The Effects of Corporate Governance and Product Market Competition on Analysts’ Forecasts: Evidence from the Brazilian Capital Market

Prof. Dr. José Elias Feres de Almeida
Associate Professor at Federal University of Espirito Santo
Department of Accountancy
E-mail: feresdealmeida@gmail.com

Prof. Dr. Flávia Zóboli Dalmácio
Associate Professor at University of Sao Paulo
Department of Accountancy and Actuarial Sciences
E-mail: flaviazd@usp.br

Abstract
We investigate how the interaction between product market competition and corporate governance enhances the accuracy of analysts’ forecasts and reduces the forecasts’ deviation. We use a sample of Brazilian public firms and control with a random effects estimator and cluster regression. Our results suggest that competitive industries provide incentives to increase the flow of information but not necessarily to enhance its quality. However, strong corporate governance enhances the financial reporting process and consequently the quality of analysts’ forecasts. Our main evidence is that the analysts who cover firms in competitive industries with strong corporate governance are the most accurate.

Keywords: product market competition; corporate governance; accuracy of analysts’ forecasts.
1. Introduction and Hypotheses Development

In this paper, we investigate how the accuracy of analysts' forecasts is improved by product market competition and firms' corporate governance environment. The literature on industrial organisation and corporate governance supports the underlying premise of our analysis that product market competition increases the flow of information to the market and when combined with strong corporate governance mechanisms, these forces align the interests of insiders and outsiders, reducing the costs of obtaining private information (Greenwald & Stiglitz, 1990; Stiglitz, 2002; Dhaliwal et al., 2008; Bushman et al., 2004; Lopes & Walker, 2008).

The quality of the information disclosed to the market conveys a signal that is interpreted differently by each economic agent, leading to different decisions. For example, in interpreting an item of information issued by a firm, a competitor may interpret it in one direction, while an analyst may interpret the signal in the opposite direction; hence, “imperfect information affects both the internal organization of firms and its external relations with labor, capital, and product markets” (Greenwald & Stiglitz, 1990, p. 164).

The presence of imperfect information provides increased market power, which is exploited by firms to increase their market share or to strategically differentiate themselves from each other because of their different costs of obtaining information (Stiglitz, 2002). In this case, the quality of accounting information is affected by the incentives arising from the intensity of competition, which in turn affects the degree and direction of management’s discretionary decisions (Dhaliwal et al., 2008) to act in their own interests or to improve the information disclosed to the market.

For example, Cheng et al. (2013) conjecture that firms in less competitive industries are associated with lower quality accounting information. Their results suggest that different channels such as product market competition filter the accounting information disclosed by
firms and that competitive industries can improve earnings quality. Dhaliwal et al. (2008) similarly show that high product market competition improves conditional conservatism; in other words, there is more efficiency in contracts among firms in a highly competitive environment, which increases the pressure on firms to disclose private information to the market. However, there is a growing demand in the literature to understand the relationship between product market competition and the role of analysts as informational intermediaries (Ali et al., 2012; Li, 2010).

Product market competition enhances agents’ ability to compare firms in the same industry (Nalebuff & Stiglitz, 1983). Thus, competition in the industry combined with increased comparability of firms’ information will enhance the quality of analysts’ forecasts (Ali et al., 2012; Li, 2010). The theoretical perspective is that the degree of competition is related to the flow of information from firms to the market; however, the type of competition might lead firms to disclose opaque information (Cheng et al., 2013).

Another channel that improves earnings quality is corporate governance. The literature shows that strong corporate governance contributes to enhanced earnings quality and reduces earnings management practices that distort firms’ real economic performance (Bushman et al., 2004; Lopes & Walker, 2008).

In this context, product market competition and corporate governance are both determinants in overcoming institutional problems such as low-quality accounting information, poor minority shareholder protection and complex legal systems that increase operational agency costs, especially in emerging markets (La Porta et al., 1998; La Porta et al., 2002; Dyck & Zingales, 2004; Guadalupe & Perez-Gonzales, 2007; Lopes & Walker, 2008).

We have selected Brazil to investigate this scenario because it fits the conditions explained above, and it also includes the presence of controlling shareholders who directly influence the corporate governance structure for both board members and executives. In the
case of boards of directors, the presence of controlling shareholders reduces independence, while in the case of executives, the decision-making process is biased toward the controlling shareholders’ interests because they are able to expropriate minority shareholders and retain private information that could be used by analysts to increase the accuracy of their forecasts.

Furthermore, product market competition and corporate governance contribute to reduce agency costs and increase the flow and the quality of private information to the market, disclosing less imperfect and incomplete information for informational intermediaries such as analysts. Therefore, we aim to investigate the following research question: What are the impacts of product market competition and corporate governance on the accuracy of analysts’ forecasts?

The perspective we present is that the degree of competition in the product market is an external mechanism that increases the flow of high- and low-quality information to the market; simultaneously, corporate governance increases the informativeness of earnings statements by reducing distortions in the financial reporting process. Thus, we hypothesise that analysts who cover firms in highly competitive industries with strong corporate governance mechanisms exert lower effort to obtain private information to develop their valuations. Thus, our first hypothesis is:

\[ H1: \text{The accuracy of analysts’ forecasts is positively associated with the extent of product market competition and corporate governance.} \]

Second, based on the literature, we assume that the flow of information to the market is enhanced when firms are in highly competitive industries; however, we are unable to identify a signal for the quality of the private information disclosed because such a signal could be imperfect and/or incomplete. To mitigate informational problems, the role of corporate governance is to improve the quality of accounting figures and thus reduce the distortions in disclosed private information. Thus, we present our second hypothesis:
H2: The greater the extent of competition and the stronger the corporate governance, the smaller the standard deviation of analysts’ forecasts.

To investigate these two hypotheses, we use a sample consisting of Brazilian public companies covered by analysts between 2001 and 2008. We use two approaches in the regression models: i) panel data regression with a random effects estimator (Wooldridge, 2002), and ii) regressions with robust standard errors clustered by firm and year (Petersen, 2009).

Our paper provides new evidence on the effects of product market competition and corporate governance on the accuracy of analysts’ forecasts. The interaction between product market competition and corporate governance substantially contributes to enhancing the accuracy of forecasts and reducing the dispersion among them. This evidence increases our knowledge about the role of competition and corporate governance because competition increases the flow of information but does not necessarily make information more complete and less imperfect, whereas corporate governance separately contributes to enhancing the quality of the information disclosed in Brazil.

Our study has implications for analysts, investors and regulators. Analysts and investors can obtain more information to analyse from firms in competitive environments and with strong corporate governance that they are able to take into account as components of investment decision-making. Through the political process, regulators can promote the development of product market competition, which will contribute to enhanced financial resource allocation in economies.

The paper is organised as follows: i) introduction and hypotheses development, ii) theoretical background, iii) research design, iv) empirical results, and v) final considerations.

2. Theoretical Background

2.1 Competition in the Market, Earnings Quality and Analysts’ Forecasts
The literature that investigates the effects of competition in the product market and the quality of accounting information is developing, especially in recent years (Kothari, 2001; Dhaliwalet al., 2008; Cheng et al., 2013).

Stiglitz (2000) argues that the economics literature has presented evidence of the imperfections of competition. The author’s perspective is that imperfect information gives rise to imperfections in competition. This consideration suggests that in an inefficient information environment, information available in the market would be incorporated into stock prices and by agents to make decisions. Low-quality accounting information is a vehicle that could contribute to a country’s inefficient capital market because competitors would have difficulty measuring their real performance against each other.

In this context, product market competition provides different incentives to economic agents such as competitors, analysts, investors and practitioners. Consider, for example, Cheng et al.’s (2013, p. 141) statement: “to avoid revealing precise information on financial performance to their rivals and the general public, managers may also choose to create an opaque information environment by controlling the quality – rather than the quantity – of information to be released”.

According to Li (2010), product market competition exerts incentives on managers to limit voluntary disclosures about a firm’s future prospects. Moreover, there are different dimensions of competition, i.e., new entrants and existing rivals, and while competition from new entrants increases disclosure quantity, competition from existing rivals decreases disclosure quantity. However, competition reduces optimism in profit forecasts and reduces pessimism in investment forecasts.

Ali et al. (2010) show that earnings forecasts and analysts’ accuracy in concentrated industries are lower in non-competitive industries than in competitive industries. In other words, disclosure policies are different according to the degree of product market competition.
In this way, product market competition contributes to asset pricing (Hou & Robinson, 2006; Giroud & Mueller, 2008), to improved earnings quality (Dhaliwalet et al., 2008; Cheng et al., 2013) and to the improved efficiency of corporate governance systems (Karuna, 2010; Giroud & Mueller, 2010). However, product market competition alone does not substitute for other mechanisms and needs to be analysed in conjunction with other factors.

2.2 Corporate Governance and Analysts’ Forecasts

According to Shleifer & Vishny (1997, p. 738), corporate governance mechanisms are economic and legal institutions that can be changed through the political process, sometimes for the better. This assertion is consistent with the idea that corporate governance can provide a signal to the capital markets, especially for market analysts making earnings forecasts. Thus, firms modify or improve their mechanisms and governance practices and make them visible to communicate something to another party (market analysts and/or investors).

In the literature review concerning the association between corporate governance and the forecasts of market analysts, we highlight the papers of Chiang & Chia (2005), Bhat et al. (2006), Byard et al. (2006), and Dalmácio et al. (2012).

Chiang & Chia (2005) investigate 225 Taiwanese high-tech companies during the 2000 to 2002 period to determine whether more corporate transparency leads to more accurate forecasts. The results reveal that when a company provides more information about financial transparency, the predictions’ bias decreases and their accuracy increases.

Bhat et al. (2006) investigate how differences in corporate governance transparency from 21 countries affect the accuracy of analysts' forecasts. The authors examine whether market analysts use the disclosures related to corporate governance in their formulations of forecasts for profits and whether the accuracy of their predictions increases with such disclosures. The results show that the dimension of corporate governance transparency is positively and significantly correlated with the accuracy of analysts' forecasts.
Byard et al. (2006) examine the association between corporate governance and the quality of information available to financial analysts. According to these authors, the quality of corporate governance is associated with an increase in the overall quality of the information possessed by financial analysts, who are considered key users of the financial disclosures provided by companies. The results indicate that the quality of financial analysts’ information about future earnings increases with the quality of corporate governance. The authors find that analysts follow companies that have better governance because they receive better information about future earnings from these companies.

Dalmácio et al. (2012) investigate - under the perspective of the Signalling Theory (Spence, 1973) – the extent that the adoption of distinctive corporate governance practices may influence the accuracy of forecasts (consensus) made by investment analysts in the Brazilian market. According to their results, there is evidence that corporate governance positively influences the accuracy of investment analysts’ forecasts. It is therefore possible to consider that the adoption of distinctive corporate governance practices represents a positive sign that is sent to the capital markets by companies – a sign that is capable of influencing the accuracy of forecasts (both consensus and individual) for analysts in the Brazilian market. The adoption of corporate governance practices also means that these signs represent parameters in the change of conditional probability that defines the beliefs of analysts while they build their forecasts and recommendations and of investors in their choice for investments.

2.3 The Brazilian Context: Institutions, Legal System and Incentives

The internal and external mechanisms of corporate governance attempt to confine minority shareholders’ expropriation by channels of private benefits of control, which improve the forecasts of analysts because accounting figures are less manipulated. Dyck &
Zingales (2004) argue that a factor that complicates this type of study is the reliable observation or quantification of the private benefits of control.

Brazil represents a fragile institutional environment. Lopes & Walker (2008) indicate that the code law legal system is one of the factors that weakens the environment because if the law is not enforced, enforcement becomes weak, which reduces the incentives for managers to disseminate timely and reliable information. The authors also highlight other factors that contribute to a fragile institutional environment, such as interference from various regulatory bodies, the strong influence of tax on accounting, fragile institutions of governance, an anaemic capital market, weak shareholder protections and the weak enforcement of legal institutions, which are all factors that increase the risk of firms that operate in such an environment. This environment demonstrates why some firms offer superior corporate governance arrangements compared with others.

Given this institutional environment that fails to function efficiently on several levels, firms are now adopting stricter governance mechanisms, sometimes under pressure from external movements in the competitive environment or because of new entrants that can provide incentives to reduce agency costs and improve the quality of accounting information. Therefore, firms that face greater competition in discretionary disciplinary mechanisms at the executive level should have reduced agency costs and should be expected to provide higher quality accounting information.

Based on the literature, failures in the institutional environment and in the incentives from the competitive environment affect the behaviour of executives' discretionary accounting, which interferes with the nature of the accounting process (recognition, measurement and disclosure) by intentionally hiding the private benefits of control through changes in accounting policies and flexibility in accounting principles.
The Brazilian context can provide new evidence regarding the roles of product market competition and corporate governance as mechanisms to control the choices of executives related to the quality of disclosures and accounting numbers. Consequently, because of incentives that arise from market competition and corporate governance, executives' accounting choices may be limited, which can increase the amount and quality of information disclosed and result in better predictions by analysts.

3. Research Design

3.1 Sample and Variables Definition

Our sample is a panel data set that is composed of 91 Brazilian public companies listed on the Sao Paulo Stock Exchange (Bovespa) that regularly receive coverage from market analysts. We consider non-financial firms from the universe of publicly traded companies in the 2001 to 2008 period, totalling 361 observations.

INSERT CHART 1 ABOUT HERE

Chart 1 shows that the Brazilian capital markets increased from 2001 to 2008. Actually, Brazil experienced a wave of IPOs from 2004-2008 that totalled 107 initial public offerings, according to the Brazilian Security Exchange Commission (CVM). We use data up to 2008, before the IFRS (International Financial Reporting Standards) Convergence Process.

Table 1 shows how we selected the sample. Although the number of observations suggests a small sample, few firms are covered by analysts in the Brazilian capital market.

We excluded 7 firms from the banking industry, totalling 36 observations, because there are specific accounting rules in that industry that could influence the construction of both the Herfindahl Index and the forecasts of analysts. We also excluded 14 more observations that we considered to be outliers.
We estimate the Herfindahl Index (HI) to measure the product market competition using information from all Brazilian public companies to reduce bias on the degree of competition within each industry, as shown in Panel A of Table 1:

**INSERT TABLE 1 ABOUT HERE**

We present the descriptive statistics in Table 2:

**INSERT TABLE 2 ABOUT HERE**

We observe that our first dependent variable, the mean analysts’ accuracy, is negative (-3.987) with a high standard deviation (12.703). Our second dependent variable, the deviation of the forecasts, ranges from 0 to 50.279 with a standard deviation of 9.145. Looking at the Corporate Governance Index (BCGI), the mean is 0.503, the minimum point is 0, and the maximum value is 0.866. This statistic is important to verify that, on average, firms achieve approximately 50% of the requirements of the BCGI, while some firms achieve more than 80% of its corporate governance requirements.

On average, the Herfindahl Index (HI) shows low competition (-0.055), but it ranges from -0.899 (high competition) to approximately 0 (low competition), which makes it possible to consider the Brazilian capital markets as highly oligopolised (we multiplied the HI by -1).

The first control variable is (QANALYST), which is the number of analysts covering a single firm; its mean is 6.4 analysts. Size (SIZE) is measured by the natural logarithm of total assets; its mean is 22.185. The price-to-book ratio (PTB) has a mean of 3.683. Dummy variables for losses (DLOSS) and the optimism of analysts (DOPTIM) are used as well.

### 3.1.1 Dependent Variables

Our first dependent variable is Analysts' Forecast Accuracy (AFA). It is measured in accordance with the previous literature (Duru & Reeb, 2002; Lang & Lundholm, 1996; Bhatet
et al., 2006; Byard et al., 2006) as the negative of the absolute value of the analysts' forecast errors (the difference between the analysts' consensus forecasts and the actual earnings per share) deflated by the stock price:

\[ AFA_{i,t} = (-1) \frac{EPSF_{i,t-1} - EPSA_{i,t}}{P_{i,t-1}} \]

where:

- \( EPSF_{i,t-1} \) = earnings per share expected by analysts' consensus at time t-1 for firm i at time t;
- \( EPSA_{i,t} \) = actual earnings per share of firm i calculated at time t; and
- \( P_{i,t-1} \) = firm's stock price at time t-1.

Our second dependent variable is Dispersion Estimates (STDFOREC), which is related to our second hypothesis. We consider this variable to be the opposite measure for the quality of information in the informational environment.

Dispersion Estimates is the risk measure and is calculated as the standard deviation of the forecast estimates for firm i in period t, scaled by the share price of firm i in period t. According to the literature, there is evidence that the greater the dispersion of the estimates, the lower their accuracy (Conroy & Harris, 1987; Byard et al., 2006).

3.1.2 Independent Variables

Our main independent variables are product market competition and corporate governance. We use the Herfindahl Index as a proxy for product market competition and the Brazilian Corporate Governance Index developed by Lopes & Walker (2008) as a proxy for corporate governance, which captures different dimensions of firms' corporate governance systems.
3.1.2.1 Corporate Governance

As a proxy for the corporate governance practices in Brazil, we use the Brazilian Corporate Governance Index (BCGI). Among the corporate governance indexes developed for Brazil, we opted to use the BCGI because we depend on the feasibility of access to updated data and the possibility that we could obtain more robust results, but mainly because the BCGI combines four dimensions of corporate governance: disclosure, ownership structure and control, composition and function of the board and shareholder rights. Our use of a combination of four dimensions of corporate governance is an attempt to avoid the problems highlighted by Larcker et al. (2007).

The BCGI is a score that is constructed from a questionnaire\(^1\) consisting of 15 questions, which was applied to all companies listed on the Bovespa in 1998, 2000, 2002, 2004 and 2006. It is noteworthy that in data collection, we used the same levels of governance (BCGI) for periods \(t\) and \(t + 1\). That is, the BCGI that was calculated for 2000 was used as a proxy for the BCGI value for 2001, which provides an expansion of the sample period. Importantly, the BCGI for 2006 was used as a proxy for the BCGI for 2007 and 2008 (\(t\), \(t + 1\) and \(t + 2\)).

The questions were designed to assess the four dimensions of corporate governance cited previously. The issues are binary (0 or 1), assigning 1 for responses that indicated good governance (for example: (1) the company publishes its financial statements on the required date, then the company is assigned a score of 1; (2) the company does not publish its financial statements in accordance with international standards, then the company is assigned a score of 0). The BCGI score is obtained by means of a simple average of the four dimensions examined. All components of BCGI have the same weight.

\(^1\)See Appendix.
The BCGI data were collected from public sources of information such as the CVM, the Bovespa and the websites of companies; collection did not require the involvement of people connected to the company. According to Lopes & Walker (2008), issues related to good corporate governance practices are recommended by the Brazilian Institute of Corporate Governance (IBGC), the CVM, the Bovespa and the World Bank.

The disclosure component of BCGI is related to the transparency of financial reporting, which reduces the information asymmetry between managers and shareholders and leads to more informative results. The second component of BCGI – the composition and function of the board of directors - is used as a proxy for the level of independence and effectiveness of the board and its proper functioning because the boards are effective mechanisms to reduce conflicts between directors and shareholders and to avoid the manipulation of results. The third component of BCGI – ownership structure and control - is used as a proxy for the level of dispersion of ownership (separation between voting rights and rights to cash flow), as the controlling shareholders have incentives to manipulate the results and expropriate minority shareholders. The fourth component of BCGI – shareholder rights - is used to measure the level of protection that the company gives to its minority shareholders as a discretionary action not required by law (Lopes & Walker, 2008).

### 3.1.2.2 Product Market Competition

We use product market competition that is estimated in the same manner as Hou & Robinson (2006) and Dhaliwal et al. (2008) as follows:

\[ HI = \sum_{i=1}^{n} (\text{marketshare}_i)^2 \]
Market share is usually measured by total assets or by operating revenue; in general, these two measurements have a high correlation. However, HI estimated by total assets captures other firms’ characteristics such as the intensity of intangible assets, and it shows less variation than revenue (Hou & Robinson, 2006).

The Herfindahl Index is criticised in the literature because of problems in capturing the real market concentration; however, it is routinely used by the market and regulators. The HI is also the most used in research studies; for example, see Giroud & Mueller (2010), Hou & Robinson (2006), Cheng et al. (2013), Ali et al. (2009), Li (2010), Karuna (2007; 2010) and Dhaliwal et al. (2008).

Using the same procedure as that used by Dhaliwal et al. (2008) to facilitate the interpretation of their results, HI is multiplied by -1 (minus one) of firm i in industry j in period t. Thus, the larger the HI value, the greater the degree of competition:

\[ PMC = \sum_{i=1}^{n} HI \times (-1) \]

3.1.3 Control Variables for Accuracy of Analysts' Forecasts

The control variables were added to the model to isolate their effects on the dependent variables, thus reducing problems caused by omitted variables. Based on a review of the literature on the determinants of analysts’ consensus forecast accuracy, we present the control variables used in the model:

1. Analysts Coverage (QANALYST): the number of analysts that follow firm i in period t. According to the literature, there is evidence that the greater the number of analysts that follow a particular company, the greater their accuracy (Conroy & Harris, 1987; Brown, 1997).
2. **Forecast Bias (DOPTIM):** binary variable (dummy) that captures the bias of the forecast. This variable assumes a value equal to 1 (one) when the forecast is optimistic and 0 (zero) when the forecast is pessimistic (Martinez, 2007).

3. **Result (DLOSS):** binary variable (dummy) that represents the results of a company in a given period (profit or loss). This variable assumes a value equal to 1 (one) when the actual result for the company is a loss and 0 (zero) when the result is a profit. According to the literature, there is evidence that if the result is a loss, the accuracy of the prediction is lower (Abarbanell & Lehavy, 2003; Byard et al., 2006; Bhat et al., 2006).

4. **Size (SIZE):** the natural logarithm of a firm’s market value is used as a proxy for size. The total market value of a firm, a currency constant, is determined by database Economática® at 01/01 of each year with 90 days of tolerance. According to the literature, there is evidence that the larger the size of the analysed company, the greater the accuracy (Brown, 1997; Richardson et al., 1999; Chiang & Chia, 2005; Bhat et al., 2006).

5. **Price-to-book ratio (PTB):** the relationship between market value and book value of firm i at time t. According to the literature, there is evidence that the higher the price-to-book ratio, the greater the accuracy (Richardson et al., 1999).

**3.2 Databases**

The data and information used in the study were collected from a variety of sources, as shown in Chart 2.

**INSERT CHART 2 ABOUT HERE**

**3.3 Models and Econometrics Issues**

We use and report unbalanced panel data regressions (Wooldridge, 2002) and “robust” t-statistics clustered by firm and year (Petersen, 2009). First, to avoid bias in selecting the
regression technique, we carried out regressions to compare the best model between OLS versus Random Effects, and then we carried out a Breusch-Pagan Test, which showed us that the more efficient model is the Random Effects Estimator. Second, we carried out a Hausman Test to decide between Fixed Effects or Random Effects. Following this procedure, we found that panel data with the Random Effects Estimator are more efficient.

Third, to provide sensitivity analysis of our dataset, we carried out a regression with clustered standard errors by firm and year according to Petersen (2009). Dhaliwal et al. (2008) use this estimator, and Armstrong et al. (2010) call this procedure two-way clustered standard errors.

We develop the following models using the same specification but changing the dependent variable:

**Model 1:**

\[
AFA = \beta_0 + \beta_1 CG_{it} + \beta_2 PMC_{it} + \beta_3 CG_{it} \times PMC_{it} + \beta_4 QANALYST_{it} + \beta_5 SIZE_{it} + \beta_6 DOPTIM_{it} + \beta_7 DLOSS_{it} + \beta_8 PTB_{it} + \epsilon_{it}
\]

where:

- AFA = Accuracy of Analysts' Forecast of firm i in period t
- CG = Brazilian Corporate Governance Index (BCGI) of firm i in period t
- PMC = Product Market Competition (HI) measured by total assets of firm i in industry j in period t
- QANALYST = number of analysts covering firm i in period t
- SIZE = natural logarithm of market value of firm i in period t
- DOPTIM = binary variable (dummy) that captures the bias of the forecast of firm i in period t
- DLOSS = binary variable (dummy) that represents the results of a company in a given period (profit or loss). This variable assumes a value equal to 1 (one) when the actual result of the company is a loss and 0 (zero) when the result is a profit for firm i in period t
- PTB = relationship between market value and book value of firm i in period t
Model 2:

\[
STDFOREC = \beta_0 + \beta_1 CG_{it} + \beta_2 PMC_{it} + \beta_3 CG_{it} \times PMC_{it} + \beta_4 QANALYST_{it} + \beta_5 SIZE_{it} + \\
+ \beta_6 DOPTIM_{it} + \beta_7 DLOSS_{it} + \beta_8 PTB_{it} + \epsilon_{it}
\]

where:

STDFOREC = risk measure, calculated as the standard deviation of the estimates (forecasts) of firm i in period t, scaled by the share price of firm i in period t

CG = Brazilian Corporate Governance Index (BCGI) of firm i in period t

PMC = Product Market Competition (HI) measured by total assets of firm i in industry j in period t

QANALYST = number of analysts covering firm i in period t

SIZE = natural logarithm of market value of firm i in period t

DOPTIM = binary variable (dummy) that captures the bias of the forecast of firm i in period t

DLOSS = binary variable (dummy) that represents the results of the company in a given period (profit or loss). This variable assumes a value equal to 1 (one) when the actual result of the company is a loss and 0 (zero) when the result is a profit for firm i in period t

PTB = relationship between market value and book value of firm i in period t

4. Empirical Results

Table 3 presents the matrix correlation among the variables. There is a high negative correlation (-0.68) between the analysts’ accuracy (AFA) and the deviations of the forecasts (STDFOREC). There is more association between STDFOREC and CG (-0.24) and STDFOREC and PMC (0.11) than for AFA and CG (0.12) and STDFOREC and PMC (-0.09).

INSERT TABLE 3 ABOUT HERE

Our results are presented in Table 4. The first two columns show the results for AFA using different estimators such as panel data with fixed effects (Wooldridge, 2002) and clustered robust standard errors regression (Petersen, 2009). The second column presents the
results for the forecasts’ deviation (STDFOREC). First, we analyse the effects of corporate governance for both models; second, we analyse the effects of product market competition, and third, we analyse the interaction between these mechanisms.

INSERT TABLE 4 ABOUT HERE

The results in Table 4 for Model 1 (columns 1 and 2) show that corporate governance (CG) improves the accuracy of analysts (AFA). The coefficient of CG is significantly positive (coef. = 29.377, $t$-statistic = 2.75 and coef. = 21.120, $t$-statistic = 4.07). In Model 2 (columns 3 and 4), we analyse the standard deviation of the forecasts (STDFOREC) to strengthen our inferences, and we find that the corporate governance variable is negative, reducing the deviations of the analysts' projections (CG = -11.170, not significant for fixed effects, and -17.872, $t$-statistic = -4.31 for clustered robust standard errors). Our results indicate that corporate governance improves the financial reporting process; consequently, analysts who use high-quality accounting figures are more accurate.

Product market competition (PMC) has significantly negative coefficients for the two estimators (PMC = -60.527 for random effects and -52.590 for cluster regression) in Model 1. In Model 2, the coefficient of competition in the market is positive and statistically significant (PMC = 42.176 and 32.973), indicating that highly competitive environments provide greater deviation in analysts' forecasts. These coefficients indicate that the accuracy of analysts is lower in highly competitive environments, while the deviation of forecasts is greater. These results indicate that competition supports the theoretical perspective to provide more information to the market. However, the quality of that information is the issue, as the results indicate that there are problems with incomplete and imperfect information disclosed to the market. It is possible, taking into account the strategic perspective, that firms disclose signals to the market to mislead competitors, but these actions also end up affecting the information used by analysts, which is reflected in the accuracy of the forecasts.
We consider our main result the interaction between product market competition and corporate governance ($\beta_3CG^{*}PMC$). In Model 1, the interaction variable $CG^{*}PMC$ is significantly positive (78.608 and 72.312), while in Model 2, the coefficients are opposite (negative) and statistically significant (-54.388 and -43.228). This negative relationship between $CG^{*}PMC$ and the standard deviation of analysts’ forecasts means that firms in competitive industries with strong corporate governance improve the accuracy of analysts’ forecasts; in other words, analysts are closer in their assessments.

An alternative explanation is that corporate governance contributes to the financial reporting process and that financial information disclosed to the market is more informative and less distorted. These results support our first and second hypotheses and contribute to the literature in accounting and finance that is focused on the accuracy of analysts’ forecasts.

The variable SIZE is positive and statistically significant in the first model for fixed effects (2.673, $t$-statistics = 2.66), indicating that analysts who follow larger firms are more accurate in their forecasts. However, this is weak evidence because size is only statistically significant in the first column. In addition, we have not found evidence for the variable DOPTIM.

The variable DLOSS in Model 1 is negative and statistically significant (-9.447, $t$-statistic = -2.56 for fixed effects only), i.e., for companies that reported losses, the forecasts are less accurate, confirming the results found by Abarbanell & Lehavy (2003), Byard et al. (2006), Bhat et al. (2006) and Dalmácio et al. (2012). When a company’s actual results are greater than zero (reporting profits), analysts do a better job than when the company reports negative results. In other words, when the company reports great losses, it ceases to be followed by analysts, and analysts cease to develop predictions for the company’s results. Similar results are reported by Brown (1998). This result is confirmed when we observe the
coefficient of the variable in Model 2, i.e., when the results are significantly negative (DLOSS = 4.941, \( t \)-statistics = 2.85), the deviation of the estimates is greater.

Our control variable price-to-book ratio (PTB) presents inconclusive results. In Model 1, it is positive and statistically significant, indicating that the higher the price-to-book ratio of the company, the greater the accuracy of the analysts' forecasts, i.e., the level of accuracy increases as firms pass from smaller market values relative to book values to firms with market values that are larger than their book values, corroborating the results presented by Richardson et al. (1999). However, in Model 2, the coefficient for cluster regression (-0.359, \( t \)-statistics = -1.77) is the opposite of the coefficient in Model 1, which complements the idea of reduced deviations in analysts' forecasts. For the fixed effects estimator, the coefficient is significantly positive (0.321, \( t \)-statistics = 2.27); this result is the opposite of our expectation.

5. Sensitivity Analysis

Our sample is restricted to Brazilian public companies followed by analysts; because of this small sample, we assess whether our results change using alternative proxies for product market competition, corporate governance and other econometric estimators. For econometric issues, we use random and fixed effects, reporting the best estimator according to the Hausman Test, POLS, clustered standard errors and Newey-West standard errors.

To mitigate the variables-measurement problem, we ran regressions using corporate governance levels developed by the Sao Paulo Stock Exchange as a proxy for corporate governance, assuming 1 for public companies listed on Level 2 and New Market (higher corporate governance levels). We also ran regressions using product market competition (PMC=HI*-1) measured by operating revenues because it has a high correlation (0.93) with product market competition (HI*-1) measured by total assets. We use the natural logarithm of the number of analysts following public companies and the results remain similar.
Table 5 shows lower slope coefficients for corporate governance and product market competition when compared with the coefficients presented in Table 4. The first and second columns present the results for AFA using random effects and clustered robust standard errors.

While corporate governance contributes to enhance AFA (D_CG = 5.540), product market competition has the opposite effect (PMC = -14.290); this higher coefficient suggests that firms in highly competitive industries disclose more information but not necessarily with high quality. The interaction effect between corporate governance and product market competition (D_CG*PMC = 11.497) improves our primary evidence that these mechanisms enhance the financial reporting process. Our results for Model 2 in columns 3 and 4 are in the same direction; our economic interpretation is that corporate governance reduces the deviations of analysts’ forecasts, while product market competition (PMC) increases the deviations. However, the interaction between corporate governance and product market competition contributes to enhance the quality of analysts’ forecasts.

Our sensitivity analysis contributes to improve our inferences, and we interpret these lower slope coefficient differences as a result of the quality of the proxies used because the direction of the coefficients remain the same using different econometric estimators (fixed effects, random effects, clustered robust standard errors and Newey-West standard errors).

6. Final Considerations

In this paper, we investigate how product market competition and corporate governance impact the accuracy of analysts' forecasts. Our underlying premise is that competitive environments provide incentives to increase the flow of information to the market, and strong corporate governance mechanisms contribute to improve the quality of the financial reporting process.
Our results partially corroborate those of previous studies (Ali et al., 2009 and Li, 2010), suggesting that product market competition, despite the fact that it increases the flow of information, negatively influences the accuracy of analysts' forecasts and increases the deviation of the forecasts; however, corporate governance mitigates informational problems.

This paper also shows that corporate governance alone contributes to improve analysts' accuracy and to reduce the deviation of forecasts. This evidence reinforces the idea that corporate governance plays a relevant role in weak institutional environments such as that in the Brazilian context. Thus, the informational environment’s quality is enhanced when firms implement corporate governance mechanisms that aim to improve the quality of the financial reporting process.

The interaction between product market competition and corporate governance is in accordance with the theoretical perspective, contributing to the enhancement of the quality of analysts’ forecasts. In other words, we consider that there are firms in competitive industries that disclose opaque information, which prevents analysts from separating high-quality information from low-quality information, taking into account that competitors use the same information that is available to the market.

Our study provides practical implications for a variety of users, for example: i) analysts’ understanding of the role of product market competition and corporate governance might contribute to the business valuation process; ii) regulators who provide incentives for firms to implement corporate governance mechanisms could contribute to better resource allocation in the economy by investors and increased protection of capital. Moreover, regulators can also develop conditions to increase product market competition; and iii) if investors take this combination of competition in the product market and corporate governance into account in their investment decisions, they will be able to better use the financial reporting process to obtain information about a firm’s future prospects.
Finally, our results have limitations because of the proxies used to measure competition and corporate governance. However, we suggest further investigation to increase our knowledge concerning the role of these variables in other countries.

References


Chart 1 – Brazilian firms’ coverage by analysts

<table>
<thead>
<tr>
<th>Year</th>
<th>Firms Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>5</td>
</tr>
<tr>
<td>2002</td>
<td>7</td>
</tr>
<tr>
<td>2003</td>
<td>34</td>
</tr>
<tr>
<td>2004</td>
<td>44</td>
</tr>
<tr>
<td>2005</td>
<td>49</td>
</tr>
<tr>
<td>2006</td>
<td>63</td>
</tr>
<tr>
<td>2007</td>
<td>78</td>
</tr>
<tr>
<td>2008</td>
<td>79</td>
</tr>
</tbody>
</table>
Chart 2 – Data sources used in research

<table>
<thead>
<tr>
<th>Data</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysts' forecasts of traded Brazilian companies</td>
<td>Database of Thomson ONE Analytics® System</td>
</tr>
<tr>
<td>Product Market Competition (Herfindahl Index)</td>
<td>Database of Economática® System</td>
</tr>
<tr>
<td>Economics, Finances and the Market of publicly traded Brazilian companies</td>
<td>Database of Economática® System</td>
</tr>
<tr>
<td>Differentiated corporate Governance practices of traded Brazilian companies</td>
<td>BCGI – Brazilian Corporate Governance Index (Lopes and Walker, 2008)</td>
</tr>
</tbody>
</table>
### Table 1 – Sample selection

<table>
<thead>
<tr>
<th>Panel A: Herfindahl Index Estimation</th>
<th>No. of obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw data of total assets</td>
<td>4.328</td>
</tr>
<tr>
<td>(-) Outliers</td>
<td>(1.115)</td>
</tr>
<tr>
<td>(=) Number of observations to estimate HI by total assets</td>
<td>3.213</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: Sample of Analysts’ Forecasts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Observations (firms covered X years)</td>
<td>411</td>
</tr>
<tr>
<td>(-) Banking Industry</td>
<td>(36)</td>
</tr>
<tr>
<td>(-) Outliers (any value greater than three standard deviations away from the mean in normalised data)</td>
<td>(16)</td>
</tr>
<tr>
<td>(=) Final Sample</td>
<td>359</td>
</tr>
<tr>
<td>Variable</td>
<td>Obs.</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
</tr>
<tr>
<td>AFA</td>
<td>359</td>
</tr>
<tr>
<td>STDFOREC</td>
<td>359</td>
</tr>
<tr>
<td>CG</td>
<td>359</td>
</tr>
<tr>
<td>PMC (Assets)</td>
<td>359</td>
</tr>
<tr>
<td>PMC (Revenues)</td>
<td>359</td>
</tr>
<tr>
<td>QANALYST</td>
<td>359</td>
</tr>
<tr>
<td>LNANALYST</td>
<td>359</td>
</tr>
<tr>
<td>SIZE</td>
<td>359</td>
</tr>
<tr>
<td>DOPTIM</td>
<td>359</td>
</tr>
<tr>
<td>DLOSS</td>
<td>359</td>
</tr>
<tr>
<td>PTB</td>
<td>359</td>
</tr>
</tbody>
</table>
Table 3 – Correlation matrix

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>AFA</th>
<th>STDFOREC</th>
<th>CG</th>
<th>PMC*</th>
<th>QANALYST</th>
<th>SIZE</th>
<th>DOPTIM</th>
<th>DLOSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STDFOREC</td>
<td>-0.71***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CG</td>
<td>0.22***</td>
<td>-0.26***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PMC</td>
<td>-0.09*</td>
<td>0.11**</td>
<td>-0.08</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QANALYST</td>
<td>0.03</td>
<td>0.03</td>
<td>-0.01</td>
<td>-0.06</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.00</td>
<td>-0.02</td>
<td>0.07***</td>
<td>-0.57***</td>
<td>-0.37***</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOPTIM</td>
<td>-0.02</td>
<td>-0.02</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.13**</td>
<td>0.06</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>DLOSS</td>
<td>-0.21***</td>
<td>0.10*</td>
<td>0.06</td>
<td>0.07</td>
<td>-0.09*</td>
<td>-0.00</td>
<td>0.18***</td>
<td>1</td>
</tr>
<tr>
<td>PTB</td>
<td>0.16***</td>
<td>-0.17***</td>
<td>0.11**</td>
<td>-0.00</td>
<td>0.09*</td>
<td>0.12**</td>
<td>0.07</td>
<td>-0.07</td>
</tr>
</tbody>
</table>

* PMC measured by total assets. The correlation coefficient between PMC measured by total assets and operating revenues is 0.93. Our results use PMC measured by total assets.
### Table 4 – Regression results

Model 1:

\[
AFA = \beta_0 + \beta_1 CG_{it} + \beta_2 PMC_{it} + \beta_3 CG_{it} \times PMC_{it} + \beta_4 QANALYST_{it} + \beta_5 SIZE_{it} \\
+ \beta_6 DOPTIM_{it} + \beta_7 DLOSS_{it} + \beta_8 PTB_{it} + \varepsilon_{it}
\]

Model 2:

\[
STDFOREC = \beta_0 + \beta_1 CG_{it} + \beta_2 PMC_{it} + \beta_3 CG_{it} \times PMC_{it} + \beta_4 QANALYST_{it} + \beta_5 SIZE_{it} \\
+ \beta_6 DOPTIM_{it} + \beta_7 DLOSS_{it} + \beta_8 PTB_{it} + \varepsilon_{it}
\]

<table>
<thead>
<tr>
<th>Var./Estimator</th>
<th>Model 1 FE</th>
<th>Model 1 CLUSTER</th>
<th>Model 2 FE</th>
<th>Model 2 CLUSTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG</td>
<td>29.377**</td>
<td>21.120***</td>
<td>-11.170</td>
<td>-17.857***</td>
</tr>
<tr>
<td></td>
<td>(2.75)</td>
<td>(4.07)</td>
<td>(-1.33)</td>
<td>(-4.31)</td>
</tr>
<tr>
<td>PMC (Assets)</td>
<td>-58.390*</td>
<td>-39.088**</td>
<td>51.941*</td>
<td>34.186***</td>
</tr>
<tr>
<td></td>
<td>(-1.91)</td>
<td>(-2.51)</td>
<td>(1.76)</td>
<td>(2.71)</td>
</tr>
<tr>
<td>CG*PMC</td>
<td>115.741**</td>
<td>51.147***</td>
<td>-89.042*</td>
<td>-45.881***</td>
</tr>
<tr>
<td></td>
<td>(2.33)</td>
<td>(2.79)</td>
<td>(-1.96)</td>
<td>(-2.86)</td>
</tr>
<tr>
<td>QANALYST</td>
<td>0.20</td>
<td>0.196</td>
<td>-0.010</td>
<td>0.113</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.49)</td>
<td>(-0.03)</td>
<td>(0.44)</td>
</tr>
<tr>
<td>SIZE</td>
<td>2.673***</td>
<td>-1.173</td>
<td>0.378</td>
<td>0.593</td>
</tr>
<tr>
<td></td>
<td>(2.66)</td>
<td>(-1.16)</td>
<td>(0.34)</td>
<td>(0.81)</td>
</tr>
<tr>
<td>DOPTIM</td>
<td>-0.853</td>
<td>-0.040</td>
<td>-0.227</td>
<td>-0.305</td>
</tr>
<tr>
<td></td>
<td>(-0.67)</td>
<td>(-0.05)</td>
<td>(-0.22)</td>
<td>(-0.51)</td>
</tr>
<tr>
<td></td>
<td>(-2.56)</td>
<td>(-1.29)</td>
<td>(2.85)</td>
<td>(1.05)</td>
</tr>
<tr>
<td>PTB</td>
<td>-0.192</td>
<td>0.431**</td>
<td>0.321**</td>
<td>-0.359*</td>
</tr>
<tr>
<td></td>
<td>(-1.41)</td>
<td>(2.11)</td>
<td>(2.27)</td>
<td>(-1.77)</td>
</tr>
<tr>
<td>INTERCEPT</td>
<td>-76.828***</td>
<td>8.848</td>
<td>0.194</td>
<td>0.535</td>
</tr>
<tr>
<td></td>
<td>(-3.44)</td>
<td>(0.50)</td>
<td>(0.01)</td>
<td>(0.04)</td>
</tr>
</tbody>
</table>

No. of obs. 359 359 359 359
prob F 0.004 0.000 0.000 0.000
Adj. $R^2$ | 13.14% | 13.46% | 20.29% | 11.98%

**Notes:** AFA = Accuracy of Analysts’ Forecasts of firm i in period t; STDFOREC = risk measure, calculated as the standard deviation of the estimates (forecasts) of firm i in period t, scaled by the share price of firm i in period t; CG = Brazilian Corporate Governance Index (BCGI) of firm i in period t; PMC = Herfindahl Index measured by total assets of firm i in industry j in period t (multiplied by -1); QANALYST = number of analysts following firm i in period t; SIZE = natural logarithm of the market value of firm i in period t; DOPTIM = binary variable (dummy) that captures the bias of the forecast of firm i in period t; DLOSS = binary variable (dummy) that represents the results of the company in a given period (profit or loss). This variable assumes a value equal to 1 (one) when the actual result of the company is a loss and 0 (zero) when the result is a profit for firm i in period t; PTB = relationship between market value and book value of firm i in period t. T-statistics are in parentheses below the coefficients and are corrected for heteroskedasticity (White procedure) for random effects or the fixed effects estimator. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.
Table 5 – Regression Results of Sensitivity Analysis

Model 1:

\[
AFA = \beta_0 + \beta_1 D_{CGt} + \beta_2 PMC_t + \beta_3 D_{CGt} \times PMC_t + \beta_4 QANALYST_t + \beta_5 SIZE_t + \\
\beta_6 DOPTIM_t + \beta_7 DLOSS_t + \beta_8 PTB_t + \epsilon_t
\]

Model 2:

\[
\text{STDFOREC} = \beta_0 + \beta_1 D_{CGt} + \beta_2 PMC_t + \beta_3 D_{CGt} \times PMC_t + \beta_4 QANALYST_t + \beta_5 SIZE_t + \\
\beta_6 DOPTIM_t + \beta_7 DLOSS_t + \beta_8 PTB_t + \epsilon_t
\]

<table>
<thead>
<tr>
<th>Var./Estimator</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Analyst Forecast Accuracy</td>
<td>Forecasts’ Standard Deviations</td>
</tr>
<tr>
<td></td>
<td>RE</td>
<td>CLUSTER</td>
</tr>
<tr>
<td>D_CG</td>
<td>5.540***</td>
<td>5.540***</td>
</tr>
<tr>
<td></td>
<td>(4.49)</td>
<td>(2.82)</td>
</tr>
<tr>
<td>PMC (REV)</td>
<td>-14.290***</td>
<td>-14.290*</td>
</tr>
<tr>
<td></td>
<td>(-3.56)</td>
<td>(-1.95)</td>
</tr>
<tr>
<td>D_CG*PMC</td>
<td>11.497***</td>
<td>11.497**</td>
</tr>
<tr>
<td></td>
<td>(3.09)</td>
<td>(2.27)</td>
</tr>
<tr>
<td>QANALYST</td>
<td>0.241</td>
<td>0.241</td>
</tr>
<tr>
<td></td>
<td>(0.98)</td>
<td>(0.60)</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.437</td>
<td>-0.437</td>
</tr>
<tr>
<td></td>
<td>(-0.65)</td>
<td>(-0.54)</td>
</tr>
<tr>
<td>DOPTIM</td>
<td>-0.167</td>
<td>-0.167</td>
</tr>
<tr>
<td></td>
<td>(-0.15)</td>
<td>(-0.18)</td>
</tr>
<tr>
<td>DLOSS</td>
<td>-8.454**</td>
<td>-8.454</td>
</tr>
<tr>
<td></td>
<td>(-2.25)</td>
<td>(-1.24)</td>
</tr>
<tr>
<td>PTB</td>
<td>0.392***</td>
<td>0.392**</td>
</tr>
<tr>
<td></td>
<td>(3.338)</td>
<td>(2.43)</td>
</tr>
<tr>
<td>INTERCEPT</td>
<td>1.082</td>
<td>1.082</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.07)</td>
</tr>
<tr>
<td>No. of obs.</td>
<td>359</td>
<td>359</td>
</tr>
<tr>
<td>prob F</td>
<td>0.004</td>
<td>0.000</td>
</tr>
<tr>
<td>Adj. R²</td>
<td>12.38%</td>
<td>12.38%</td>
</tr>
</tbody>
</table>

**Notes:** AFA = Accuracy of Analysts’ Forecasts of firm i in period t; STDFOREC = risk measure, calculated as the standard deviation of the estimates (forecasts) of firm i in period t, scaled by the share price of firm i in period t; CG = Brazilian Corporate Governance Index (BCGI) of firm i in period t; PMC = Herfindahl Index measured by the operating revenues of firm i in industry j in period t (multiplied by -1); QANALYST = number of analysts following firm i in period t; SIZE = natural logarithm of market value of firm i in period t; DOPTIM = binary variable (dummy) that captures the bias of the forecast of firm i in period t; DLOSS = binary variable (dummy) that represents the results of the company in a given period (profit or loss). This variable assumes a value equal to 1 (one) when the actual result of the company is a loss and 0 (zero) when the result is a profit for firm i in period t; PTB = relationship between market value and book value of firm i in period t. T-statistics are in parentheses below the coefficients and are corrected for heteroskedasticity (White procedure) for random effects or the fixed effects estimator. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.
Brazilian Corporate Governance Index (BCGI) Scoring Instrument

(Lopes & Walker, 2008)

I – DISCLOSURE (BCGIdisc)
1. Does the company publish its financial statements by the required date?
2. Does the company publish its financial statements according to international standards (US-GAAP or IFRS)?
3. Is the company audited by one of the Big Five accounting firms?

II – BOARD COMPOSITION AND FUNCTIONING (BCGIboard)
4. Are the Chairman of the Board and the CEO not the same person?
5. Is the Board not composed primarily of insiders?
6. Is the size of the Board between 5 and 9 members as suggested by the Brazilian Institute of Corporate Governance?
7. Do the members of the Board have consecutive one-year terms as suggested by the Brazilian Institute of Corporate Governance?
8. Does the company have a permanent Audit Committee?

III – OWNERSHIP STRUCTURE AND CONTROL (BCGIprop)
9. Do the controlling shareholders own less than fifty percent of the voting shares?
10. Is the percentage of voting shares greater than eighty percent of the total?
11. Is the ratio between cash flow rights and voting rights larger than 1?
12. Is the free float larger than or equal to what is required by the São Paulo Stock Exchange New Market (25%)?

IV – SHAREHOLDERS RIGHTS (BCGIrights)
13. Does the company statute establish arbitration as a way to solve conflicts?
14. Does the company statute establish rights in addition to what is required by the law?
15. Does the company give tag-along rights beyond what is required by the law?