mature-stage firms score highly in terms of board structure, board procedure, shareholder rights, and disclosure. Firms in the birth-stage have the weakest average overall corporate governance score (53.57). The notion that firms provide fuller disclosures, enhance shareholder protection, and alter board structure (e.g. use more outsiders on the board), as they mature, is consistent with the views presented in Filatotchev et al. (2006). However, the relationship between life-cycle and corporate governance score is less clear in the alternative life-cycle proxies, and differences in governance practices across life-cycle stages are economically small.

[Insert Table 4 about here]

Table 5 shows that more stringent listings positively impact corporate governance quality; stricter listing requirements are associated with better board structures and procedures, more favorable shareholder rights, and better disclosure quality. To a lesser degree, listing level also appears to have a positive influence on ownership structure; yet, this relationship does not appear to be linear (see Panel A, Table 5). Panel B of Table 5 presents the relationship between listing level and corporate governance across life-cycle stages. The link between listing level and corporate governance quality described above remains, and is clearly evident in all four life-cycle stages (see row labelled "Max range across listing levels"). However, the life-cycle does not seem to have a clear connection with corporate governance quality once we add the listing level; this holds for all three life-cycle proxies (see columns labelled "Max life-cycle range within listing level").

In summary, firms listed in a stricter exchange level have, on average, better corporate governance relative to less strict exchange levels. This difference is statistically significant at the 1% level in all but one life-cycle category. Regardless of the life-cycle proxy used, there is not a significant life-cycle effect on corporate governance. However, there is a clear listing-level effect, even after adjusting for life-cycle.

[Insert Table 5 about here]

5.   Regression analysis and results

We proceed to multivariate analyses and employ pooled OLS regressions as follows:

$$\text{Gov}_{it} = \alpha + \beta \text{L2/NM}_{it} + \delta_1 \text{Growth} - \text{stage}_{it} + \delta_2 \text{Mature} - \text{stage}_{it} + \delta_3 \text{SO/Decline} - \text{stage}_{it}$$
$$+ \eta \text{Controls}_{it} + \text{Year}_t + \text{Industry}_i + e_{it} \qquad (1)$$

Where the dependent variable is firms' corporate governance (Gov) quality score.[21] Like Black et al. (2014) we group Regular and Level 1 lists (Reg/L1), and Level 2 and Novo Mercado list (L2/NM) together, respectively, to create two listing groups. Our main variables of interest are the L2/NM indicator (Reg/L1 is the reference class) and the firm life-cycle indicator variables (Birth-stage firms are the reference group). Controls is a vector of firm-specific regressors described in Appendix 3. Specifically, we control for other potential determinants of firm-level governance, namely firm size, cross-listing status, cash holdings,

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[21] Loderer et al. (2012) standardize corporate governance annually by industry mean and standard deviation. Our results do not change when we run our tests using the same approach.

asset tangibility, growth opportunities, leverage, and risk, which all have been included in related studies (Klapper and Love, 2004; Durnev and Kim, 2005; Doidge et al., 2007; Black et al., 2006). Financial data is from Thomson Reuters Worldscope. Information on cross-listings in the United States by firms from Brazil is sourced from the Bank of New York-Mellon (www.adrbnymellon.com), Citibank (wwss.citissb.com/adr), JP Morgan (www.adr.com), the New York Stock Exchange (www.nyse.com), and NASDAQ (www.nasdaq.com). Because firms cross-delist and migrate across cross-listing types, we consult the historical record to ensure that we classify firms according to their correct cross-listing status in 2004, 2007, and 2009. Because the number of cross-listed firms is small, we group all firms together rather than differentiate by listing type. We add controls for industry and time effects. The standard errors are clustered by firm following Petersen (2009).

Table 6 depicts the results of pooled OLS regressions expressed in Equation (1). The listing level (L2/NM) has a positive effect on corporate governance quality which is significant at the 1% level, whereas the life-cycle does not have a statistically significant influence on corporate governance. This is consistent with the univariate tests shown in Table 5 above. The listing-level dummy variable (L2/NM) is positive and significant, indicating that corporate governance quality is higher for L2/NM firms relative to Reg/L1 listings. The average estimated coefficient for L2/NM is 12.57, which implies a governance premium of 23.89% for L2/NM firms (i.e., (12.57/52.61)*100). Both da Silveira et al. (2010) and Black et al. (2014) show that L2/NM firms are better-governed than Reg/L1 firms. Conversely, the coefficients for the life-cycle variables are not statistically different from zero, except in two instances: using Dickinson (2011), mature-stage firms are better-governed than birth-stage firms. Using AR (1992), mature-stage firms are better-governed than growth-stage firms. In both instances, the differences in corporate governance across life-cycle stages are economically much smaller than the differences in governance across listing-levels. For example, mature-stage governance is just 7.9% higher than birth-stage governance (i.e. (4.55/56.97)*100).

Altogether, the results suggest that there is a significant bonding effect but a much less pronounced life-cycle effect in the corporate governance practices of listed Brazilian firms. Further, there is evidence to support a size effect; larger firms have better quality corporate governance given the positive and statistically

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significant coefficient of firm size. With the exception of firm risk (using Dickinson (2011)), none of the other firm-level attributes are statistically significant determinants of corporate governance quality.[22]

Panel B of Table 6 portrays the results of similar models as above in Panel A, where the dependent variable is each single component of corporate governance. Life-cycle variables have few statistically significant effects in any of the corporate governance characteristics; with the exception of board procedure, corporate governance quality does not differ across life-cycle stages. In stark contrast, the listing level has a statistically significant effect (at the 1% level) on shareholder rights, disclosure quality, and ownership structure. Differences in corporate governance across listing-levels also exhibit sizable economic significance. For example, differences in shareholder rights, disclosure, and ownership between Reg/L1 and L2/NM firms imply governance premiums for L2/NM firms in the region of 127%, 31%, and 33%, respectively. Differences in shareholder rights, disclosure, and ownership scores between Reg/L1 and L2/NM firms are to be expected since it is along these dimensions that governance is mandated to be stronger for L2/NM firms (see Appendix 1 and 2).[23] However, a L2/NM listing does not have a significant effect on the remaining three components of governance.[24] The results support the hypothesis that listing level is a relevant predictor of corporate governance, albeit the effect is not uniform across all corporate governance features, due to the specific exchange requirements across listing levels.

[Insert Table 6 about here]

Table 7 Panel A presents the results of our previous models based on subsamples by listing level.[25] With a single exception, there are no differences in corporate governance quality across life-cycle stages. The sole exception is L2/NM firms where we find that growth-stage firms are better governed than firms in the shake-out/decline stage. There are no differences in corporate governance between growth- and

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[22] Da Silveira et al. (2010) also study the determinants of Brazilian corporate governance quality over the period from 1998-2004. In their analysis, it is only L2/NM indicator dummy, a Level 2/3 cross-listing in the United States indicator dummy, and the percentage of voting to total shares, which are statistically significant determinants of differences in corporate governance practices across firms. They do not find that the relationship between corporate governance and firm size is statistically significant.

[23] Black et al. (2012) show that lower level listings very often voluntarily adopt higher level listing governance standards. This suggests that actual differences in governance between Reg/L1 and L2/NM firms is less than the differences implied by the stock exchange listing requirements per se.

[24] Compared to Reg/L1, L2/NM firms are not mandated by law to practice better board structure and procedure and related party transaction governance. Also, Black et al. (2014) show that corporate governance improvements in Brazil over the sample period were largely attributable to improvements in the board structure and board procedure practices of Reg/L1 firms. For L2/NM firms, corporate governance quality remained high over the sample period but changed little.

[25] A caveat is in order when examining the findings from Tables 7-10. These tables suggest a distinct listing effect, but no such life-cycle effect. However, the number of firm-year observations in each of these regressions is low.

mature-stage firms. In Panel B, we test a similar model where the dependent variable is each individual corporate governance attribute. Within listing levels, and with some exceptions, corporate governance practices across firms are broadly similar, regardless of firms' life-cycle stage. The exceptions, some of which we find difficult to explain, involve firms in the shake-out/decline stage. For example, Table 7 shows that Reg/L1 firms in the shake-out/decline stage score more highly in terms of board procedure, and L2/NM firms in the shake-out/decline stage provide fuller disclosures. Compared to mature-stage firms, L2/NM growth-stage firms score more highly in terms of RPT and ownership structure. The difference in RPT between growth- and mature-stage firms is positive (17.28) and economically significant (27.89% of average RPT for L2/NM firms).

Similar to Table 7, in Table 8, we run similar models but using subsamples by MLDA life-cycle category. Our main variable of interest is the estimated coefficient on the L2/NM dummy indicator. In Panel A, this indicator variable is positive, statistically and economically significant across all three life-cycle stages.[26] Regardless of life-cycle stage, L2/NM firms are better-governed than Reg/L1 firms. In Panel B, we switch the dependent variable to each corporate governance attribute. Listing level is able to explain corporate governance attributes: shareholder rights, disclosure quality and ownership structure, similar to the overall sample results (in Table 6). The coefficients of the listing-level variable is positive in all cases where it is statistically significant, suggesting that firms that list at a stricter level (L2/NM), relative to Reg/L1, enhance corporate governance quality through shareholder rights, disclosure requirements, and ownership structure.[27] As before (see Table 6), there are no differences in board structure, board procedure, and related-party transactions across Bovespa listing levels.

[Insert Table 7 and Table 8 about here]

In Table 9 Panel A, we evaluate the effect of listing level on corporate governance index elements required for a L2/NM premium listing (BCGI-L2NM) and, alternatively, on a corporate governance index using governance elements not required for a Level 2/NM premium listing (BCGI-NON-L2NM).[28] Based on earlier findings, we expect to find that differences in governance between L2/NM and Reg/L1 firms

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[26] In these tests we do not include shake-out/decline stage firms because there are few observations.

[27] The results for disclosure and shareholder are not surprising because a L2/NM listing requires firms to satisfy stringent disclosure requirements and provide protections to shareholders (see Appendix 1).

[28] We follow Black et al. (2014) and exclude from the construction of BCGI-L2NM and BCGI-NON-L2NM, two ownership structure elements which are required of a Novo Mercado listing but not a Level 2 listing.

are due to differences in governance elements required of a L2/NM listing. This is what we find. Specifically, we observe that listing level has a statistically significant impact on the corporate governance attributes when they are part of the listing requirements. The estimated coefficients are large, and much larger than we observed earlier (see Tables 6 and 8). Specifically, the estimated coefficient for L2/NM implies that Reg/L1 adopt just over half of the mandated L2/NM listing requirements. In Panel B, the dependent variables are non-Level 2/NM indexes for each of the individual corporate governance sub-indexes. As expected, the effect of listing level is weak on corporate governance attributes not related to listing requirements for L2/NM. In fact, the listing level variable has a positive and statistically significant effect only on disclosure quality (DIS-NON-L2NM). Taking Panels A and B together, differences in corporate governance quality between Reg/L1 and L2/NM firms come about because the latter score more highly in terms of the governance elements required of a L2/NM listing.[29] Reg/L1 and L2/NM firms are broadly similar when comparisons are made using governance elements not required of a L2/NM listing.

[Insert Table 9 about here]

In Table 10, we employ an alternative measure of life cycle, namely firm age. Firm age is measured as current year less the year in which a firms goes public and is in log form. Banyi and Kahle (2014) suggest that firm age can serve as an (imperfect) measure of firm maturity. Filatotchev et al. (2006) suggest that it is the time since a firm becomes a public which is a key influencer over corporate governance practices. In Panel A, we test whether firm age has an effect on corporate governance and on each of its attributes using the full sample. Firm age does not have a statistically significant effect on overall corporate governance or its individual components, except for a positive effect on board structure. Also, when we replace the MLDA lifecycle with firm age, the estimated coefficients for the L2/NM dummy remain positive and statistically significant for overall governance, shareholder rights, disclosure, and ownership.

In Panel B, we test the same model using subsamples by listing level. Whereas firm age does not have a statistically significant impact (except in one case, ownership structure) on corporate governance using the Reg/L1 subsample, it has a positive effect (sig. at the 1% level) on aggregate corporate governance and two attributes (board structure and disclosure) in the Level 2/NM subsample. This result suggests that

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[29] Black et al. (2014) show that Reg/L1 firms voluntarily adopt many of the governance provisions required of L2/NM firms, but adopt few non-L2/NM requirements. In Appendix 1, governance attributes mandatory for Level 2 and L2/NM are indicated with a *.

firm age becomes relevant only when firms have already signalled to the market that they are listing at a stricter exchange, hence the improvement in corporate governance is conditional on a stricter exchange listing level. Mature firms tend to be better governed than younger firms only if listed in the strictest stock exchanges. Lastly, in Panel C, we create subsamples by firm life-cycle category. Firm age does not have a statistically significant effect on corporate governance, even when the dependent variables are corporate governance attributes: it is only weakly significant in one of the 18 models (board structure for mature-stage firms). In contrast, the L2/NM dummy is significant in 10 of the 18 models.

In summary, Table 10 confirms that life-cycle is not a strong predictor of corporate governance. However, when firms are listed at the most stringent stock exchanges, firm age is positively correlated with better corporate governance. These findings contrast notably with those of Loderer et al. (2012). Using a sample of firms in the United States, they find that overall corporate governance quality deteriorates as firms' age. Finally, firm listing levels are again shown to be a better corporate governance predictor.

[Insert Table 10 about here]

6.   Robustness tests

As a robustness check, in Table 11, we introduce alternative samples from emerging markets. Specifically, we employ South Korean and Indian firms to compare the impact of firm life-cycle on corporate governance relative to our results on the sample of Brazilian firms.[30] We observe 497 firms in South Korea from 1998 to 2004, resulting in a total of 2,185 firm-year observations. In India, corporate governance is measured in 2005, 2007, and 2011 for 307 firms in total.[31] Life-cycle is proxied using MLDA. Mature-stage firms are most prevalent in Korea, while the number of firm-year observations is evenly distributed in the introduction, mature, and shake-out/decline life-cycle stages in India.[32] Firm-level controls, industry and time fixed effects are included in all regressions but not reported.[33]

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[30] Prior to the establishment of the Korea Exchange in 2005, Korean firms could list on one of two stock exchanges, namely the Korean Stock Exchange (KSE) and the Korea Securities Dealers Automated Quotation System (KOSDAQ), which differ in terms of their listing requirements. In Table 12 our focus is on exploring the governance life-cycle in Korea. Hence, we do not differentiate firms by stock exchange listing type. Dewenter et al. (2005) differentiate Korean firms by stock exchange choice and show that firms listed on KOSDAQ (where delisting requirements were more onerous than on KSE) were worth more than KSE firms.
[31] Corporate governance scores in Korea and India are compiled by Black et al. (2014). We thank them for kindly providing us with this data. Corporate governance indexes for both countries are presented in appendix 4.
[32] Appendix 5 summarizes corporate governance practices in Korea and India.
[33] We follow Black et al. (2006) and include the following controls; business group (Chaebol) indicator (for Korean sample only), cross-listing indicator, size, and a size-indicator for large firms (for Korean sample only), advertising (to sales), average (two-year) profitability, one-year sales growth, average (two-year) external financing dependence,

In Panel A, we observe a negative impact of growth and mature life-cycle stages on the quality of corporate governance of South Korean firms, albeit those coefficients are marginally significant (at the 10% level). When we test individual corporate governance attributes, we find that life-cycle stages have an effect (statistically significant in 40% of the cases) on board structure and procedure, shareholder rights, and ownership structure; interestingly, the coefficients are mostly negative except for one positive and significant coefficient. Even where statistically significant governance differences exist across life-cycle stages, the economic significance of these differences are small. For example, the difference in overall governance between mature-stage and shake-out/decline-stage firms is small (1.578) or just 4.6% of average governance. Large percentage differences in individual governance attributes exists but only when individual governance scores are already low (see for example, board structure). These results question whether there is a clear direction on the impact of life-cycle on the corporate governance of South Korean firms.

In Panel B, we run similar tests on a sample of Indian firms. The results are consistent with our main results from a sample of Brazilian firms as life-cycle proxies only have one statistically significant coefficient in one of the corporate governance components (related party transactions). Overall the results from Panels A and Panel B support the idea that life-cycle proxies are not a reliable predictor of the quality of corporate governance, similar to the results using a sample of Brazilian firms. The results of our paper are not unique to the Brazilian stock exchanges.

[Insert Table 11 about here]

Lastly, to test whether corporate life-cycle proxies are indeed a robust measure of the life-cycle stage, Table 12 shows the relationship between corporate life-cycle and corporate policies (dividends to sales, cash holdings (measured as cash to book assets), and net cash flows from investment) for Brazilian, South Korean, and Indian firms. Even after including relevant control variables, we find that firm-life cycle is able to predict corporate policies, particularly, dividend policy among firms from all countries.[34] To a

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export (to sales), leverage (natural log of debt to equity), capital expenditures (to sales), firm risk, property plant and equipment (to sales), and market share.

[34] Flavin and O'Connor (2017) tests the life-cycle model of dividends in South Korea and show that mature firms pay the largest dividends of all firms. Faff et al. (2016) show that investment expenditure (change in cash) decreases (increases) as firm mature.

lesser extent, firm life-cycle predicts cash holdings and net investment. Overall, our robustness tests validate our measure of the corporate life-cycle.

[Insert Table 12 about here]

7.   **Concluding remarks**

Filatotchev et al. (2006) propose three main corporate governance objectives (monitoring, resource, and strategic goals) that may follow a structured pattern along the corporate life-cycle. Other authors suggest, however, that corporate governance objectives vary independently of predetermined life-cycle stages; hence corporate goals do not follow a universal life-cycle pattern (Miller and Friesen, 1984; Phelps et al., 2007). This stream of literature suggests that corporate governance may vary by specific firm conditions at any point in time rather than based on a life-cycle phase.

In this paper, we posit that firms signal to the markets improvements in corporate governance by self-selecting into a more stringent listing level; comparable to the bonding hypothesis (Doidge et al., 2004). The listing level decision is a better predictor of corporate governance quality relative to the corporate life-cycle explanation. Firms signal changes in corporate governance objectives by listing at a given degree of regulation scrutiny that fits the governance needs of the organization, consistent with the conjectures of Phelps et al. (2007). For example, firms in need for external capital become more transparent and signal this improvement by listing in a stricter exchange. We find that the listing level is a better predictor of corporate governance than the life-cycle approach, regardless of the life-cycle proxy employed. Overall, stricter listing levels are associated with higher corporate governance quality whereas the life-cycle does not impact corporate governance. The listing level is a better predictor of the strength of disclosure, shareholder rights, and board structure. It appears that firms determine the degree of regulation that matches the specific requirements at any point during their life-cycle.

Our paper is relevant for market regulators as they can assess the outcomes of exchange listings requirements and create related policy and market guidelines that further enhance the corporate governance of listed firms. Similarly, portfolio managers can evaluate corporate governance objectives and their implication on portfolio diversification. In addition, investors can consider the exchange listing requirements as an important proxy for the quality of board structure, shareholder protection, disclosure requirements, and ownership structure.

Due to potential limitation of the model specification, we do not necessarily reject the notion that the life-cycle is irrelevant in emerging markets, however, we conclude that listing requirements and enforcement appears to be better predictors of corporate governance. In other words, firms self-select to comply with regulation, hence, it results in stronger corporate governance than the universal concept of the evolution of the firm. We observe that the decision to list at a given level depends on the needs to improve access to financing, monitoring, and strategy. In this line, Hugill and Siegel (2012) find that once controlling for country-level regulation and enforcement, the amount of investment opportunities, the need for external financing, and concentration of cash flow ownership rights are the strongest firm-level predictors of corporate governance. These results are consistent with the need for monitoring and financing requirements, but not necessarily related to the life cycle.

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Table 1: Sample description

This table summarizes our sample of 116 firms from Brazil observed in the years 2004, 2006, and 2009. Panel A reports the number of observations by firm, the number of observations by year, and the number of observations by Bovespa listing level. Panel B reports the number of firm-year observations in each life-cycle stage. Life-cycle is measured using Anthony and Ramesh (AR, 1992), Dickinson (2011), and Multiclass Linear Discriminant Analysis (MLDA). Panel B reports the number of firm-year observations in each life-cycle stage. Both Anthony and Ramesh (AR) and Dickinson (2011) life-cycle approaches groups firm-years into one of four life-cycle stages, namely introduction, growth, maturity, and shake-out/decline. Panel C reports whether firms belong in one or multiple life-cycle stages over the sample period. Panel D reports the percentage of firms that are in the same life-cycle stage according to MLDA and Dickinson (2011), and MLDA and AR (1992), respectively. Panel E reports the proportion of firm-year observations in each Bovespa listing level together with the number of life-cycle firm-years in each listing level. L2/NM is a combination of Level 2 and Novo Mercado listing types.

Panel A: Number of observations by firm, year, and Bovespa listing level

Observations by firm		Observations by year		Bovespa listing type	
One	67	2004	43	Regular	66
Two	34	2006	62	Level 1	32
Three	15	2009	75	Level 2	9
	116		180	Novo Mercado	73

Panel B: Number of firm-years in each life-cycle stage

Anthony and Ramesh (1992)		Dickinson (2011)		MLDA	
Birth	66	Birth	23	Birth	44
Growth	43	Growth	50	Growth	55
Mature	33	Mature	69	Mature	64
Decline	38	Shake-out/decline	14	Shake-out/decline	17
	180		156		180

Panel C: Number of firms and number of life-cycle stages

Anthony and Ramesh (1992)		Dickinson (2011)		MLDA	
1 Stage	87	1 Stage	80	1 Stage	87
2 Stages	26	2 Stages	22	2 Stages	28
3 Stages	3	3 Stages	2	3 Stages	1
	116		104		116

Panel D: Comparing life-cycle measures

	MLDA life-cycle			
	Birth	Growth	Mature	Shake-out/decline
Dickinson (2011)	52.17	42.00	55.07	14.29
Anthony and Ramesh (1992)	52.27	23.64	18.75	11.76

Panel E: Proportion of firm-year observations in each life-cycle stage by Bovespa listing level

	# Obs	Birth	Growth	Mature	Decline
Anthony and Ramesh (1992):					
Regular	66	0.39	0.21	0.23	0.17
Level 1	32	0.13	0.25	0.22	0.41
L2/NM	82	0.44	0.26	0.13	0.17
Dickinson (2011):					
Regular	46	0.17	0.30	0.41	0.11
Level 1	30	0.10	0.33	0.57	0.00
L2/NM	80	0.15	0.33	0.41	0.11
MLDA:					
Regular	66	0.41	0.20	0.29	0.11
Level 1	32	0.13	0.31	0.38	0.19
L2/NM	82	0.16	0.39	0.40	0.05

Table 2: Firm characteristics, life-cycle stage, and Bovespa listing level

This table presents average firm characteristics by life-cycle stage and Bovespa listing level. Life-cycle is measured using Anthony and Ramesh (AR, 1992), Dickinson (2011), and Multiclass Linear Discriminant Analysis (MLDA). Regular and Level 1, and Level 2 and Novo Mercado listing levels are grouped together, respectively Size is annual rank decile of firm size where firm size is log assets. INVCF is net cash flow from investments scaled by total assets; FINCF is net financing cash flows scaled by total assets, and OPCF is net operating cash flows also scaled by book assets. Profit is EBIT to total assets; dividend is dividends-to-sales (%), risk is calculated annually using the standard deviation of weekly share prices, and cash is cash to total assets.

Panel A: Life-cycle measured using Anthony and Ramesh (1992)

	Size decile	INVCF	FINCF	OPCF	Profit	Dividend	Risk	Cash
Birth	5.02	(0.08)	0.08	0.04	0.02	1.87	2.66	0.13
Growth	5.14	(0.07)	0.07	0.04	0.04	2.12	3.30	0.12
Mature	5.55	(0.07)	0.00	0.10	0.05	3.49	2.87	0.15
Decline	6.42	(0.05)	(0.04)	0.13	0.09	6.76	2.31	0.21

Panel B: Life-cycle measured using Dickinson (2011)

	Size decile	INVCF	FINCF	OPCF	Profit	Dividend	Risk	Cash
Birth	4.30	(0.05)	0.23	(0.13)	(0.01)	1.97	3.46	0.13
Growth	6.00	(0.13)	0.10	0.09	0.04	2.38	2.81	0.17
Mature	5.59	(0.06)	(0.06)	0.14	0.08	4.53	2.30	0.14
Decline	5.86	0.05	0.03	0.00	0.02	2.18	3.00	0.18

Panel C: Life-cycle measured using Multiclass Linear Discriminant Analysis (MLDA)

	Size decile	INVCF	FINCF	OPCF	Profit	Dividend	Risk	Cash
Birth	3.00	(0.06)	0.11	0.00	(0.02)	1.93	2.45	0.10
Growth	7.95	(0.09)	0.06	0.08	0.06	3.12	3.69	0.16
Mature	4.81	(0.07)	(0.03)	0.14	0.11	4.68	2.15	0.19
Decline	6.00	(0.05)	0.09	(0.01)	(0.07)	1.78	3.03	0.10

Panel D: Bovespa listing level

	Size decile	INVCF	FINCF	OPCF	Profit	Dividend	Risk	Cash
Reg/L1	4.82	(0.06)	0.02	0.06	0.02	2.34	2.40	0.11
L2/NM	6.17	(0.08)	0.06	0.08	0.07	4.36	3.22	0.20

Table 3: Summary statistics and correlation matrix

Panel A summarizes overall corporate governance and individual corporate governance attributes. Panel B presents correlation between the corporate governance and life-cycle measures. Life-cycle is measured using Anthony and Ramesh (AR, 1992), Dickinson (2011), and Multiclass Linear Discriminant Analysis (MLDA). Corporate governance is from Black et al. (2014). ***, **, and * denotes statistical significance at the 1, 5, and 10% levels, respectively.

Panel A: Summary statistics

	Mean	Standard deviation	Minimum	Maximum
Corporate governance	60.67	14.05	20.12	90.12
Board structure	51.11	22.24	0	100
Board procedure	64.07	24.97	0	100
Shareholder rights	49.68	25.91	0	100
Disclosure	78.38	25.57	18.18	100
RPT	62.67	31.74	0	100
Ownership structure	58.13	16.38	26.31	91.30

Panel B: Correlations between corporate governance and life-cycle variables

	Corporate governance	Board structure	Board procedure	Shareholder rights	Disclosure	RPT	Ownership structure	AR (1992)	DK (2011)	MLDA
Corporate governance	1									
Board structure	0.50***	1								
Board procedure	0.61***	0.28***	1							
Shareholder rights	0.74***	0.35***	0.26***	1						
Disclosure	0.79***	0.22***	0.47***	0.64***	1					
RPT	0.40***	0.01	(0.01)	0.02	0.08	1				
Ownership structure	0.37***	(0.15)**	0.10	0.30***	0.32***	(0.01)	1			
AR (1992)	0.11	0.25***	0.15**	0.02	0.06	0.02	(0.17)**	1		
DK (2011)	0.08	0.19**	0.08	0.02	0.03	(0.00)	(0.04)	0.30***	1	
MLDA	0.15**	0.11	0.16**	0.11	0.20***	(0.05)	(0.00)	0.21***	0.24***	1

Table 4: Corporate governance and firm life-cycle stage

This table reports average corporate governance quality by life-cycle stage for a sample of 116 firms from Brazil. Life-cycle is measured using Anthony and Ramesh (1992), Dickinson (2011), and Multiclass Linear Discriminant Analysis (MLDA). Corporate governance is from Black et al. (2014). ***, **, and * denotes statistical significance at the 1, 5, and 10% levels, respectively.

Panel A: Life-cycle measured using Anthony and Ramesh (1992)

Life-cycle stage	Obs	Corporate gov	Board structure	Board procedure	Share rights	Disclosure	RPT	Own
Birth	66	59.48	45.67	60.86	49.13	77.55	63.03	60.63
Growth	43	59.32	47.51	63.18	49.50	77.38	58.14	60.22
Mature	33	61.41	57.58	62.63	49.78	75.76	67.88	54.86
Decline	38	63.64	59.02	71.93	50.75	83.25	62.63	54.25
Max range across life-cycle		4.32	13.35***	11.07**	1.62	7.50	9.74*	6.38

Panel B: Life-cycle measured using Dickinson (2011)

Life-cycle stage	Obs	Corporate gov	Board structure	Board procedure	Share rights	Disclosure	RPT	Own
Birth	23	56.97	34.78	57.25	47.83	76.68	65.22	60.10
Growth	50	63.17	54.57	66.00	53.14	83.09	62.40	59.84
Mature	69	63.42	56.52	70.05	51.76	82.87	61.74	57.60
Shake-out/decline	14	59.55	44.90	57.14	51.02	77.27	67.14	59.84
Max range across life-cycle		6.45*	21.74***	12.91**	5.31	6.41	5.40	2.50

Panel C: Life-cycle measured using Multiclass Linear Discriminant Analysis (MLDA)

Life-cycle stage	Obs	Corporate gov	Board structure	Board procedure	Share rights	Disclosure	RPT	Own
Birth	44	53.57	44.16	53.41	38.96	62.40	66.36	56.11
Growth	55	65.07	53.51	70.61	55.58	87.44	62.55	60.73
Mature	64	62.29	55.13	64.32	54.24	82.39	59.69	57.95
Shake-out/decline	17	58.78	46.22	69.61	41.18	75.40	64.71	55.57
Max range across life-cycle		11.50***	10.98**	17.20**	16.62***	25.04***	6.68	5.15

Table 5: Corporate governance, life-cycle and Bovespa listing levels

Panel A reports average corporate governance quality by Bovespa listing level. Panel B reports average corporate governance for firms in each life-cycle stage and for each Bovespa listing level. We calculate (a) the range in average corporate governance across the life-cycle for each Bovespa listing level (i.e. range within listing level), and (b) the range in average corporate governance across the Bovespa listing levels for each life-cycle stage (i.e. range across listing levels). Life-cycle is measured using Anthony and Ramesh (1992), Dickinson (2011), and Multiclass Linear Discriminant Analysis (MLDA). Corporate governance is from Black et al. (2014). ***, **, and * denotes statistical significance at the 1, 5, and 10% levels, respectively.

Panel A: Corporate governance standards on the Bovespa Stock Exchange

Bovespa listing level	Obs	Corporate gov	Board structure	Board procedure	Share rights	Disclosure	RPT	Own
Regular	66	48.14	44.81	52.53	27.49	51.52	60.30	52.21
Level 1	32	61.84	58.04	72.40	37.50	87.22	69.38	46.53
Level 2/NM	82	70.31	53.48	70.12	72.30	96.56	61.95	67.42
L2/NM less Regular listing level	22.17***	8.67***	17.59***	44.81***	45.04***	1.65	15.21***	

Panel B: Corporate governance standards on Bovespa by life-cycle stage

Life-cycle measured using Anthony and Ramesh (1992)

Bovespa listing level	Life-cycle stage				Max life-cycle range within listing level
	Birth stage	Growth stage	Mature stage	Decline stage	
Regular	47.17	45.06	49.96	51.88	6.82
Level 1	53.20	59.04	66.09	63.93	12.89**
Level 2/ Novo Mercado	69.07	68.93	74.06	72.60	5.13
Max range across listing levels	21.90***	23.87***	24.10***	20.72***	

Life-cycle measured using Dickinson (2011)

Bovespa listing level	Life-cycle stage				Max life-cycle range within listing level
	Birth stage	Growth stage	Mature stage	Shake-out/decline stage	
Regular	40.11	50.48	50.23	42.63	10.37*
Level 1	54.61	59.58	64.65	na	10.04*
Level 2/ Novo Mercado	68.81	71.39	70.39	68.96	2.58
Max range across listing levels	28.70***	20.91***	20.16***	26.33***	

Life-cycle measured using Multiclass Linear Discriminant Analysis (MLDA)

Bovespa listing level	Life-cycle stage				Max life-cycle range within listing level
	Birth stage	Growth stage	Mature stage	Shake-out/decline stage	
Regular	46.08	48.45	50.43	49.27	4.35
Level 1	52.63	65.59	59.81	65.79	13.16***
Level 2/ Novo Mercado	69.40	71.65	70.01	64.91	6.74
Max range across listing levels	23.32***	23.20***	19.58***	16.52**	

Table 6: Regression estimates of the corporate governance life-cycle

This table reports pooled ordinary least squares estimates for the full sample of firms. The standard errors are clustered by firm. The dependent variable is corporate governance or one of its individual sub-indexes, as indicated. Corporate governance is from Black et al. (2014). Life-cycle is measured using AR (1992), DK (2011), and MLDA. Level 2/NM is a dummy indicator which is 1 if the firm is a Level 2 or Novo Mercado premium listing, zero otherwise. All regressions include an intercept term, industry and time dummies but are not reported. In Panel B, life-cycle is proxied using MLDA. ***, **, and * denotes statistical significance at the 1, 5, and 10% levels, respectively.

Panel A	Dependent variable is overall corporate governance		
	Life-cycle indicator		
	Anthony and Ramesh (1992)	Dickinson (2011)	MLDA
Growth stage	-1.079	2.579	-0.391
	(0.57)	(0.93)	(0.14)
Mature stage	3.331	4.552*	-1.241
	(1.52)	(1.68)	(0.48)
Shake-out/decline stage	2.745	-0.074	2.180
	(0.96)	(0.02)	(0.63)
Level 2/Novo Mercado	13.528***	11.620***	12.550***
	(6.06)	(6.54)	(6.31)
Cross-listing	1.024	-0.989	-0.141
	(0.36)	(0.36)	(0.05)
Size	2.867***	2.859***	3.076***
	(3.57)	(3.32)	(3.92)
Cash	3.566	12.670	7.511
	(0.38)	(1.26)	(0.91)
Tangibility	-1.505	-2.010	-1.931
	(1.18)	(1.41)	(1.41)
Profitability	-7.501	-4.652	
	(0.51)	(0.27)	
Growth opportunities	0.511	-0.122	0.600
	(0.49)	(0.11)	(0.54)
Leverage	-3.720	-5.485	-3.901
	(0.71)	(0.97)	(0.77)
Firm risk	-0.364	-0.557*	-0.381
	(1.23)	(1.80)	(1.21)
Industry and time dummies	Yes	Yes	Yes
Observations	180	156	180
R-Squared	0.561	0.573	0.552
Ave gov in birth stage	59.48	56.97	53.57
Ave gov in Reg/L1 stage	52.61	52.61	52.61
	Tests for differences in corporate governance across life-cycle stages		
Growth vs. mature	*		

Panel B	Dependent variable is					
	Board structure	Board procedure	Shareholder rights	Disclosure	RPT	Ownership
Growth stage	4.542	-2.723	0.924	-3.675	-4.687	3.273
	(0.85)	(0.42)	(0.21)	(0.85)	(0.48)	(0.81)
Mature stage	4.532	-2.547	2.572	-0.965	-11.246	0.211
	(0.82)	(0.49)	(0.78)	(0.25)	(1.44)	(0.06)
Shake-out/decline stage	0.169	10.172	5.163	1.754	-5.453	1.272
	(0.02)	(1.33)	(0.93)	(0.30)	(0.59)	(0.30)
Level 2/Novo Mercado	1.506	0.109	39.029***	19.497***	-1.254	16.413***
	(0.32)	(0.02)	(12.54)	(6.64)	(0.21)	(5.36)
Industry and time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.217	0.277	0.700	0.709	0.170	0.430
Ave gov in MLDA birth stage	44.16	53.41	38.96	62.40	66.36	56.11
Ave gov in Reg/L1 stage	49.13	59.01	30.76	63.17	63.27	50.35
	Tests for differences in corporate governance across life-cycle stages					
Growth vs. shake-out/decline		*				
Mature vs. shake-out/decline		*				

Table 7: Governance-life-cycle regressions for each Bovespa listing level

This table reports pooled ordinary least squares estimates. Separate corporate governance-life-cycle regressions are estimated for Bovespa Reg/L1 and L2/NM listing levels, respectively. The standard errors are clustered by firm. The dependent variable is corporate governance (Panel A) or one of its individual sub-indexes (Panel B), as indicated. Corporate governance is from Black et al. (2014). Life-cycle is proxied using Multiclass Linear Discriminant Analysis (MLDA). All regressions include an intercept term which is not reported. The regressions do not include industry and time dummies. ***, **, and * denotes statistical significance at the 1, 5, and 10% levels, respectively.

Panel A	Dependent variable is overall corporate governance	
	Bovespa listing level	
	Reg/L1	L2/NM
Growth stage	-4.765	5.639
	(1.28)	(1.62)
Mature stage	0.413	1.252
	(0.13)	(0.47)
Shake-out/decline stage	1.538	-1.083
	(0.36)	(0.24)
Controls	Yes	Yes
Observations	98	82
R-Squared	0.379	0.135
Ave gov in birth stage	46.93	69.40
Tests for differences in corporate governance across MLDA life-cycle stages		
Growth vs. SO/decline		*

Panel B	Dependent variable is				
	Board structure		Board procedure		Shareholder rights	
	Bovespa listing level					
	Reg/L1	L2/NM	Reg/L1	L2/NM	Reg/L1	L2/NM
Growth stage	-0.235	9.718	-6.327	7.852	-5.636	5.513
	(0.03)	(1.40)	(0.65)	(0.86)	(0.97)	(1.04)
Mature stage	7.202	8.938	-3.609	6.993	0.123	2.845
	(0.97)	(1.42)	(0.48)	(0.91)	(0.02)	(0.79)
Shake-out/decline stage	-1.293	-4.205	10.490	2.169	3.107	-1.696
	(0.17)	(0.58)	(1.15)	(0.14)	(0.50)	(0.26)
Observations	98	82	98	82	98	82
Controls	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.184	0.234	0.279	0.148	0.245	0.109
Ave gov in birth stage	43.32	46.15	49.46	62.82	25.81	70.33
Tests for differences in corporate governance across MLDA life-cycle stages						
Growth vs. SO/decline		*	*			
Mature vs. SO/decline			*			

	Dependent variable is				
	Disclosure		RPT		Ownership	
	Bovespa listing level					
	Reg/L1	L2/NM	Reg/L1	L2/NM	Reg/L1	L2/NM
Growth stage	-4.652	1.045	-15.106	3.377	3.368	6.327
	(0.58)	(0.40)	(1.17)	(0.27)	(0.61)	(1.18)
Mature stage	1.784	2.170	-3.204	-13.903	0.003	0.466
	(0.25)	(0.81)	(0.31)	(1.32)	(0.00)	(0.11)
Shake-out/decline stage	1.608	6.203**	-5.216	-12.895	0.530	3.927
	(0.18)	(2.44)	(0.51)	(0.65)	(0.13)	(0.46)
Observations	98	82	98	82	98	82
Controls	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.465	0.165	0.123	0.238	0.236	0.260
Ave gov in birth stage	49.27	93.70	63.87	72.31	49.85	71.06
Tests for differences in corporate governance across MLDA life-cycle stages						
Growth vs. mature				*		*
Growth vs. SO/decline		***				
Mature vs. SO/decline		***				

Table 8: Governance-listing regressions for each MLDA life-cycle stage

This table reports pooled ordinary least squares estimates. Separate corporate governance-listing levels regressions are estimated by MLDA life-cycle stage (excl. shake-out/decline stage firms). The standard errors are clustered by firm. The dependent variable is corporate governance (Panel A) or one of its individual sub-indexes (Panel B), as indicated. Corporate governance is from Black et al. (2014). Life-cycle is proxied using Multiclass Linear Discriminant Analysis (MLDA). Level 2/NM is a dummy indicator which is 1 if the firm is a Level 2 or Novo Mercado premium listing, zero otherwise. All regressions include an intercept term which is not reported. The regressions do not include industry and time dummies. ***, **, and * denotes statistical significance at the 1, 5, and 10% levels, respectively.

Panel A	Dependent variable is corporate governance		
	MLDA life-cycle stage		
	Birth stage	Growth stage	Mature stage
Level 2/NM	20.019***	12.677***	14.516***
	(4.85)	(3.99)	(4.65)
Controls	Yes	Yes	Yes
Observations	44	55	64
R-Squared	0.655	0.542	0.422
Ave gov Reg/L1	46.93	55.91	54.06

Panel B	Dependent variable is								
	Board structure			Board procedure			Shareholder rights		
	MLDA life-cycle stage								
	Birth stage	Growth stage	Mature stage	Birth stage	Growth stage	Mature stage	Birth stage	Growth stage	Mature stage
Level 2/NM	9.774	-2.126	0.097	13.733	1.061	6.149	37.758***	44.220***	34.940***
	(1.24)	(0.28)	(0.02)	(1.46)	(0.13)	(0.86)	(4.64)	(8.82)	(8.78)
Observations	44	55	64	44	55	64	44	55	64
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.096	0.181	0.106	0.237	0.229	0.223	0.697	0.722	0.680
Ave gov Reg/L1	43.32	52.17	52.07	49.46	66.67	57.53	25.81	30.43	34.56
	Dependent variable is								
	Disclosure			RPT			Ownership		
	MLDA life-cycle stage								
	Birth stage	Growth stage	Mature stage	Birth stage	Growth stage	Mature stage	Birth stage	Growth stage	Mature stage
Level 2/NM	26.851***	16.588***	25.672***	14.996	4.662	-0.810	17.001**	11.655**	21.046***
	(3.54)	(3.47)	(5.25)	(1.23)	(0.48)	(0.09)	(2.32)	(2.55)	(5.86)
Observations	44	55	64	44	55	64	44	55	64
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.743	0.628	0.525	0.354	0.238	0.172	0.528	0.482	0.432
Ave gov Reg/L1	49.27	74.31	66.86	63.87	59.13	63.87	49.85	52.73	49.48

Table 9: BCGI-NM and BCGI-NON-NM for Reg/L1 and Leve2/Novo Mercado firms

This table reports pooled ordinary least squares estimates for the full sample of firms and for firms defined by MLDA life-cycle stage. The standard errors are clustered by firm. In Panel A, the dependent variable is a corporate governance index based solely on the elements which are required for a Level 2/NM premium listing (BCGI-L2NM) and a corporate governance index using governance elements not required for a Level 2/NM premium listing (BCGI-NON-L2NM), as indicated. In Panel B, the dependent variables are non-Level 2/NM indexes for each of the individual corporate governance sub-indexes. BS is board structure, BP is board procedure, SR is shareholder rights, DIS is disclosure, and RPT related party transactions. Corporate governance is from Black et al. (2014). Life-cycle is measured using Multiclass Linear Discriminant Analysis (MLDA). Level 2/NM is a dummy indicator which is 1 if the firm is a Level 2 or Novo Mercado premium listing, zero otherwise. ***, **, and * denotes statistical significance at the 1, 5, and 10% levels, respectively.

Panel A	Dependent variable is							
	BCGI-L2NM				BCGI-NON-L2NM			
	All firms	MLDA life-cycle stage			All firms	MLDA life-cycle stage		
		Birth	Growth	Mature		Birth	Growth	Mature
Level 2/NM	40.519***	50.445***	40.087***	43.566***	2.252	9.203*	2.490	3.753
	(17.77)	(8.10)	(9.76)	(13.66)	(0.85)	(1.75)	(0.60)	(0.92)
Ind dummies	Yes	No	No	No	Yes	No	No	No
Time dummies	Yes	No	No	No	Yes	No	No	No
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	180	44	55	64	180	44	55	64
R-Squared	0.846	0.863	0.832	0.848	0.319	0.392	0.336	0.227

Panel B	Dependent variable is				
	BS-NON-L2NM	BP-NON-L2NM	SR-NON-L2NM	DIS-NON-L2NM	RPT-NON-L2NM
Level 2/NM	-3.625	-0.754	2.725	10.924***	1.887
	(0.74)	(0.16)	(0.50)	(3.16)	(0.35)
Ind dummies	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	180	180	180	180	180
R-Squared	0.215	0.260	0.164	0.549	0.176

Table 10: The relationship between corporate governance and firm age in Brazil

This table reports pooled ordinary least squares estimates. The dependent variable is corporate governance or one of its individual sub-indexes, as indicated. Panel A uses all 116 firms. In Panel B, we estimate separate regressions by Bovespa listing level. In Panel C, we estimate separate regressions by MLDA life-cycle stage. The standard errors are clustered by firm. Corporate governance is from Black et al. (2014). Firm age is the log age of the firm and is calculated as year less the listing year of firm. Firm-level controls are included but not reported. Time and industry dummies are included in Panel A only. ***, **, and * denotes statistical significance at the 1, 5, and 10% levels, respectively.

Panel A	Dependent variable is						
	Corporate governance	Board structure	Board procedure	Shareholder rights	Disclosure	RPT	Ownership
Log (firm age)	1.023	5.228**	1.771	0.879	-0.682	-0.094	-0.962
	(0.75)	(2.04)	(0.77)	(0.55)	(0.46)	(0.03)	(0.55)
Level 2/NM	14.385***	3.814	3.593	32.128***	22.420***	1.905	16.448***
	(5.31)	(0.70)	(0.66)	(11.74)	(6.29)	(0.27)	(4.74)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	180	180	180	180	180	180	180
R-Squared	0.508	0.142	0.223	0.687	0.629	0.077	
Panel B	Dependent variable is						
	Corporate governance	Board structure	Board procedure	Shareholder rights	Disclosure	RPT	Ownership
	Reg/L1 firms						
Log (firm age)	-1.399	3.342	-0.399	-1.078	-3.465	-2.967	-3.824**
	(0.79)	(0.79)	(0.13)	(0.34)	(1.04)	(0.71)	(2.08)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	98	98	98	98	98	98	98
R-Squared	0.361	0.174	0.251	0.228	0.464	0.102	0.260
	L2/NM firms						
Log (firm age)	3.104**	6.878***	4.709	2.296	1.321***	2.857	0.565
	(2.40)	(2.77)	(1.67)	(1.43)	(2.80)	(0.65)	(0.26)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	82	82	82	82	82	82	82
R-Squared	0.193	0.297	0.182	0.121	0.103	0.196	0.235
Panel C	Dependent variable is						
	Corporate governance	Board structure	Board procedure	Shareholder rights	Disclosure	RPT	Ownership
	Birth stage firms						
Log (firm age)	0.649	-1.115	-0.001	2.245	-0.920	5.454	-1.858
	(0.25)	(0.17)	(0.00)	(0.55)	(0.20)	(0.78)	(0.61)
Level 2/NM	18.455**	5.113	10.813	36.948***	27.718***	21.013	9.122
	(2.67)	(0.36)	(0.78)	(3.03)	(2.90)	(0.95)	(0.93)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	44	44	44	44	44	44	44
R-Squared	0.638	0.100	0.239	0.684	0.743	0.217	0.532
	Growth stage firms						
Log (firm age)	-1.745	-2.601	-2.749	-0.229	-0.777	-2.287	-1.828
	(0.79)	(0.62)	(0.57)	(0.06)	(0.23)	(0.33)	(0.66)
Level 2/NM	10.583***	-5.246	-2.237	43.945***	15.655***	1.918	9.462
	(3.08)	(0.61)	(0.20)	(6.60)	(2.79)	(0.14)	(1.64)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	55	55	55	55	55	55	55
R-Squared	0.550	0.188	0.236	0.722	0.628	0.240	0.487
	Mature stage firms						
Log (firm age)	1.190	8.762**	3.277	-0.056	-2.666	-3.238	1.053
	(0.42)	(2.05)	(0.73)	(0.03)	(1.08)	(0.51)	(0.42)
Level 2/NM	15.732***	7.976	9.179	35.383***	23.148***	-2.868	21.573***
	(3.38)	(1.12)	(1.05)	(9.03)	(3.94)	(0.26)	(5.23)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	64	64	64	64	64	64	64
R-Squared	0.429	0.181	0.233	0.690	0.529	0.174	0.425

Table 11: The corporate governance life-cycle in India and Korea Republic

This table reports pooled ordinary least squares estimates for firms from Korea Republic and India. For Korea Republic, the sample period is 1998 to 2004. For India, firms are observed in the years 2005, 2007, and 2011. The dependent variable is overall corporate governance, board structure, board procedure, shareholder rights, disclosure, ownership structure, and related party transactions, as indicated. The standard errors are clustered by firm. Life-cycle is proxied using MLDA. MLDA classifies firms into one of four life-cycle stages (introduction, growth, mature, and shake-out/decline) using multiclass linear discriminant analysis. Corporate governance is from Black et al. (2014). All regressions include an intercept term, time dummies, and firm-level controls, which are not reported. ***, **, and * denotes statistical significance at the 1, 5, and 10% levels, respectively.

| Panel A | | Firm-year observations in each MLDA life-cycle stage | | | |
	Number of firms	Introduction	Growth	Mature	Shake-out/decline
Korea Republic	497	475	433	762	515
India	307	141	57	145	133

| Panel B | Korea Republic | | | | | |
| | Dependent variable is | | | | | |
	Corporate governance	Board structure	Board procedure	Shareholder rights	Disclosure	Ownership structure
Growth	-1.324*	-1.187**	-1.454	0.061	-1.254	-2.788*
	(1.94)	(2.26)	(1.10)	(0.04)	(0.77)	(1.82)
Mature	-1.357*	-0.899	-2.889**	-3.545**	-1.206	1.754
	(1.89)	(1.54)	(2.10)	(2.38)	(0.59)	(1.03)
Shake-out/decline	0.221	-0.423	-2.267**	0.710	-0.094	3.182**
	(0.36)	(0.79)	(2.03)	(0.57)	(0.06)	(2.15)
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	2,185	2,185	2,185	2,185	2,185	2,185
R-Squared	0.566	0.569	0.273	0.517	0.376	0.165
Average governance in birth stage	34.07	5.65	40.50	11.95	25.47	86.80
	Tests for differences in corporate governance across MLDA life-cycle stages					
Growth vs. mature				***		***
Growth vs. SO/decline	***					***
Mature vs. SO/decline	***			***		

| Panel C | India | | | | | |
| | Dependent variable is | | | | | |
	Corporate governance	Board structure	Board procedure	Shareholder rights	Disclosure	Related party transactions
Growth	-0.062	-2.555	2.901	-0.558	2.850	-2.947
	(0.04)	(0.88)	(1.05)	(0.21)	(0.88)	(0.62)
Mature	-0.582	0.001	2.149	-2.644	0.575	-2.993
	(0.35)	(0.00)	(0.81)	(0.83)	(0.17)	(0.69)
Shake-out/decline	-1.774	0.214	-1.878	-1.354	0.798	-6.650**
	(1.29)	(0.09)	(0.83)	(0.58)	(0.31)	(2.02)
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	476	476	476	476	476	476
R-Squared	0.072	0.077	0.062	0.092	0.161	0.151
Average governance in birth stage	61.28	74.23	53.95	41.43	65.05	71.75
	Tests for differences in corporate governance across MLDA life-cycle stages					
Growth vs. SO/decline			*			

Table 12: The relationship between life-cycle and corporate policies in Brazil, Korea, and India

This table reports pooled ordinary least squares estimates for firms from Brazil (2004, 2006, and 2009), Korea Republic (1998-2004) and India (2005, 2007, and 2011). The dependent variable is dividends (dividends-to-sales (%)), cash holdings (cash to assets), and net cash flows from investment to total assets, as indicated. The standard errors are clustered by firm. Life-cycle is proxied using Multiclass Linear Discriminant Analysis (MLDA). All regressions include a constant, time and industry dummies which are not reported. ***, **, and * denotes statistical significance at the 1, 5, and 10% levels, respectively.

	Brazil			Korea			India		
	Dependent variable is								
	Dividends	Cash	Net Investment	Dividends	Cash	Net Investment	Dividends	Cash	Net Investment
Growth	-1.343**	0.026	-0.038	0.639***	0.011	-0.022**	0.659**	-0.026	0.026
	(2.26)	(0.83)	(0.91)	(8.68)	(1.44)	(2.30)	(2.00)	(1.09)	(1.38)
Mature	0.806	0.046*	-0.015	0.793***	0.030***	-0.023**	1.978***	-0.000	-0.013
	(1.45)	(1.78)	(0.51)	(11.08)	(3.39)	(2.30)	(5.84)	(0.02)	(0.80)
Shake-out/decline	-0.423	-0.039	-0.010	0.347***	-0.003	0.004	0.687***	-0.026	0.046***
	(0.62)	(1.40)	(0.24)	(5.04)	(0.46)	(0.57)	(2.68)	(1.46)	(3.14)
MBA	1.164***	0.028***	-0.011	0.178***	0.018***	-0.010	0.082*	0.000	-0.003
	(3.51)	(2.81)	(0.98)	(3.50)	(4.74)	(1.56)	(1.75)	(0.18)	(1.46)
Corporate governance	0.030			0.010			0.021**		
	(1.38)			(1.61)			(1.97)		
Size	0.384*	0.002	0.002	0.045	-0.010***	-0.012***	0.110	0.010	-0.012***
	(1.93)	(0.21)	(0.25)	(1.52)	(3.06)	(5.06)	(1.49)	(1.46)	(3.69)
Cash/Assets	4.552*		0.092	1.810***		-0.052	3.477*		0.133***
	(1.80)		(1.06)	(3.26)		(0.82)	(1.91)		(2.78)
Leverage	-4.612***		0.035	-1.352***		0.041*	-2.393***		-0.111***
	(5.19)		(0.68)	(6.31)		(1.66)	(3.84)		(2.58)
PPE/Assets	4.384***			0.307			1.024		
	(3.01)			(1.64)			(1.63)		
Sales/Assets			0.003			0.001			0.019
			(0.40)			(0.86)			(1.59)
CAPEX		-0.154			-0.176***			-0.106*	
		(1.13)			(4.16)			(1.88)	
Dividend dummy		0.078***			0.008			0.016	
		(4.17)			(1.26)			(1.51)	
LTD		0.101			-0.119***			-0.064	
		(1.39)			(4.39)			(1.52)	
STD		-0.036**			-0.162***			-0.071	
		(2.30)			(5.79)			(1.30)	
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	180	180	156	2,184	2,184	2,184	476	476	476
R-Squared	0.474	0.339	0.550	0.264	0.193	0.063	0.262	0.156	0.175

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Appendix 1: Main aspects of Sao Paulo Stock Exchange (Bovespa) listing levels

This table reports the main governance provisions associated with the different listing level of the Sao Paolo (Bovespa) Stock Exchange. There are four levels, namely Regular, Level 1, Level 2, and Novo Mercado.

	Regular	Level 1	Level 2	Novo Mercado
Only common shares allowed	No	No	No	REQUIRED
Free-float of at least 25% of outstanding shares	No	REQUIRED	REQUIRED	REQUIRED
Public offerings have to use mechanisms to favour capital dispersion	No	REQUIRED	REQUIRED	REQUIRED
Disclosure requirements:				
Agreements between company and related parties	No	REQUIRED	REQUIRED	REQUIRED
Transactions in company by employees, directors, fiscal board members	No	REQUIRED	REQUIRED	REQUIRED
Shares held by controllers, directors, and members of the fiscal board	No	REQUIRED	REQUIRED	REQUIRED
Securities issued by the company	No	REQUIRED	REQUIRED	REQUIRED
Statement of cash flows	No	REQUIRED	REQUIRED	REQUIRED
Consolidated quarterly financial statements (if firm provides consolidated annual statements)	No	REQUIRED	REQUIRED	REQUIRED
Financial statements which comply with US GAAP or IFRS, note reconciling these to Brazilian statements	No	No	REQUIRED	REQUIRED
English language financial statements	No	No	REQUIRED	REQUIRED
Meetings with analysts (at least annually)	No	REQUIRED	REQUIRED	REQUIRED
Annual calendar of corporate events	No	REQUIRED	REQUIRED	REQUIRED
Board of Directors:				
Minimum number or percentage of independent directors required	No	No	20%	20%
Non-staggered board terms, maximum two years	No	No	REQUIRED	REQUIRED
Corporate rules:				
Preferred shares vote together with common shareholders on selected issues (including mergers spin-offs, contracts between the company and related firms)	No	No	REQUIRED	Not relevant
Freeze out offer based on economic value of firm, determined by independent valuation	No	No	REQUIRED	REQUIRED
Minority common shareholders have tag-along rights on sale of control, at 100% of price paid for controlling shares	No	No	REQUIRED	REQUIRED
Preferred shareholders have tag-along rights on sale of control, at least 80% of the price paid for controlling shares	No	No	REQUIRED	Not relevant
Disputes with shareholders submitted to arbitration	No	No	REQUIRED	REQUIRED

Appendix 2: Brazil Corporate Governance Index		Level 2 or NM	Novo Mercado
	Board Structure index:		
1	≥ 1 outside director	*	
2	≥ 30% outside directors		
3	≥ 50% outside directors		
4	CEO is NOT board chairman		
5	Audit committee exists		
6	Permanent or near-permanent fiscal board exists		
7	Permanent fiscal board or audit committee with minority shareholder representative exists		
	Board Procedure subindex:		
8	> 4 board meetings in last year		
9	Firm has system to evaluate CEO		
10	Firm has system to evaluate other executives		
11	Board receives materials in advance of meetings		
12	Firm has code of ethics		
13	Bylaw/policy to govern board		
	Disclosure index:		
14	RPTs are disclosed to shareholders		
15	Firm has regular meetings with analysts		
16	Annual financials on firm website		
17	Quarterly financials are consolidated	*	
18	Firm puts quarterly financials on firm website		
19	English language financial statements exist	*	
20	Financials included statement of cash flows	*	
21	Financial statements in IRFS or US GAAP	*	
22	MD&A discussion in financial statements		
23	Firm discloses annual agenda of corporate events	*	
24	Auditor does not provide non-audit services		
	Shareholder rights index:		
25	Annual election of all directors		
26	Board included at least one member elected by minority shareholders		
27	Freeze out offer to minority shareholders based on shares' economic value	*	
28	Takeover rights on sale of control > legal minimum	*	
29	Disputes with shareholders subject to arbitration	*	
30	Firm has no authorized capital or provides pre-emptive rights		
31	Free float is at least 25% of total shares	*	
	Related Party Transactions (RPT) index: Items 32-34 treated as a single item in calculation of RPT		
32	No loans to insiders		
	No significant sales to/purchases from insiders		
	No real property rental from or to an insider		
33	RPTs require board approval		
34	RPTs approved by non-interested directors		
35	RPTs approved by non-interested shareholders		
36	RPT's banned by company charter		
	Ownership index:		
37	Fraction of common shares owned by largest shareholder		
38	$1.5 * \{[(\text{common shares})/(\text{common shares} + \text{preferred shares})] - 1/3\}$		**
39	Ownership parity = (1-wedge). Wedge = (Fraction of voting shares owned by largest owner)-(Fraction of econ. ownership by largest owner). Econ. ownership by largest shareholder = (Common + preferred shares owned)/(Total common + preferred shares)		**
40	Ln (No. of shareholders in control group. If firm has a shareholder agreement, number of members of the agreement. If not, no. of 5% of shareholders who together hold 50% of common shares. If no control group, or no agreement and all 5% of shareholders hold <50% common shares, assume = 10		
41	Firm has one or more outside 5% shareholders (the disclosure threshold)		

Appendix 3: Variable descriptions

This table summarizes the main variables used in the paper. We describe each variable together with its source. We summarize each variable by presenting its mean, median, minimum and range values.

Variable:	Description:	Source	Mean	Median	Min	Range
Corporate governance	Corporate governance	Black et al. (2014)	60.67	62.64	20.12	70.00
Board structure	Board structure	Black et al. (2014)	51.11	57.14	0	100.00
Board independence	Board independence	Black et al. (2014)	49.86	50.00	0	100.00
Audit committee and fiscal board	Audit committee and fiscal board	Black et al. (2014)	42.59	66.67	0	100.00
Board procedure	Board procedure	Black et al. (2014)	64.07	66.67	0	100.00
Disclosure	Disclosure	Black et al. (2014)	78.38	90.91	18.18	81.82
Shareholder rights	Shareholder rights	Black et al. (2014)	49.68	57.14	0.00	100.00
Ownership structure	Ownership structure	Black et al. (2014)	58.13	57.11	26.31	64.99
Related party transactions	Related party transactions	Black et al. (2014)	62.67	80.00	0	100.00
AR (1992) life-cycle	Anthony and Ramesh (1992) life-cycle index	Worldscope	n.m.	n.m.	n.m.	n.m.
Dickinson (2011) life-cycle	Dickinson (2011) life-cycle index	Worldscope	n.m.	n.m.	n.m.	n.m.
MLDA life-cycle	Life-cycle indicator using Multivariate Linear Discriminant Analysis	Worldscope	n.m.	n.m.	n.m.	n.m.
Bovespa listing level	Bovespa listing level	Bovespa	1.49	1.00	0	3.00
Crosslist	1 if the firm is cross listed in the United States	BNY, Citibank	0.16	0	0	1.00
Size	Log of book assets in local currency	Worldscope	13.92	13.82	9.32	8.29
Cash	Cash to book assets	Worldscope	0.15	0.13	0	0.43
Tangibility	PPE to sales	Worldscope	0.57	0.28	0.02	2.84
Profitability	Net income to book assets	Worldscope	0.04	0.05	(0.21)	0.39
Leverage	Liabilities to book assets	Worldscope	0.62	0.58	0.25	1.19
Growth opportunities	Market to book of assets	Worldscope	1.74	1.45	0.73	3.35
Firm risk	Standard deviation of weekly share prices	Worldscope	2.78	1.64	0.02	12.82
Industry dummies	Industry codes mapped to US 2-digit SIC codes	Worldscope	n.m.	n.m.	n.m.	n.m.
Life-cycle descriptors:						
Firm age (AGE)	Age of firm: year less listing year	Black et al. (2014)	13.91	11.5	1.00	49.00
Capex to firm value (CAPEX)	Capital expenditures scaled by value of firm. The value of the firm is the sum of the market value of equity and the book value of debt	Worldscope	0.08	0.06	0	0.69
Sales growth (SG)	One-year sales growth	Worldscope	0.18	0.16	(2.52)	4.51
Dividends to assets (DIV)	Dividends to book assets	Worldscope	0.03	0.01	0.00	0.20
NCFO	Net cash flows from operating activities scaled by book assets	Worldscope	0.07	0.09	(0.43)	(1.05)
NCFI	Net cash flows from investing activities scaled by book assets	Worldscope	0.07	0.05	(0.26)	0.97
NCFF	Net cash flows from financing activities scaled by book assets	Worldscope	0.04	0.00	(0.24)	0.96

Appendix 4: India and Korea Corporate Governance Index	India	Korea
Board Structure Subindex:		
≥ 1 outside director	Required	Required
≥ 30% outside directors	Required	Common
≥ 50% outside directors	Included	Included
> 50% outside directors	Included	Included
CEO is NOT board chairman	Included	Avail (NP)
Board has outside chair or lead director	F (NP)	Included
≥ 50% outside directors or ≥ 1/3 outside directors & CEO is not chairman	Included	Avail (NP)
Audit committee	Required	Included
Audit committee has majority of outside directors	Included	Included
Compensation committee	Included	Included
Outside director nominating committee	NA	Included
Board Procedure Subindex:		
≥ 4 board meetings in a year	Available (NP)	Included
Firm has system to evaluate CEO	Included	NA
Firm has system to evaluate other executives	Included	NA
Firm evaluates nonexecutive directors	Included	Included (NP)
Firm has succession plan for CEO	Included	NA
Firm has nonexecutive director retire age	Included	Rare (F)
Directors receive regular board training	Included	NA
Nonexecutives-only annual board meeting	Included	Rare (F)
Outside directors-only annual board meeting	Rare (NP)	Included
Board receives materials in advance	Included	NA
Nonexecutives can hire counsel, advisors	Included	NA
Firm has code of ethics	Included	F (NP)
Bylaw/policy to govern board	NA	Included (NP)
Directors' votes recorded in board minutes	Available (NP)	Included (NP)
Firm has foreign outside director	Available (NP)	Included
Shareholders approve outside directors' pay	Rare (NP)	Included (NP)
Outsider directors attend minimum % of meetings	Available (NP)	Included (70%)
Firm has internal audit/control function	Available (NP)	Required
Audit committee membership disclosed	Available (NP)	Required
Bylaw to govern audit committee	Included	Included (NP)
Audit committee recommends external auditor	Included	NA
Outside directors on audit committee meet separately	Included	NA
Audit committee includes accounting or finance expert	Required	Included (NP)
Audit committee approves internal audit head	Available (NP)	Included (NP)
≥ 4 audit committee meetings in a year	NA	Included
Disclosure Subindex:		
RPTs are disclosed to shareholders	Included	Required
Firm has regular meetings with analysts	Included	Included (NP)
Firm discloses 5% holders	Included	Required
Control group shareholder agreement disclosed	Included	NA
Annual financials on firm website	Included	Available (NM)
Quarterly financials on firm website	Included	NA
Firm puts annual report on firm website	Included	NA
Directors' report on firm website	Included	NM
Corporate governance report on firm website	Included	NM
Firm discloses annual agenda of corporate events	NA	Required
English language financial statements exist	NM	Included (NP)
Financials included statement of cash flows	Required	Required
MD&A discussion in financial statements	Required	Required
Firm discloses director shareholdings	F (NA)	Required
Annual meeting results disclosed	NA	Required

Appendix 4: India and Korea Corporate Governance Index	India	Korea
Board members' roles/employment disclosed	NA	Required
Board members' background disclosed	NA	Included
Board members' date of joining board disclosed	NA	Required
Information re internal audit/control disclosed	NA	Required
Number of board meetings disclosed	F (NP)	Required
Board resolutions disclosed	NA	Required
Executive director compensation disclosed	NA	Required
Auditor does not provide non-audit services	Included	F
Non-audit fees < 25% of total auditor fees	Included	F
Full board reviews auditor's recommendations	Included	NA
Audit partner is rotated every 5 years	Included	F
Shareholder Rights Subindex:		
Outside directors serve one year terms	Included	F
Firm allows voting by postal ballot	Included	Included
Company has policy against insider trading	Included	NA
Cumulative voting for election of directors	Not allowed	Included
Director candidates disclosed to shareholders in advance of shareholder meeting	NA	Included
Freezeout offer based on shares' economic value	Required	Required
Disputes with shareholders subject to arbitration	Included	NA
Firm provides pre-emptive rights	Required	Required
Related Party Transactions (RPT) Subindex:		
RPTs are on arms-length terms	Included	NM
RPTs require board approval	Available (NP)	Included (In SR Index)
RPTs approved by noninterested directors	Available (NP)	Required if > Threshold
RPTs with executives approved by board, audit committee or shareholders	Included	Required
RPTs with executives approved by audit committee or non-interested directors	Included	NA
RPTs with executives approved by shareholders	Included	F, Rare
RPTs with controlling shareholder approved by board, audit committee or shareholders	Included	Required if > Threshold
RPTs with controlling shareholder approved by audit committee or non-interested directors	Included	NA

Appendix 5: Summary statistics

Panel A: Korea

	Mean	Standard deviation	Minimum	Maximum
Corporate governance	34.43	10.27	8.05	80.24
Board structure	4.52	8.92	0	42.86
Board procedure	39.57	16.17	0	100
Shareholder rights	26.48	21.03	0	100
Disclosure	14.41	23.54	0	100
Ownership structure	87.16	15.81	10.24	100

Panel B: India

	Mean	Standard deviation	Minimum	Maximum
Corporate governance	60.37	10.12	31.93	86.92
Board structure	75.53	17.91	0	100
Board procedure	55.28	16.20	15.38	92.31
Shareholder rights	41.07	16.48	0	100
Disclosure	63.74	19.92	23.08	100
RPT	66.25	27.72	100	100