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BOARD CHARACTERISTICS AND COMPENSATION IN BRAZILIAN LISTED COMPANIES

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ABSTRACT

This article suggests that larger, better-governed, and lower ownership concentration companies have less homogeneous and passive boards, but pay more to their senior managers and directors. These companies probably need better-paid professionals to cope with more complex compliance and business environments. We create two categorical variables named homogeneity (HS) and passivity (PS) scores that aggregate hand collected board member characteristics. More homogeneous and passive boards may grant larger director and senior management compensations under the managerial power hypothesis (BEBCHUK and FRIED, 2005). On the other hand, larger and value increasing companies may pay more to their senior managers (JENSEN and MURPHY, 1990). Our findings suggest that less homogeneous and passive boards grant larger compensations in univariate tests. These results, however, do not transpire in multivariate tests. More homogeneous and passive boards are more frequent in smaller and higher ownership concentration companies, with poorer corporate governance and disclosure practices. It is possible that financial disclosure practices are more important than board characteristics (LEAL and CARVALHAL-DA-SILVA, 2007). These results highlight the importance of disclosure and transparency efforts to improve investor relations and reduce the cost of capital in a high ownership concentration country.

Keywords: board characteristics, executive compensation, corporate governance, ownership concentration, Brazil

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RESUMO

Este artigo sugere que empresas maiores, com melhores práticas de governança corporativa e menor concentração de direitos de propriedade têm conselhos de administração (CA) menos homogêneos e passivos, mas pagam mais a sua diretoria e conselheiros. Essas empresas provavelmente precisam de profissionais mais bem pagos para lidar com ambientes de conformidade e de negócios mais complexos. Nós criamos duas variáveis categóricas chamadas de pontuações de homogeneidade e passividade que agregam dados colhidos a mão sobre características dos membros do CA. CAs mais homogêneos e passivos podem conceder maiores remunerações para a diretoria e conselheiros sob a hipótese do poder gerencial (BEBCHUK e FRIED, 2005). Por outro lado, grandes empresas que agregam valor para os acionistas podem pagar mais a sua diretoria (JENSEN e MURPHY, 1990). Nossos resultados sugerem que os CA menos homogêneos e passivos concedem remunerações maiores em testes univariados. Estes resultados, no entanto, não surgem nos testes multivariados. CAs mais homogêneos e passivos são mais frequentes em empresas menores, com maior concentração de direitos de propriedade e práticas de governança corporativa e divulgação de informações piores. É possível que as práticas de divulgação financeira sejam mais importantes do que as características dos conselheiros (LEAL e CARVALHAL-DA-SILVA, 2007). Estes resultados destacam a importância dos esforços de divulgação e transparência para melhorar as relações com investidores e reduzir o custo de capital em um país com concentração de direitos de propriedade elevada.

Palavras-chave: características dos conselheiros, remuneração de executivos, governança corporativa, concentração dos direitos de propriedade, Brasil.

1 – INTRODUCTION

Compensation is a critical board of directors (BOD) decision. Compensation packages may align the interests of senior managers and directors with those of minority shareholders, but they may also lead to conflicts and adhere little to performance (BEBCHUK and FRIED, 2005). This article uses a hand-collected database of Brazilian BOD member characteristics to investigate their association with senior management and BOD compensation levels. Two scores named BOD homogeneity and passivity collect individual BOD member characteristics because they may substitute for one another as potential indicators of BOD effectiveness. BOD member characteristics include their age, gender, academic background, time availability proxies, committee participation, and independence.

The contribution of this article is to verify if individual director characteristics matter in a high ownership concentration country where powerful shareholders nominate most directors. Ownership concentration is very high in Brazil and previous research concluded that it is negatively associated with compensation levels, lending some support to the managerial power hypothesis (PINTO and LEAL, 2013; BEBCHUK and FRIED, 2005). However, the identity of ultimate major shareholders also matters. Pinto and Leal (2013) assert that senior management and BOD average and dispersion of individual compensation increase when controlling family members hold BOD seats, with family directors and senior managers earning a much higher pay than others. Institutional investors as relevant shareholders (more than 5% of equity interest), on the other hand, may be associated to lower levels of compensation. This may be, in part, because the largest Brazilian institutional shareholders are pension funds associated to large state-owned business groups in the energy, financial, and infrastructure sectors. Compensation is lower in state-owned enterprises and, thus, institutional investors relevant shareholding may simply reflect this (PINTO and LEAL, 2013). Thus, the question is whether BOD member characteristics stand out in compensation decisions even in the presence high ownership concentration or if they are blurred by other well-known compensation determinants. For instance, previous studies suggest that financial disclosure may be the most important corporate governance aspect in Brazil and other emerging markets (LEAL and CARVALHAL-DA-SILVA, 2007).

The empirical tests employed data from 2010 through 2013 reported under a new and more demanding disclosure regime introduced in 2009. These new rules include the composition of BOD and senior management compensation but require only the maximum, minimum, and average of total individual compensation, in place of identified individual compensation reporting. The ensuing analysis used the total for all individuals

and average of individual compensation, including all of its components, in senior management and the BOD, separately.

The sample characteristics of the average BOD are: seven people, 56 years of age, 16 percent of independent directors, eight percent of women, three different academic backgrounds among directors, and only one committee with a majority of outside members. The percentage of independent directors is small even with a majority of outside directors, suggesting that major shareholders appoint most of them. The median annual total compensation levels were US\$ 1.8 and US\$ 0.3 million for senior managers and directors, respectively. BOD maximum total compensation figures confirm that some directors make much more than others. Companies traded in the two most demanding premium listings of the stock exchange display greater academic background diversity, busier and more independent boards, and committees with a majority of outside directors, but less gender diversity. These companies may possibly require a more professional BOD, with more experienced and busier directors, even though they do not hire many women. Companies traded in the two most demanding premium lists also display larger total compensation and less ownership concentration.

Univariate tests for some of the BOD characteristics suggested an association with compensation. Companies with less homogeneous and passive boards are larger, with better corporate governance and disclosure practices, have lower ownership concentration, and, in contrast to the managerial power hypothesis, pay more to their senior managers and BOD members. Yet, the homogeneity and passivity scores are not significant in our multivariate analysis. A dummy variable indicates whether a company trades in the two most demanding listing levels of the stock exchange and proxies for the quality of its corporate governance and disclosure practices because they must comply with more stringent requirements about these practices. They possibly tend to pay more to their BOD members and senior managers because they need to hire more qualified, highly demanded, and independent people. Companies that are larger and add value to shareholders also pay more, as suggested by Jensen and Murphy (1990).

Leal and Carvalhal-da-Silva (2007) assert that disclosure, specially financial disclosure, is the aspect with the larger impact over shareholder value in the Brazilian corporate governance practices indices they built. Thus, consistently with this conclusion, our board characteristics scores did not show significance in a multivariate model that included the aforementioned proxy for the quality of corporate governance practices. Nevertheless, one cannot discard the managerial power hypothesis entirely because even lower ownership concentration companies cannot be considered dispersed equity capital enterprises. BODs are more homogeneous and passive in higher ownership concentration companies, which pay less to their senior managers and directors. On the other hand, as

pointed out by Pinto and Leal (2013), compensation dispersion is significant in higher ownership concentration family-owned companies. Thus, company size, a broad measure of corporate governance quality, and ownership concentration seem to dominate the BOD composition characteristics sampled in terms of their association to the outcome of compensation decisions.

This paper proceeds with a background and literature review section, followed by a presentation of the data and method. The results section details the findings and the final section concludes.

2 – BACKGROUND

2.1 Recent Brazilian related events

The Brazilian Securities Commission (CVM) instituted new regulation by the end of 2009 that drastically expanded what companies must disclose in their annual filings. Instruction CVM 480 of 7 December 2009 introduced the Reference Form (*Formulário de Referência* or FR) that companies must use to disclose information, such as financial statements, risk factors and policy, operational and economic issues and projections, management discussion, corporate governance policies and rules, internal controls and related party transactions, securities trading policies, as well as compensation details, among other topics. Before the introduction of the new compensation disclosure demands in the FR, Brazilian companies reported a budget for the total lumped compensation of the BOD and senior managers that had to be approved annually in the General Shareholders Assembly and provided only general statements about their compensation policy and instruments.

The focus of this article is on the total compensation amount disclosed on section 13 of the FR. Companies must disclose the sum for all individuals and the average, minimum, and maximum individual total compensation for the BOD and senior management, separately. Total compensation includes all forms of benefits to BOD members and senior managers such as wages, bonuses, options and stock plans, and insurance, severance and retirement benefits. Yet, companies are not required to disclose compensation of individual in senior management and the BOD. Thus, it is not clear how much each BOD and senior management member earns.

Between 15 and 20 percent of Brazilian listed companies, depending on the year considered, still do not comply with this disclosure. They rely on a court injunction secured by the Brazilian Institute of Financial Executives in 2010 that guarantees its members the

right of non-compliance. The plaintiffs claim that the new regulation made their members more vulnerable to criminals, particularly kidnapers, because divulging the maximum senior management and BOD compensation is akin to revealing how much the most important people in the company earn. Be as it may, Barros *et al.* (2015) do not find support for the personal safety argument. They conclude that non-compliance is positively related to company size and ownership concentration and negatively associated to the quality of corporate governance practices and profitability. Even so, the court injunction may remain in effect for many years because the Brazilian judiciary will certainly take from one to two decades to reach a final decision on the matter, given the many opportunities for appeals and procrastination offered by the local judicial process.

The Brazilian stock exchange added three premium-listing segments in 2000 to its single existing list. The existing list at the time became the "traditional" list and it does not require anything in addition to the legal requirements. The three premium lists require that companies comply with increasingly more demanding corporate governance and disclosure practices. Companies voluntarily join the listing level that they desire. The three new lists are, in ascending order of rigor of their demands: Level 1, Level 2, and *Novo Mercado* (New Market or NM). Interestingly, not even the most rigorous list (NM) includes demands about compensation. Finally, there are a few Brazilian corporate governance codes. The Brazilian Corporate Governance Institute (IBGC) produced the most widely used. It recommends that companies disclose individual compensation and, if they do not do it, that they explain why. However, there is no regulatory comply or explain requirement relative to any of the existing codes.

2.2 Brief literature review

Jensen and Murphy (1990) suggest that compensation is directly related to company size, value, and performance. Larger companies may be more complex and demand more and better managers, which should be able to deliver better corporate performance and increase market value. This is not free of controversy. Bebchuk and Fried (2005) claim that the relationship between compensation and performance is weak due to the design of variable compensation packages.

Silva and Chien (2013) investigate compensation in 420 Brazilian listed companies between 2002 and 2009, before the FR compensation disclosure rules. They do not find a significant relationship between total compensation and relative market value or performance. Correia, Amaral, and Louvet (2014) analyzed total compensation in the 1997-2006 period, prior to the introduction of the FR as well. They find a positive and significant association between compensation and company size and a negative and significant relationship between compensation and relevant institutional investor

ownership. Relevant ownership defined as greater than the five percent legal threshold for disclosure. The largest institutional investors in Brazil are pension funds linked to the largest state-owned companies. Pinto and Leal (2013) indicated that state-owned companies pay significantly less to their BOD and senior managers than other companies. Thus, the Correia *et al.* finding may simply reflect state ownership.

Ownership concentration may be detrimental to compensation decisions in Brazil. Sternberg, Leal, and Bortolon (2011) showed that Brazil is a high ownership concentration economy. Even though major and controlling shareholders may monitor management compensation more closely than widely dispersed shareholders, they may also abuse their power and compensate themselves generously above professional managers when they act as senior managers or BOD members, specially in family controlled companies (BARONTINI and BOZZI, 2011; VILLALONG and AMIT, 2006). Consistently, Pinto and Leal (2013) show that Brazilian companies with no controlling shareholder or coalition (a bloc of shareholders with more than 50% of the voting shares) pay an average of 79 percent more to senior managers, twice more to the chief executive officer (CEO), and 80 percent more to BOD members. This result refers to 315 listed companies in 2009, the first year of FR reporting. They also conclude that compensation decreases as ownership concentration increases but that family controlled companies pay 43 percent more to their CEOs and that BOD compensation increases proportionally to family membership in the BOD. This previous Brazilian evidence suggests that company size, ownership concentration, and the identity of controlling shareholders may be relevant compensation determinants.

2.3 BOD characteristics aspects

This article intends to gauge the relationship between BOD characteristics and compensation. Group decision-making is subject to the effects of social interactions among group members. Group formation, cohesion, and characteristics may be related to the outcomes of its decisions. Dorff (2007) believes that groupthink and information cascades are two aspects of social interaction that may affect BOD decision making, particularly in compensation decisions.

Janis (1982) defines groupthink as flaws in decision making by a cohesive group striving for unanimity. This cohesive group operates with civility and under specific cooperation norms and may place greater value on consensus than on the critical evaluation of alternate courses of action. Janis (1982) believes that groupthink is more likely to occur when groups are not very diverse and have limited time for decisions that may greatly impact group members. Bainbridge (2002) relates the propensity of

groupthink in BODs to the demographic characteristics of its members, their social status, the importance and quantity of decisions, and the time availability of directors.

BOD member diversity may reduce homogeneity and extreme cohesion and potentially mitigate groupthink. Subrahmanyam (2008) argues that CEOs and directors are less likely to belong to the same social network when boards are more heterogeneous, leading to better corporate governance practices, lower executive compensation, and more and better debate. Yet, Bebchuk and Fried (2005) stress that directors are commonly chosen through the social networks of incumbent directors.

Silveira and Barros (2013) developed a score to gauge BOD homogeneity in French companies that considers gender and foreigner membership, tenure, and age and academic background dispersion. This article develops a similar score. Even though there are claims that homogeneity is directly associated to groupthink, we do not assume or attempt to verify this relationship by means of the score herein because homogeneity may also be related to other group behavior aspects.

Information cascades occur when a group member disregards his or her own information or opinion and finds that the optimal decision is to follow the opinion or vote of a preceding member in a situation that group members voice their opinions openly and sequentially, as in a BOD meeting (BIKHCHANDANI, HIRSHLEIFER, and WELCH, 1992). Group members begin to ignore their own private information and follow the prevailing votes after a certain point in such setting (DORFF, 2007). When the first few that voice their opinions are group leaders, most powerful members, or those that possess privileged information they induce or aggravate information cascades. Dorff (2007) states that following the decision of others may be desirable in social networks even when in conflict with own private information. Information cascades may be confounded with groupthink because consensus is reached either way.

Dorff (2007) asserts that information cascades are related to decision makers with little private information witnessing individual decisions voiced openly within the group by preceding decision makers under time limitations. More time availability could lead to a greater propensity to consider other alternatives. González, Modernell, and París (2006) found evidence of information cascades in experiments with a three people board where the second to vote tends to follow the first, who has more private information than the others. Dorff (2007) argues that directors are busy people with little incentive to search for information independently to assess complex decisions. Directors may participate in several boards or in another senior management team, limiting their time availability.

Santos and Silveira (2007) suggest that Brazilian directors are busy because of pervasive board interlocking and other senior management commitments. Silveira and

Barros (2013) assert that busy boards and those in which powerful company leaders set the agenda tend to be more passive, inducing information cascades. These authors proposed a BOD passivity score that inspired the passivity score employed herein. We do not assume that passive boards show information cascades or attempt to verify it.

Pinto and Leal (2013) evince that Brazilian companies that voluntarily joined the two most demanding listing levels of the Brazilian stock exchange pay more to senior managers and BOD members. Thus, better corporate governance and disclosure practices may be positively associated to greater compensation levels in Brazil. Lower ownership concentration and company size are also positively related to compensation levels. The companies in the two most demanding trading lists display lower ownership concentration.

These empirical results suggest that compensation is larger in better-governed and lower ownership concentration companies. It is reasonable to believe that less homogeneous and passive boards are more often present in these companies. If this were verified, the Brazilian evidence suggests that less homogeneous and passive boards grant larger compensation packages, possibly in face of more complex compliance and business demands. On the other hand, higher ownership concentration and poorly governed companies should display more homogeneous and passive boards. Compensation could be lower in these companies because major shareholders control compensation packages tightly. This, however, does not exclude outlier compensation values to major shareholders when they hold senior management and board seats. This evidence contrasts with the managerial power hypothesis that implies that better-governed companies would display less homogeneous and passive boards that grant lower compensation packages. Thus, there is no clear hypothesis about BOD characteristics and compensation levels.

3 – DATA DESCRIPTION

The Appendix contains details about the definitions of the variables employed in this article. Company compensation level is the dependent variable. It is implemented through four variables measuring total and average individual compensation for the BOD and senior management in logarithm form. We considered the total compensation of BOD and senior management, including wages and other cash payments, such as bonuses and profit sharing, direct and indirect benefits, severance payments, stock grants, and stock options. Regulation requires the disclosure of the maximum, average, and median of individual compensations. Barros *et al.* (2015) report that many companies use a court injunction in order to avoid reporting these figures alleging that their senior officers

would be at a greater risk of criminal acts. Companies are not required to report individualized compensation figures.

The main explanatory variables are two scores that aspire to capture BOD homogeneity and passivity based on the proposal advanced by Silveira and Barros (2013, p. 45-48) in their analysis of French companies. The scores and their components are built as dummy variables. The first score collects personal characteristics of the individuals that comprise the BOD: age, gender, and academic background. Panel A of Table 1 shows how we obtained the homogeneity score (HS). The second score gathers BOD characteristics such as time availability, number of committees, and the proportion of independent BOD members. It attempts to capture the potential passivity of BOD members because they may lack the proper time availability and independence or the board is not satisfactorily structured. Panel B of Table 1 shows the passivity score (PS). These BOD characteristics are typically addressed in recommendations for BOD improvement, such as those listed in Leblanc (2013).

Table 1 – Homogeneity and Passivity Scores

Dummy Variable	Definition
Panel A: homogeneity score (HS):	
ACBKG	The academic background profile is defined as business, technological, legal, and other. Null if three or more profiles are present in the BOD in each company-year; 1 otherwise.
AGE	Null if the standard deviation of the age of BOD members in each company-year is greater than the median standard deviation of the age of BOD members in each company-year in the sample; 1 otherwise.
GENDER	Null if the percentage of female directors in the board of directors (BOD) relative to the total of BOD members in each company-year is greater than the sample median; 1 otherwise.
HS	Null if the sum of the values of GENDER, AGE, and ACDCKG is less than 2; 1 otherwise, indicating greater BOD homogeneity.
Panel B: passivity score (PS):	
AVAIL	Null if the percentage of non-executive BOD members that hold five or more BOD or executive positions elsewhere relative to the total of BOD members in each company-year is less than the sample median of this percentage; 1 otherwise.
CEO	Null if the percentage of directors that are CEOs of other companies relative to the total of outside BOD members in each company-year is less than the sample median of this percentage; 1 otherwise.
COMM	Null if the percentage of BOD committees made up of 50% or more of outside members is 2 or more; 1 otherwise.
INDEP	Null if the percentage of BOD members declared as independent relative to the total of BOD members in each company-year greater or equal to the sample median of this percentage; 1 otherwise.
PS	Null if the sum of CEO, COMM, INDEP, and AVAIL is less than 2; 1 otherwise, indicating greater BOD passivity.

The new regulation demanding more details about compensation disclosure and BOD characteristics, among many other items, was introduced at the end of 2009 comprising their annual filings according to the FR. The Brazilian securities commission availed software for standardized company uploading of their BOD and compensation information in 2010. Thus, BOD and compensation information was hand-collected from items 12 and 13 of the FR, respectively, for years 2010 through 2013. The initial sampled year was the first one in which the company upload software was available. The FR was introduced for reporting the 2009 information but collection format was not standardized until 2010. Information prior to 2009 was provided under a different regulation and format and did not contain the details needed for the analysis in this article. We used the most recent FR available for a given year, since companies may update their annual filings as much as they want. The number of listed companies included in the sample for each

year was 328, 337, 343, and 331, respectively for 2010 through 2013, totaling 1,339 firm-years.

The total number of firm-years initially considered for the two scores was 1,339. There were 1,083 firm-years with senior management compensation information. There were 203 cases of null firm-year compensation for senior management that were excluded from the analysis as probable reporting mistakes. The remaining firms did not report compensation due to the aforementioned court injunction and were also excluded from the analysis. Regarding BOD compensation, 1,111 firm-years reported it. Fifty-three firm-years reporting null BOD together with non-null senior management compensation were considered valid because there are firms with null BOD compensation (Pinto and Leal, 2013, p. 312; IBGC, 2014, p. 21). We assigned a BOD compensation value of 1 to these firm-years to allow for the logarithm.

The control variables include the total (voting and non-voting) ownership percentage of the largest shareholder, listing in the two most demanding premium lists of the Brazilian stock exchange to proxy for the quality of corporate governance practices of the company, firm size, return on assets, and relative market value (the price-to-book ratio), as described in the Appendix. The set of control variables was extracted from the Economatica® database. The previous Brazilian literature reviewed indicates that these controls are significant determinants of compensation levels (SILVA and CHIEN, 2013; CORREIA *et al.*, 2014; BARROS *et al.*, 2015). We apply panel regressions to analyze the influence of the BOD characteristics scores on compensation. Details on the implementation of the models are provided in the following section and in the notes to the tables.

4 – RESULTS

4.1 Descriptive statistics

Panel A of Table 2 presents descriptive statistics for selected variables for all firm-years in the panel. Descriptive statistics for each year are available upon request but do not reveal different patterns. The average BOD includes seven members. Eighty-three percent of BOD members are outsiders but companies declared only 16 percent independent, on average. These results are consistent with those in Brugni *et al.* (2013). Four percent of the outside BOD members held seats in more than five BODs and three percent were CEOs in other companies. The average BOD member age was 56. Boards included only eight percent of women and, typically, three different academic backgrounds among directors. There was an average of only one committee with a majority of outside members per board.

The average exchange rate was 1.8874 Brazilian reais (R\$) per US dollars (US\$) in the 2010-2013 period, according to Brazilian Central Bank annual averages and own calculations. The average total annual compensation of all senior managers was R\$ 9.9 million (US\$ 5.2 million) but the corresponding median was only R\$ 3.4 million (US\$ 1.8 million), indicating a skewed distribution. The average of the average individual annual compensation figures for senior managers was R\$ 1.8 million (US\$ 1.0 million) and the corresponding median was R\$ 0.8 million (US\$ 0.4 million). The average and median total compensation of all BOD members were R\$ 1.5 million (US\$ 0.8 million) and R\$ 0.5 million (US\$ 0.3 million), respectively, but the maximum was a whopping R\$ 104 million (US\$ 55.1 million). Pinto and Leal (2013) suggested that many times the most powerful person in a Brazilian company is a BOD member and not the CEO. For example, controlling shareholders sometimes prefer to command their companies from the BOD without assuming CEO responsibilities and dealing with the day-to-day operation and compliance issues of the company. The average and median of the average individual annual BOD member compensation are R\$ 310 thousand (US\$ 164 thousand) and R\$ 70 thousand (US\$ 37 thousand), respectively. Panel B of Table 2 portrays these figures.

The control variables are in Panel C of Table 2. The average total asset of the sample companies is R\$ 19 billion (US\$ 10 billion). N2NM is a dummy variable indicating if a company is listed in the two most demanding listing levels of the exchange (Novo Mercado or Level 2) and proxies for the quality of its corporate governance practices. Forty-one percent of the sample companies are listed in Novo Mercado or Level 2. The percentage of the total equity capital, including voting and non-voting shares, of the largest shareholder averages 45 percent, consistent with Sternberg et al. (2011) that report a very high degree of ownership concentration. Finally, the median return on assets and price-to-book ratio are 2.85 percent per year and 1.32, respectively.

A correlation analysis, omitted here but available with the authors, showed that HS and PS are positive and significantly correlated (0.43). These scores are also positive and significantly correlated with ownership concentration and negative and significantly correlated with firm size and N2NM. Consistently, firm size is positive and significantly associated with N2NM and negative and significantly correlated with ownership concentration.

Table 2 – Descriptive statistics 2010-2013

Variable	Mean	Median	SD	Maximum	Minimum	No obs.
Panel A: characteristics of the board of directors						
Ac. Backg.	3	3	1	7	1	1339
Age	56	56	7	89	35	1339
Busy	4%	0%	13%	100%	0%	1339
CEO-other	3%	0%	9%	50%	0%	1339
Committees	1	0	1	10	0	1339
Independent	16%	0%	19%	100%	0%	1339
Outsider	83%	86%	18%	100%	0%	1339
SD of age	10	10	5	132	0	1339
Size	7	7	3	24	1	1339
Woman	8%	0%	14%	100%	0%	1339
Panel B: compensation variables (in R\$ thousands)						
TMC	12,200	5,029	33,300	454,000	0.137	1083
AMC	2,280	1,041	8,999	177,000	0.000	1083
TBC	1,851	676	6,196	104,000	0.001	1111
ABC	377	103	2,466	72,700	0.000	1111
Panel C: control variables						
TA	19.00	2.25	96.60	1,160	0.00	1322
N2NM	0.41	0.00	0.49	1.00	0.00	1339
PB	1.92	1.32	8.21	71.93	-224.15	1116
ROA	-2.50%	2.85%	1,880%	58,971%	-31,476%	1321
T1	45%	39%	26%	100%	5%	1337

Notes: all variables defined in the Appendix. All currency figures in Brazilian reais (R\$). TA in Panel C in R\$ billions. The average exchange rate in the 2010-2013 period was R\$ 1,8874 per US\$. SD is standard deviation. There were 328, 337, 343, and 331 for 2010, 2011, 2012, and 2013, respectively. There were 47, 48, 44, and 89 companies that did not inform compensation of BOD and senior management in 2010, 2011, 2012, and 2013, respectively, and were omitted from the analysis. The cases in which the senior management team compensation was informed and non-null and the BOD compensation was null were included in the analysis.

4.2 Mean and median tests

Table 3 shows mean and median tests of each component of HS e PS according to N2NM. HS and PS and their individual components assume values of 1 or 0, with one suggesting more homogeneous or passive boards, respectively. Panel A of Table 3 shows that HS is lower for the companies listed in the two most demanding segments of the exchange. However, the individual components of HS do not display a consistent behavior. Age is not significantly different in the two categories of N2NM. Gender diversity is lower when companies are listed in the two most demanding listing segments, while the academic background of board members is more diverse in those companies. Firm size is positively correlated with N2NM, thus there should be greater academic background diversity and less gender diversity in the boards of larger firms.

PS is significantly lower when N2NM is equal to one according to Panel B of Table 3. Companies listed in the two most demanding lists significantly use more committees with outside BOD member majority, have more independent directors but display greater

board interlocking. This insinuates that the BODs in these companies may be structured more formally and employ more outside and independent, but busier, directors because these firms search for more experienced, reputed, and well connected directors.

Finally, Panel C of Table 3 shows that the senior management and BOD compensation are significantly larger when N2NM is equal to one, denoting a possible effort to hire more experienced and qualified professionals. Results for the BOD compensation reflect a skewed mean possibly due to extreme values associated to large compensation packages to controlling shareholders who are BOD members, as suggested by Pinto and Leal (2013).

Table 3 – Mean and median tests according to premium exchange listing (N2NM)

Variable	Mean	N2NM=0 Mean	N2NM=1 Mean	t	z	No obs N2NM=0	No obs N2NM=1
Panel A: homogeneity score (HS) and its components							
HS	0.49	0.51	0.45	2.26	2.26	790	549
AGE	0.50	0.51	0.48	1.12	1.12	790	549
ACBKG	0.34	0.39	0.26	5.16	5.11	790	549
GENDER	0.64	0.61	0.68	-2.86	-2.85	790	549
Panel B: passivity score (PS) and its components							
PS	0.69	0.87	0.44	19.25	17.04	790	549
AVAIL	0.15	0.12	0.18	-3.04	-3.03	790	549
CEO	0.15	0.14	0.16	-0.84	-0.85	790	549
COMM	0.79	0.89	0.64	11.46	10.94	790	549
INDEP	0.54	0.83	0.12	36.09	25.69	790	549
Panel C: senior management and BOD total compensation (R\$ millions)							
TMC	12.20	10.30	14.40	-2.05	-14.23	580	503
log(TMC)	15.26	14.72	15.88	-11.96	-14.23	580	503
TBC	1.85	1.96	1.72	.064	-8.30	605	506
log(TBC)	12.70	12.13	13.38	-6.45	-8.30	605	506

Notes: all variables defined in Table 1 and the Appendix. The average exchange rate in the 2010-2013 period was R\$ 1,8874 per US\$. N2NM is equal to 1 when the company is listed under the two most demanding segments of the Brazilian exchange. *t* is the mean equality t-test according to N2NM. *z* is the Mann-Whitney median equality test z-score according to N2NM. Values in bold are significant at the 5 percent level.

Table 4 shows the mean and median of the control variables according the HS and PS dummy variables. Companies with a unit HS or PS are smaller, display greater ownership concentration, and are usually not listed in the two most demanding segments of the stock exchange. Results are not significant or conclusive for the return on assets and price-to-book ratio.

Table 4 – Mean and median tests according to the homogeneity and passivity scores

Panel A: select variables and the homogeneity score (HS)						
Variable	Mean HS=0	Mean HS=1	t	z	No obs HS=0	No obs HS=1
TA	14.75	13.80	7.10	6.19	678	644
N2NM	0.44	0.38	2.26	2.26	687	652
PB	1.87	1.99	-0.25	0.80	606	510
ROA	-0.15	0.11	-0.26	2.65	678	643
T1	0.42	0.49	-4.35	-3.87	687	652

Panel B: select variables and the passivity score (PS)						
Variable	Mean PS=0	Mean PS=1	t	z	No obs PS=0	No obs PS=1
TA	15.46	13.76	12.16	12.59	411	911
N2NM	0.75	0.26	19.25	17.04	411	928
PB	2.47	1.62	1.66	6.34	395	721
ROA	0.04	-0.05	0.09	4.24	411	910
T1	0.35	0.50	-9.91	-9.44	411	928

Notes: all variables defined in Table 1 and the Appendix. TA in R\$ billions. The average exchange rate in the 2010-2013 period was R\$ 1,8874 per US\$. HS and PS are equal to 1 when the company possibly has more homogeneous and passive BODs. *t* is the mean equality t-test according to HS or PS. *z* is the Mann-Whitney median equality test z-score according to HS or PS. Values in bold are significant at the 5 percent level.

Table 5 shows a preliminary univariate analysis of compensation according to HS and PS and their individual components. Panels A and B show the total senior management compensation results. Senior management compensation is significantly larger when HS and PS are equal to one. The HS result for senior management is largely driven by the academic background diversity in the BOD because the results for the other variables are weaker. The results for the individual components of PS in Panel B are more difficult to interpret. Senior management compensation is larger when there is greater use of committees with a majority of outside members and a larger number of independent BOD members, which is consistent with the conjecture that senior management compensation increases as companies become larger and more complex, as reflected by the number of committees and independent directors in the BOD. Senior management compensation is significantly smaller when there are more BOD members who are CEOs or occupy board seats in other companies. It is difficult to say how the presence of these BOD members inhibits greater pay for senior management.

Finally, Panels C and D of Table 5 depict the results for the total BOD compensation. BOD compensation is also significantly larger when HS and PS are equal to one. The HS result in Panel C is also driven by the academic background diversity in the BOD because the results for the other variables are weaker. Greater academic background diversity may be associated to boards in larger and more complex companies. The results for the individual components of PS in Panel D are more difficult to

interpret once again. As with the total compensation of senior management, the total compensation of the BOD is larger when there are more committees with a majority of outside members and a larger number of independent directors. The greater presence of BOD members who are also CEOs or directors in other companies is associated to a lower total compensation to the BOD.

In general, these preliminary results are similar for the total compensation of senior management and BOD. Greater BOD member academic background diversity and independence and BOD use of committees with a majority of outside members are associated with larger compensation packages. This is consistent with the fact that greater use of committees and independent directors is associated with company size and possibly complexity. On the other hand, more BOD members who are CEOs and directors in other companies are related to lower compensation packages. At first, this evidence seems contradictory because busy boards would place less energy in compensation decisions and be less inclined to reduce the compensation packages of their peers, especially if they belong to the same social network. However, our correlation analysis shows that HS and PS are positively and significantly correlated with ownership concentration evincing the influence of major shareholders over directors in general. Moreover, Brugni et al. (2013) point out that 75 percent of Brazilian directors in their sample were nominated by controlling shareholders.

Table 5 – Mean and median tests of compensation according to the homogeneity (HS) and passivity (PS) scores and their components

Variable	Mean Variable=0	Mean Variable=1	t	z	No obs Variable=0	No obs Variable=1
Panel A: log of total management compensation (TMC) and HS						
HS	15.46	15.03	4.17	3.46	585	498
AGE	15.38	15.14	2.27	1.96	556	527
ACBKG	15.38	15.00	3.48	4.17	745	338
GENDER	15.32	15.23	0.81	0.57	405	678
Panel B: log of total management compensation (TMC) and PS						
PS	15.96	14.88	10.54	11.74	382	701
AVAIL	15.15	15.87	-5.10	-4.93	916	167
CEO	15.19	15.63	-3.08	-3.71	915	168
COMM	16.34	14.91	12.95	14.17	268	815
INDEP	15.74	14.75	10.15	12.55	559	524
Panel C: log of total BOD compensation (TBC) and HS						
HS	13.03	12.32	3.61	5.53	595	516
AGE	12.80	12.59	1.10	2.94	572	539
ACBKG	12.86	12.36	2.36	5.24	758	353
GENDER	12.96	12.54	2.04	1.76	416	695
Panel D: log of total BOD compensation (TBC) and PS						
PS	13.78	12.13	8.21	11.25	383	728
AVAIL	12.50	13.80	-4.82	-5.69	938	173
CEO	12.68	12.79	-0.38	-2.48	940	171
COMM	14.41	12.15	10.24	14.19	268	843
INDEP	13.38	11.99	7.18	9.23	564	547

Notes: The compensation variables are in R\$ millions defined in the Appendix. The average exchange rate in the 2010-2013 period was R\$ 1,8874 per US\$. HS and PS are equal to 1 when the company possibly has more homogeneous and passive BODs. Their components are defined in Table 1. *t* is the mean equality *t*-test according to HS, PS or each one of their components. *z* is the Mann-Whitney median equality test *z*-score according to HS, PS or each one of their components. Values in bold are significant at the 5 percent level.

4.3 Panel models

Tables 6 and 7 show the results for the total and average compensation of senior management and the BOD, respectively. Four different models are displayed for each one of the four compensation variables. The notes in the tables offer details about the models. The Breusch-Pagan (1980) test, not shown, indicated that panel regressions were better than ordinary least square regressions for all models, suggesting that the intercepts across individuals are not equal. Fixed effect panel models assume that non-observed individual heterogeneity is correlated with the explanatory variables and is time invariant. This kind of panel model is unbiased by time invariant omitted characteristics but cannot be used to investigate the influence of these characteristics on the dependent variable (Kennedy, p. 303-307). Thus, the dummy N2NM was omitted in the fixed effect models because it does not vary in time. Random effects panel models, on the other hand, assume that non-observed individual heterogeneity is uncorrelated with the explanatory variables and has a

random component. This kind of model allows the inclusion of time invariant explanatory variables. The Hausman (1978) test verifies the correlation between the explanatory variables and the random effects. The null is that random effects panel models estimators are unbiased.

Table 6 shows the panel model results for the total and average compensation of the senior management team. Models I through III in Table 6 use fixed effects and model IV uses random effects panel regressions following the results of the Hausman (1978) tests reported in the table. The HS and PS scores do not display any significance in the panel models even when they are the only explanatory variables. Model IV includes firm size, ownership concentration, and the corporate governance quality proxy and is the only one with a noteworthy adjusted R^2 . Not surprisingly, senior management compensation increases with firm size, the quality of corporate governance practices, and the price-to-book ratio, and decreases with ownership concentration, a result suggested by our univariate analysis and already reported for Brazil by Pinto and Leal (2013) for 2009 and Silva and Chien (2013, p. 494) for the period between 2002 and 2009, prior to the new FR disclosure regulation. Board characteristics do not seem to be associated with senior management compensation when taken jointly in the two scores. The other explanatory variables, which may influence board characteristics as well as compensation, are possibly more important as determinants of Brazilian senior management compensation. This is consistent with the Leal and Carvalhal-da-Silva (2007) assertion that disclosure was the most important corporate governance aspect in their analysis.

Table 6 – Panel models for senior management compensation 2010-2013

Variable	Total Management Compensation				Average Management Comp.			
	I	II	III	IV	I	II	III	IV
HS	-0.03 (0.46)	-0.06 (0.17)	–	-0.05 (0.21)	0.02 (0.82)	-0.01 (0.87)	–	-0.03 (0.61)
PS	-0.01 (0.78)	–	-0.02 (0.65)	0.03 (0.58)	0.01 (0.92)	–	0.04 (0.67)	0.06 (0.49)
TA	–	–	–	0.39 (0.00)	–	–	–	0.25 (0.00)
ROA	–	0.09 (0.37)	0.10 (0.35)	0.03 (0.76)	–	0.05 (0.65)	0.05 (0.65)	0.03 (0.71)
PB	–	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	–	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
N2NM	–	–	–	0.79 (0.00)	–	–	–	0.64 (0.00)
T1	–	–	–	-0.45 (0.10)	–	–	–	-0.42 (0.09)
Intercept	15.29 (0.00)	15.44 (0.00)	15.43 (0.00)	9.36 (0.00)	13.71 (0.00)	13.85 (0.00)	13.82 (0.00)	9.97 (0.00)
Adj. R ²	0.04	0.01	0.02	0.37	0.03	0.00	0.00	0.20
No. Obs.	1083	937	937	937	1079	934	934	934
Groups	310	279	279	279	310	279	279	279
HT	0.00	0.00	0.00	0.17	0.00	0.02	0.00	0.53

Notes: All variable definitions in Table 1 and the Appendix. Figures in parenthesis are p-values for the coefficient significance t-tests. HT is the p-value for the null that a random effects model is preferable in a Hausman (1978) test. Models IV for the two dependent variables are random effects models. Variable N2NM was omitted in the fixed effects models because it does not display year-to-year variability.

Results for the total and average BOD compensation are in Table 7. Total and average BOD compensation is positive and significantly associated with firm size and the proxy for the quality of corporate governance practices. The results for the HS and PS dummies are weak once again. HS and PS displayed a negative marginal significance only in one model each, suggesting that more homogeneous and passive boards enjoy lower compensation packages, which is consistent with the conjectures in this article. Only models IV, those including all variables, displayed a noteworthy adjusted R².

Table 7- Panel models for board of director's (BOD) compensation 2010-2013

Variable	Total BOD Compensation				Average BOD Compensation			
	I	II	III	IV	I	II	III	IV
HS	-0.30 (0.09)	-0.14 (0.16)	–	-0.05 (0.68)	-0.18 (0.25)	-0.06 (0.50)	–	0.03 (0.81)
PS	-0.13 (0.36)	–	-0.15 (0.10)	-0.12 (0.27)	-0.14 (0.26)	–	-0.12 (0.16)	-0.13 (0.20)
TA	–	–	–	0.59 (0.00)	–	–	–	0.46 (0.00)
ROA	–	0.10 (0.56)	-0.05 (0.83)	-0.13 (0.49)	–	0.08 (0.62)	-0.04 (0.84)	-0.10 (0.60)
PB	–	0.00 (0.74)	0.00 (0.48)	0.00 (0.78)	–	0.00 (0.77)	0.00 (0.54)	0.00 (0.79)
N2NM	–	1.15 (0.00)	–	0.63 (0.09)	–	0.84 (0.02)	–	0.41 (0.22)
T1	–	–	–	-0.53 (0.33)	–	–	–	-0.44 (0.37)
Intercept	12.92 (0.00)	12.19 (0.00)	13.02 (0.00)	4.04 (0.01)	11.15 (0.00)	10.56 (0.00)	11.22 (0.00)	4.30 (0.00)
Adj. R ²	0.03	0.03	0.03	0.15	0.02	0.02	0.02	0.11
No. Obs.	1111	958	958	958	1110	958	958	958
Groups	319	287	287	287	318	287	287	287
HT	0.00	0.13	0.00	0.44	0.00	0.23	0.00	0.57

Notes: All variable definitions in Table 1 and the Appendix. Figures in parenthesis are p-values for the coefficient significance t-tests. HT is the p-value for the null that a random effects model is preferable in a Hausman (1978) test. Models II and IV for the two dependent variables are random effects models. Variable N2NM was omitted in the fixed effects models because it does not display year-to-year variability.

Silva and Chien (2013) studied the determinants of performance and included the overall total and average joint compensation of senior management and the BOD as explanatory variables because that is what was available prior to the regulatory change by the end of 2009. They find that compensation is positive and significantly related to the price-to-book ratio but no relationship with the return on assets, which is consistent with the results presented above.

In general, the evidence for HS and PS is disappointing. These board characteristics scores do not have a significant relationship with compensation and are superseded by better known explanatory variables such as firm size, ownership concentration, relative market value, and a proxy for the overall quality of corporate governance and disclosure practices of the company. The intercepts of all models are significant, suggesting that future research should engage in searching for more determinants of compensation. Naturally, the choice of score implementation adopted herein may have also influenced our findings.

4.4 Robustness checks

We do not address endogeneity issues further because of the lack of significance of the board characteristics dummies. The HS and PS dummies are a function of the median of each specific component. An alternative definition is to measure each component of these scores according to the quartiles of the underlying variable. Thus, the alternate HS has three components that assume values between 0 and 3, depending on the quartile. This alternative HS is the sum of the scores for each individual component and varies between 0 and 9. An alternate PS redefined in the same way takes on values between 0 and 12 because it has four individual components assuming values ranging between 0 and 3 each. This replacement criterion expands the range of categorical values that each original score had. Yet, the panel regression results with the alternative scores are weaker than those with the original scores. We have also produced a battery of descriptive statistics, preliminary tests, and OLS regressions for each individual year but they do not add any new information to the more synthetic panel results above. These outcomes are not included in the article but are available upon request.

5 – CONCLUSIONS

Two scores attempt to capture the degree of homogeneity and passivity of the board of directors of Brazilian listed companies. A change in the reporting regulation at the end of 2009 and a new software standardization to input the data released in 2010 made available more information about the board characteristics in these scores. This article used an average of 335 companies per year in a panel from 2010 through 2013 to investigate if the scores are significant determinants of senior management and board of director compensation. The two scores were implemented as dummy variables, assuming the value of 1 when boards are supposedly more homogeneous or passive.

One conjecture was that more homogeneous and passive boards could decide in favor of more generous compensation packages, according to the managerial power hypothesis (BEBCHUK and FRIED, 2005). In high ownership concentration environment of Brazil, this could translate into greater compensation for controlling shareholders and their family members or representatives when they act as managers or directors.

The results from panel regression models did not reveal any significance for the scores. Other well-known determinants of compensation, such as a proxy for the overall quality of the corporate governance practices of the company, firm size, and the price-to-book ratio were positive and significantly associated with senior management and board

compensation, whereas total equity ownership concentration of the largest shareholder was negative and significantly associated with compensation.

The evidence for these variables is consistent with prior Brazilian findings in Pinto and Leal (2013) for 2009 and Silva and Chen (2013) for a period before the new disclosure regulation. This evidence is also consistent with the conjecture that certain corporate governance practices may have greater influence than others, as suggested by Leal and Carvalhal-da-Silva (2007) about disclosure practices.

Even though the homogeneity and passivity scores did not display significance in the panel models, our univariate analysis revealed associations between compensation and some board characteristics. The academic background diversity of board members, the proportion of independent directors, and the number of committees with a majority of outside members seem to be positively associated to senior management and director compensation. On the other hand, the compensation of senior management and directors are lower when more board members act as CEOs and directors of other companies possibly because the board passivity indicator is positively and significantly associated to ownership concentration.

These univariate results, however, do not transpire in the multivariate models probably because other variables, particularly the proxy for the quality of corporate governance practices and firm size, are core determinants of compensation and, when taken jointly, may represent potential substitutes to measure the same constructs. For example, academic background diversity is not mutually exclusive with gender diversity and may also be strongly related to firm size, board functioning complexity (more committees, for example), and more outside directors (and possibly more interlocking), all of them being reflected in the quality of corporate governance practices proxy.

The univariate analysis also showed that firm size, better quality of corporate governance practices, and ownership concentration are associated with the individual variables used in the board homogeneity and passivity scores. Larger firms with less concentrated ownership and better corporate governance practices may display more diverse and less passive boards. Better-governed firms may also display boards with greater academic background diversity, with more independent but busier directors, and more committees comprised with a majority of outside directors. Somewhat surprisingly, these companies have significantly less board gender diversity.

Future research may have to compile broader and more detailed board and director characteristics metrics. It is possible that a better appraisal of the complexity of board tasks through an analysis of their agenda, minutes, frequency of meetings, and director absenteeism, for example, yields better metrics. Board diversity should also include

other characteristics such as nationality, regional origin, elementary schooling information, family and professional networks, etc. However, some of these data may not be available or reported in a standardized fashion and the hindrances we faced will remain. Additional lines of inquiry could examine fixed and variable compensation proportions, as well as the sensitivity of compensation packages, relative to board characteristics.

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APPENDIX
Variable definitions

Board characteristics variables in Table 2:

Variable	Definition
Ac. Backg.	Number of different academic backgrounds of BOD members in a company-year, such as business, law, technology, etc.
Age	Average age of the BOD members in a company-year.
Busy	Percentage of outside BOD members that hold five or more BOD seats in other companies.
CEO-other	Percentage of outside BOD members that are also identified as CEOs in other companies.
Committees	Number of BOD committees with 50% or more of outside members.
Independent	Percentage of independent members of the BOD. Only the BOD members identified as independents were counted.
Outsider	Percentage of outside effective BOD members. Outside BOD members are those that belong only to the BOD and not to senior management.
SD of age	Standard deviation of the age of the BOD members in a company-year.
Size	Number of effective BOD members for each company-year. Only members of the BOD, and not their substitutes were counted.
Woman	Percentage of female effective BOD members. Gender determination was made through their first names because there is no gender identification field.

Compensation variables:

Variable	Definition
ABC	Sum of the total annual compensation of all members of the BOD divided by the total number of effective BOD members (size).
AMC	Sum of the total annual compensation of all members of senior management divided by the total number of senior managers.
TBC	Sum of the total annual compensation of all members of the BOD.
TMC	Sum of the total annual compensation of all members of senior management.

Control variables:

N2NM	Null if the company is listed in the traditional or Level 1 segments of the Brazilian stock exchange; 1 otherwise, i. e., if listed in Level 2 or <i>Novo Mercado</i> (NM).
PB	Price-to-book ratio defined as the ratio between the market value and the book value for each company-year.
ROA	Return on assets defined as the ratio between earnings before interest and total assets for each company-year from the end of the year income statement and balance sheet.
T1	Percentage of direct ownership of the largest shareholder in the voting and non-voting equity capital in each company-year.
TA	Natural logarithm of total assets of each company-year from the annual balance sheet.

