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Determinants of Disclosure Timing for Financial Statements of Brazilian Public Companies*

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ABSTRACT

This work examines the determining factors affecting the timing of disclosures in quarterly and annual financial statements of Brazilian companies with shares that are listed on the Sao Paulo Stock Exchange with shares that composed the São Paulo Stock Exchange Index (IBOVESPA) during the period 1/1997 – 2/2009. The determining factors were grouped into the following four dimensions: the complexity of operations, the characteristics of corporate governance, the level of information asymmetry, and the proprietary costs and statement content. With a final sample of 83 companies (1585 observations), the effects of 13 explanatory variables on the timing of disclosures in financial statements were examined using panel data methods; the variables examined included leverage control, company size, level of corporate governance, institutional ownership, financial statement consolidation, volatility, and losses. The main findings suggest that disclosing consolidated statements and/or statements that include losses has a positive effect on the timing of the disclosure, corroborating the hypothesis that disclosure timing is positively affected by greater complexity in operations and by the content of the statements (in this case, "bad news"). Control of the leverage variable, in turn, was shown to be negatively related to disclosure timing, suggesting that there may be a substitution relationship between these variables. Contrary to theoretical expectations, volatility displayed positive and statistically significant coefficients. However, upon the application of the instrumental variables method to obtain consistent estimates when there is simultaneity between volatility and disclosure timing, the volatility variable exhibited a negative coefficient and was statistically non-significant.

Keywords: Disclosures. Financial statements. Timing. Corporate governance. Panel data methods.

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1 INTRODUCTION

The efficient allocation of resources in the economy consists of directing available resources to economically viable investment projects. In this allocation process, information plays an important role among the involved investment agents (savers and borrowers). Financial disclosure (corporate disclosure) practices are an important mechanism in the functioning of an efficient capital market because they provide investors and potential investors with useful and reliable information regarding the operations and processes of a company and its management. Thus, publicly traded companies must provide and make available a minimum amount of mandatory disclosure in the form of, for instance, financial statements, explanatory notes, and management reports.

The main link between economic theory and contemporary accounting addresses the notion that firms that are committed to providing maximum disclosure should have a lower cost of capital induced by information asymmetries in the market[1]. An increase in disclosure levels reduces information asymmetries between companies and their shareholders and between the potential buyers and potential sellers of shares. This increase, in turn, should reduce the discount at which companies sell their shares, thus lowering their cost of capital (Diamond & Verrecchia, 1991; Baiman & Verrecchia, 1996).

With regard to the significance of mandatory financial statements, several empirical studies have measured the effect of financial information on the pricing of stocks as a method of verifying the relevance of the contents of financial reports on the capital market. The studies by Ball and Brown (1968), Beaver (1981), and Brown and Warner (1980, 1985) are notable. In Brazil, despite the scarcity of empirical research, studies by Schiehll (1996), Prux Jr. (1998), Lopes (2002), Lima and Terra (2005), and Terra and Lima (2006) are notable. By observing significant abnormal returns on the disclosure dates of financial statements, such studies permit the conclusion that financial information affects share prices and is therefore relevant to the capital market.

The utility of financial information, however, is not only related to its nature and content but also to the time at which it is released (timing). High-quality and highly reliable information no longer be useful (to influence the decision-making process) if it is not released at the appropriate time. Therefore, the quality of the disclosure should also be measured by the speed with which the financial statements are released to the public. Based on these considerations, we formulated the following research question: What are the determinants of the disclosure timing of financial statements by Brazilian companies?

The main objective of our study is to provide evidence related to the determinants of the timing of publicly traded Brazilian companies. To achieve this objective, we analyzed quarterly and annual financial statements of Brazilian companies with shares that were traded on the Sao Paulo Stock Exchange with shares that composed the São Paulo Stock Exchange Index (IBOVESPA) during the period 1/1997 – 2/2009. Timing is defined as the period of time between the close of the fiscal period and the date of release of financial statements, which is similar manner to the studies of Chambers and Penman (1984), Sengupta (2004), and Velury and Jenkins (2006).

This study contributes to the literature on financial disclosure in several ways. First, this study addresses how managers decide when to disclose their companies' quarterly and annual financial statements, which is a study dimension that remains in its infancy in Brazil. With respect to methodologies, the Poisson regression model was used among other estimation methods, which may be considered the most appropriate because the dependent variable assumes only non-negative integers. Finally, we believe that the results of this study may be useful for regulatory and professional entities (such as the Brazilian Securities Commission, Brazilian Federal Council of Accounting, and the Institute of Independent Auditors of Brazil, among others) as contributing to the understanding of the factors associated with the timing of the release of financial statements on the Brazilian capital markets.

Our findings indicate that the proposed model explains a considerable amount of the variation in timing the release of financial statements. Of the 13 explanatory variables representative of the four theoretical dimensions (complexity, corporate governance, informational asymmetry, and proprietary costs and statement content), three display statistically significant coefficients in almost all of the regressions performed – consolidated statements, control leverage, and losses. The rest of the article is structured as follows. In the next section, a brief literature review is presented. In section 3, the research method, variables used, and estimated model are explained. Finally, in sections 4 and 5, an analysis of the results and final considerations of the study are found, respectively.

2 THEORETICAL AND EMPIRICAL REFERENCES

2.1 Information Asymmetry and the Role of Disclosure.

According to Akerlof (1970), information asymmetry may be characterized as a situation in which the parties to a transaction do not possess all the information necessary to verify whether the terms of the arrangement that is being proposed are acceptable and will be implemented implemented and/or to evaluate the individual performances

[1] The existence of informational asymmetries creates costs by introducing adverse selection in the transactions between resource suppliers and the company.

involved. Markets with information asymmetries among market participants with regard to the object(s) of negotiation may not function correctly and, in extreme cases, may cease to exist (Lemons Principle).

One of the greatest challenges of an economy is to channel savers' resources to the best investment opportunities. In this context, the capital market plays an essential role by creating the conditions enabling demanders (borrowers) and suppliers (savers) to exchange resources at the lowest cost possible. However, among other traits, the relationship between savers and borrowers is normally characterized by the following features: a) borrowers typically have more information than savers regarding the use of resources (information asymmetry); and b) once savers have exceeded their resources, borrowers possess incentives to expropriate them because their actions cannot be completely monitored (moral hazard). These characteristics may create difficulties for the correct functioning of the capital market, particularly as they relate to the informational question.

With the goal of mitigating the problems stemming from the existence of information asymmetries on the capital market and therefore allow for its better functioning. Internal and external mechanisms have been implemented to encourage the disclosure of private information by companies and to allow more effective monitoring of management by stakeholders (interested parties). Standing out among these mechanisms is mandatory disclosure, i.e., the disclosure of a set of minimum information content required by applicable law and by the actions of relevant regulatory agencies.

In Brazil, in addition to mandatory disclosure, the Brazilian Securities Commission (Comissão de Valores Mobiliários - CVM) and by the São Paulo Stock Exchange (Bovespa) and/or by the Brazilian Institute of Corporate Governance (Instituto Brasileiro de Governança Corporativa - IBGC) recommend the disclosure of other information of a voluntary nature. This release of this complementary information and the mandatory information together seeks to facilitate decision-making by users by making the company management process more transparent, reducing information asymmetries among market participants.

According to Healy and Palepu (2001), the economic consequences of disclosure on the capital markets are an increase in stock liquidity and a reduction of the cost of capital. In this regard, Kim and Verrecchia (1994) note that disclosure reduces the information asymmetry between more-informed (sophisticated) and less-informed (unsophisticated) investors. With increased disclosure, investors believe that the stock price is fair, and liquidity increases as a consequence. Healy, Hutton, and Palepu (1999) and Leuz and Verrecchia (2000) provide empirical evidence that disclosure is positively associated with the liquidity of the stock market.

As for reducing the cost of capital, several studies, including studies by Diamond and Verrecchia (1991), Botosan (1997), Healy and Palepu (2001), Easley, Hvidkjaer, and O'Hara (2002), Botosan and Plumlee (2002), Easley and O'Hara (2004), Bailey, Karolyi, and Salva (2006), and Lambert, Leuz, and Verrecchia (2007) suggest (and show) a relationship between the quality (or level) of financial information and returns on assets, or, alternatively, the cost of capital. The economic intuition that sustains this relationship is that the financial information is vital to reduce information asymmetry between market agents, thereby mitigating the problem of adverse selection; so agents require a greater expected return from those companies that disclose a less and poorer quality information (greater information risk) in relation to those companies that disclose more and better information (less information risk). Therefore, managers have incentives to increase the level of disclosure to reduce the problem of asymmetry and, consequently, the cost of capital.

In Brazil, Malacrida and Yamamoto (2006) analyzed the relationship between levels of disclosure of financial information and the stock return volatility of 40 companies listed on the São Paulo Stock Exchange Index (IBOVESPA) in 2002. The results suggest that companies with greater average levels of disclosure show lower levels of stock return volatility on average. Using a sample of 222 Brazilian companies, Alencar (2005) analyzed whether the level of disclosure is a determining factor of the cost of equity (given by the beta in the Capital Asset Pricing Model CAPM) in 2003, and his results indicate that the level of disclosure does not affect the beta of the companies' in a statistically significant manner. The lack of a relationship between the level of disclosure and the cost of equity, according to this, may be the result of limitations in the proxy used for the disclosure level. Lima (2009) analyzed the relationship between the level of voluntary disclosure and the cost of debt in a sample of 23 companies during the period between 2000 and 2004. Corroborating the author's hypothesis, the results (pooled estimation) indicate that the level of voluntary disclosure has an inverse relationship with the cost of debt. In summary, the empirical results reported for Brazil suggest that the adoption of greater levels of disclosure can benefit companies by lowering their volatility and their cost of capital, which is consistent with studies performed in other countries.

2.2 Determinants of the Timing of Financial Statements.

According to Givoly and Palmon (1982), delays in the disclosure of financial statements most likely increase the uncertainty associated with decisions for which the statements provide relevant information. Chambers and Penman (1984) indicate that the greater the lag in the disclosure of the financial information, the greater the possibility that other information sources will act as a substitute for that information. Thus, delaying the disclosure of financial statements will lower stock return volatility on the date of the disclosure because the informational content of the sta-

tements will tend to be anticipated, at least in part. Using this line of reasoning, Sengupta (2004) stresses that the usefulness of financial information for market participants must be a function of the nature of the information and when it is disclosed.

According to Sengupta (2004, p. 459), the literature concerning corporate disclosure generally holds that the optimal disclosure strategy should be determined by the associated costs and benefits. Based on these costs and benefits, managers should determine the nature and content of the information in addition to the ideal date and the appropriate media for the disclosure among other considerations. Therefore, this argument suggests that managers should determine the date of the disclosure of financial statements based on an evaluation of the potential costs and benefits of disclosing the information more quickly. These costs and benefits are most likely related to characteristics of the company and its competitive environment and to the content of the financial statements for the period in question.

Among the specific characteristics of companies and of their competitive environments that could influence the timing of the release of the financial statements, according to the relevant literature, are the characteristics related to the complexity of operations (or accounting complexity), litigation costs, proprietary costs and corporate governance. According to Givoly and Palmon (1982, p. 491)

> The single most important determinant of the timeliness of the earnings announcement is the length of the audit. Three main factors are likely to decide the total input required for an external audit: the size of the company, the quality of its internal control system, and the complexity of its operation (…) At the same time, big corporations may be more closely watched by investors and therefore under greater pressure to release information on a timely basis.

Givoly and Palmon (1982), Chambers and Penman (1984), and Sengupta (2004) found evidence that the timing of the release of financial statements is inversely related to company size, which is consistent with the argument that large companies are under greater pressure from the public (investors in particular) to disclose their financial statements more rapidly. With regard to the complexity of operations, Sengupta (2004) presents evidence that companies that operate in multiple sectors and/or that report special items tend to disclose their financial statements later. In addition, this author found a positive and statistically significant relationship between the disclosure timing and the number of acquisitions undertaken by the company during the period. These results corroborate the hypothesis that the complexity of operations positively affects the timing of the release of financial statements. Givoly and Palmon (1982) use average sales growth and the ratio of stocks to assets as proxies for financial complexity, but they do not find conclusive evidence about the relationship between these variables and the timing of disclosure.

According to Sengupta (2004), timely disclosures most likely play an important role in reducing litigation costs. Skinner (1994), for example, argues that managers have an incentive to anticipate the announcement of unexpected negative results and therefore avoid large declines in stock prices on the date of disclosure of such results, thereby reducing the potential costs of lawsuits (by shareholders). According to this author, this strategy is the best available alternative for at least two reasons. First, anticipated disclosure weakens the argument of claimant(s) that managers failed to rapidly divulge the information. Second, the shorter the period of "non-disclosure", the smaller the number of claimants and therefore the lower the expected litigation costs (evidence of this will be presented below).

Sengupta (2004) also argues that independent board members have little to gain and much to lose (lawsuit costs and/or loss of reputation) with the postponement of the disclosure of financial statements and would therefore have incentives to encourage a policy of timely disclosure in contrast to managers. As evidence for this possibility, Sengupta (2004) finds a negative and statistically significant relationship between the percentage of non-managing directors of the company and disclosure timing, supporting the author's argument. In addition, the author presents evidence that companies that operate in sectors with a high likelihood of litigation (high-technology sectors) tend to disclose their financial statements more rapidly.

According to Verrecchia (1990), proprietary costs may hinder voluntary disclosure and intensify information asymmetry between managers and stakeholders in a competitive market since disclosing more information is equivalent to allow competitors to know their business in greater depth; this outcome may affect the company's competitiveness (Verrecchia, 1983). In this case, retaining relevant information or postponing its disclosure would be determined to be for the benefit of shareholders. In terms of evidence, Sengupta (2004) finds a positive and statistically significant relationship between the timing of disclosure and the concentration of sales in the sector (which is a proxy for proprietary costs, see Bamber & Cheon, 1998, p. 171), corroborating the hypothesis that proprietary costs may create incentives to postpone the disclosure of relevant information.

Companies committed to better corporate governance practices and under greater scrutiny from the market would a priori be more willing to practice a policy of timely disclosure (assuming a complementary relationship between these variables). Therefore, it is reasonable to assume that firms in special listing segments (such as Level 1, Level 2, and the New Market of Bovespa) and/or those that are more actively traded tend to disclose their statements more quickly. According to Sengupta (2004), investor demand for timely disclosure should increase with trading volume because investors should be more concerned with receiving information from those companies in which they invest with greater frequency and intensity. Thus, there should be a negative relationship between disclosure timing by a particular

company and the volume of its shares that are traded on the market. With regard to the ownership structure, Sengupta (2004) argues that disclosure is the most effective method of communicating private information when ownership is dispersed; therefore, there should be a negative relationship between disclosure timing and shareholding dispersion. Velury and Jenkins (2006) argue that a negative relationship between disclosure timing and the level of institutional ownership should be expected if institutional investors are better monitors of management than individual investors. With regard to the empirical evidence, Sengupta (2004) and Velury and Jenkins (2006) found that disclosure timing is negatively related to the level of institutional ownership and positively related to the ownership concentration. In addition, Sengupta (2004) found a negative relationship between the disclosure timing and the traded volume.

Finally, the content of financial statements may also play a relevant role in the determination of the date of disclosure of this information. As discussed above, Skinner (1994) suggests that managers have incentives to anticipate the disclosure of unexpected negative results ("bad news"). Conversely, based on a previous literature review, Begley and Fischer (1998) posit that delaying the disclosure of "bad news" allows managers to benefit in the following ways: a) by being able to close deals under more favorable conditions before the disclosure; b) by having more time to prepare responses to criticisms and to plan to reverse the bad performance; and c) by having more time to find ways to reverse the "bad news" through manipulation of the results (accrual or earnings management). In terms of empirical evidence, Whittred (1980), Kross (1981), Givoly and Palmon (1982), Chambers and Penman (1984), Begley and Fisher (1998), Sengupta (2004) and Velury, and Jenkins (2006) have found that managers tend to disclose "bad news" later. These results are consistent with the hypothesis that the benefits of delaying the disclosure of "bad news" exceed the possible costs associated with such disclosure (such as, for example, litigation costs).

3 RESEARCH METHOD

3.1 Definition of Variables.

The dependent variable in this study is the period of time between the end of the accounting period and the disclosure date of the respective financial statements. The term "accounting period" refers to a quarter in the case of Quarterly Financial Statements (Informações Trimestrais - ITR) and a year in the case of Standardized Financial Statements (Demonstrações Financeiras Padronizadas - DFP). In all cases, the reference period for the obtained values is the respective calendar quarter. The disclosure of the DFP is regulated by article 28, item II, CVM Instruction 480/2009, which establishes the maximum period of disclosure as 3 months after the end of the fiscal year. The disclosure of the ITR is regulated by article 29, item II, and by article 65 of CVM Instruction 480/2009, which establishes the maximum period of disclosure as 45 days after the closing date of each quarter[2].

Table 1 *Analyzed dimensions and definitions of explanatory variables*

Dimensions	Variable	Operationalization	Expected Sign
Complexity of Operations	Size	LN (Assets), in which LN = natural log.	+/-
	Consolidated Statements	"1" if the company presented consolidated statements in the quarter, "0" otherwise.	+
	Regulated Sector	"1" for Electric Energy, Finance, and Insurance, Funds, Mining, Petroleum, and Gas, Telecommunications and Transport, "0" otherwise.	+
	ADR	"1" if the company possesses a Level II or Level III American Depository Receipts program, "0" otherwise.	+
Corporate Governance	Level of Corporate Governance	"1" if the company has adhered to BOVESPA's Special Corporate Governance Levels (Level 1, Level 2 or the New Market), "0" otherwise.	+/-
	Leverage Control	% Votes of the 5 largest shareholders / % Capital of the 5 largest shareholders	+/-
	Level of Institutional Ownership	% of shares with voting rights (ordinary) held by investors classified as institutional (for a listing of these, please contact the authors).	-
	Level of Private Ownership	% of shares with voting rights (ordinary) held by private investors (for a listing of these, please contact the authors).	-
Information Asymmetry	Turnover	(Volume traded on the Stock Exchange x 4) / Market Value of the shares. OBS: all the company shares (ON, PN, PNA, PNB….) were included in this calculation.	-
	Volatility	Standard deviation of the daily returns of the most liquid share of the company in the quarter.	-
Proprietary Costs and Statement Content	Market to Book Value (MtB)	Market Value of the Shares / Book Value of the Shares (Equity)	+
	Loss	"1" if the company displayed a net loss in the quarter, "0" otherwise.	+/-
	Good News	"1" if the variation in the earnings per share (EPS) between the current quarter and the same quarter from the previous year was positive, "0" otherwise.	-

[2] The norm (CVM Instruction 480/2009) is recent, and it could therefore raise doubts with regard to possible changes in the maximum period of disclosure of the ITRs and DFPs throughout the period of the study. Thus, it is noteworthy that there was no change in these periods (see CVM Instructions 202/1993 and 351/2001).

The explanatory variables were selected based on our review of the literature discussed above. The availability of data and the specific characteristics of the Brazilian capital market were noted. Initially, the following four dimensions were defined as potential factors affecting the timing of the release of the financial statements according to the literature: i) the complexity of the company's operations; ii) the characteristics of the company's corporate governance; iii) the level of information asymmetry in the stock market; and iv) the proprietary costs and the content of the statements. For the empirical implementation of these four dimensions, variables that were appropriate proxies for the underlying factors were selected. A chart of the explanatory variables with summarized information, operationalization, and expectations with regard to the sign of the relationship with the dependent variable is presented in Table 1.

I) To represent the complexity of the operations, the following variables were selected:

- Size: the measurement of the company's size, and consequently, the complexity of its operations. However, as highlighted by Givoly and Palmon (1982), large corporations are most likely under greater scrutiny by investors and are therefore under greater pressure for the timely disclosure of their statements.
- Consolidated Statements: the consolidation of the financial statements of a group of companies is certainly a factor of greater complexity.
- Regulated Sector: companies in regulated sectors are subject to more severe scrutiny by regulatory agencies (for example, the Central Bank in the case of banks), which may increase the degree of complexity in their accounting.
- ADR: the companies that possess Level II or Level III American Depository Receipts programs must convert their financial statements to United States Generally Accepted Accounting Principles (USGAAP). This conversion increases the complexity of the accounting for these companies.

II) To represent the characteristics of corporate governance, the following variables were selected:

- Level of Corporate Governance: a company that voluntarily adheres to the special corporate governance levels recommended by Bovespa is formally committing to a differentiated set of rules with respect to its relationship with investors. If there is a complementary relationship between adherence to such special levels and the practice of timely disclosure, then a negative relationship is expected between this explanatory variable and the disclosure timing of the financial statements. Conversely, if the relationship between adherence to the special levels and the practice of timely disclosure is a substitution relationship, then a positive relationship is expected between this explanatory variable and the dependent variable.
- Leverage Control: measures the relationship between the percentage of votes of the five main shareholders and the percentage of their rights to cash flows. In this regard, this indicates the propensity of shareholders to extract private control benefits, an important characteristic of the Brazilian capital market (Leal & Saito, 2003; Dyck & Zingales, 2004). Once again, the expected sign of the relationship between this explanatory variable and the disclosure timing variable will depend on the nature of this relationship, i.e., whether it is a complementary (positive sign) or a substitution (negative sign) relationship;
- Institutional Ownership: if institutional investors monitor the companies in which they are shareholders more closely than do general shareholders, then a negative relationship between the level of institutional ownership and the timing of disclosure should be expected;
- Private Ownership: private companies are less susceptible to political influences, both in their business execution and in the choice of management board members. However, such companies also need legitimacy and would therefore tend to incorporate the environmental demands more rapidly compared to public companies. Thus, a negative relationship is expected between disclosure timing and the level of private ownership.

III) To represent the degree of information asymmetry between the company and the market, the following variables were selected:

- Turnover: the ratio of the traded volume of the company's shares throughout the fiscal period to their market value at the end of the same period. This ratio indirectly indicates the number of investors who are more closely monitoring the company's activities and demanding related information. As Sengupta (2004) shows, a negative relationship is expected between this explanatory variable and the disclosure timing of financial statements.
- Volatility: this corresponds to the variability of the daily returns of the company's most liquid share during the respective fiscal period (quarter). High volatility suggests greater uncertainty with regard to the company's operations and most likely a greater demand for timely disclosure. It is noteworthy that volatility may be determined, at least in part, by the quality of the financial information. Lambert, Leuz, and Verrecchia (2007), for example, developed a model consistent with the CAPM and showed that an increase in the quality of financial information reduces the estimated variance of the firm's cash flows. Because timely disclosure is one of the determinants of the quality of the financial information, disclosure timing and the volatility of the firm's returns may be determined simultaneously. In this case, the instrumental variables method should be used for consistent estimation of the model's parameters.

IV) To represent proprietary costs and the content of financial statements, the following variables were selected:

- Market to Book Value: the ratio between the company's market value and its book value. This reflects the company's growth opportunities and possibly the amount of proprietary costs. According to Bamber and Cheon (1998, p. 171), the greater the company's growth opportunities are, the more reluctant managers are to reveal information because doing so could reduce the value of such opportunities. Therefore, it is expected that companies with more growth opportunities delay the disclosure of business-relevant information as much as possible.
- Loss: losses may cause a delay in the disclosure of what would be negative news regarding the company. As highlighted in the empirical review, several studies have found that managers tend to delay the disclosure of "bad news". Skinner (1994), however, suggests that managers have incentives to anticipate the disclosure of unexpected results ("bad news") to minimize litigation costs;
- Good News: if the disclosure of financial statements causes positive surprise in the market, it may be delayed less than in situations in which the surprise is not positive. To determine this "surprise", the choice was made to use the variation in the Earnings per Share (EPS) between the current quarter and the same quarter from the previous year as a proxy. If this variation is positive, or rather, if there was an increase in the EPS, it is considered that good news has been communicated to the market.

Descriptive statistics for the dependent variable in terms of annual and quarterly periods are presented in Table 2. Before undertaking any analysis, it is noteworthy that there is only information available from the first and second quarters of 2009 and that 1997 contains a relatively small number of observations. Based on this table, the average lag in the release of financial statements in the sample is approximately 44 days. Throughout the years, however, this average decreases considerably, with a decrease of approximately seven days being observed between 1998 and 2008, for example. With regard to the lag per quarter, the average values for the first three quarters of the year (approximately 38 to 39 days) are similar, while the fourth quarter average is higher (approximately 63 days) because the fourth quarter includes the disclosure of the DFPs, for which there is a longer period for disclosure, as discussed above.

Based on Table 2, the lateness percentage, i.e., the percentage of disclosures after the legal period, corresponds to 18% of the disclosures analyzed. As with the average lag, the percentage of lateness has decreased considerably over the years (35% of disclosures were late in 1998 compared to 7% in 2008). Although the preparation of DFPs is generally more complex than that of ITRs, the percentage of lateness in the fourth quarter is approximately 6%, less than one-third of the percentage of late disclosures in the other quarters; this percentage reflects, at least in part, the longer period granted for disclosures at the end of the year.

Table 2 *Descriptive statistics for the dependent variable*

Year	Obs	Mean	Median	Standard Deviation	% Lateness	Maximum	Minimum	1st percentile	99th percentile
1997	11	56.91	51	14.63	64	82	35	35	82
1998	63	50.44	47	23.38	35	114	13	13	114
1999	105	47.61	47	19.28	42	147	13	14	99
2000	116	44.69	45	17.54	30	92	13	13	92
2001	133	48.00	45	18.99	32	115	10	11	102
2002	132	45.20	43	18.48	20	110	10	11	105
2003	124	43.53	42	18.05	14	93	9	10	92
2004	127	43.28	41	17.60	13	90	8	12	90
2005	146	43.11	40.5	15.95	9	89	10	11	89
2006	149	44.65	42	16.98	13	95	6	7	92
2007	177	42.43	41	14.62	11	91	5	6	91
2008	204	43.57	42	17.22	7	90	7	16	89
2009	98	40.01	43	7.09	9	50	16	16	50
Quarter	**Obs**	**Mean**	**Median**	**Standard Deviation**	**% Lateness**	**Maximum**	**Minimum**	**1st percentile**	**99th percentile**
1º	393	39.40	41	11.53	23	147	5	10	71
2º	424	38.04	40	10.28	22	114	6	11	59
3º	383	38.29	40	10.69	21	110	6	9	64
4º	385	62.91	62	20.42	6	115	10	13	102
Total	1585	44.48	43	17.29	18	147	5	11	92

% Lateness refers to the percentage of disclosures that occur after the established legal period

Descriptive statistics for the explanatory variables (continuous quantitative variables only) are presented in Table 3. It is noteworthy that on average, the disclosures analyzed come from privately controlled companies with limited institutional participation whose majority shareholders use leverage control. Table 4 shows the matrix of correlations of the explanatory variables (continuous quantitative variables only). The correlations between these variables are modest, generally displaying a maximum of 0.27 (between Turnover and Volatility) and a minimum of -0.33 (between Size and % Private Ownership), suggesting that problems of multicollinearity are negligible.

Table 3 *Descriptive statistics of the continuous quantitative explanatory variables*

Variable	Obs	Mean	Median	Standard Deviation	Maximum	Minimum	1st Percentile	99th Percentile
Size	1585	16.57	16.52	1.45	20.31	12.22	13.93	19.90
Leverage Control	1585	1.61	1.57	0.53	3.00	0.91	0.97	2.84
% Institucional Prop.	1585	0.10	0.05	0.15	0.87	0.00	0.00	0.58
% Private Prop.	1585	0.88	1.00	0.24	1.00	0.06	0.15	1.00
Turnover	1585	639.17	463.83	590.96	5789.39	12.97	60.24	2892.72
Volatilily (%)	1585	2.98	2.69	1.30	20.62	0.34	1.35	7.46
Market to Book Value	1585	2.18	1.48	3.79	73.18	-26.42	0.16	18.15

Table 4 *Correlation matrix (Pearson) of the continuous explanatory variables*

	Size	(1)	(2)	(3)	(4)	(5)
Leverage Control (1)	**-0.07**					
% Institucional Prop. (2)	-0.03	**-0.13**				
% Private Prop. (3)	**-0.33**	**0.16**	-0.03			
Turnover (4)	**-0.22**	**0.17**	**0.07**	**0.07**		
Volatilily (5)	**-0.16**	0.01	**0.09**	0.02	**0.27**	
Market to Book Value	**-0.07**	**-0.10**	**-0.07**	**0.15**	**0.04**	**-0.05**

Correlations that are significant at a level of 10% or less are in bold.

3.2 Characterization of the Sample and Data Collection.

Initially, the sample period consisted of all quarters between 1995/1 and 2009/2 (year/quarter)[3]. We chose to begin the sample period in the year 1995 because this is the first year after the implementation of the Real Plan (Plano Real) in July of 1994. In each quarter of the sample period, companies that comprised the IBOVESPA in that quarter were selected for the composition of the sample. Because the IBOVESPA is reviewed in a four month base, the following convention was adopted:

a) 1st quarter → composition of IBOVESPA in the 1st Four-month period (January/April);

b) 2nd quarter → composition of IBOVESPA in the 2nd Four-month period (May/August);

c) 3rd and 4th quarters → composition of IBOVESPA in the 3rd Four-month period (September/December);

The criterion employed for the sample selection sought to meet two requirements. First, the sample must be representative of the Brazilian capital market, and our sample would represent the most traded companies on the Bovespa. Second, the number of companies must be manageable because the disclosure date of financial statements would be collected manually along with the Bovespa Daily Bulletins (Boletins Diários da Bovespa - BDI). By restricting the sample to those companies that comprised the IBOVESPA in each quarter, both requirements are satisfied because the shares listed on the IBOVESPA correspond to at least 80% of the business and the financial volume on the Bovespa (BM&FBovespa, 2010), and the number of companies comprising the IBOVESPA is limited and manageable.

The initial sample consisted of 3080 observations from 112 different companies. Observations from the initial sample for companies that did not have available information on all the variables necessary to analyze the problem (1483 observations) and observations for which the disclosure period was not found in an interval from 0 to 150 days (12 observations) were excluded. Data on the ownership structure (shareholder composition) were only available from the year 1997 onward, and the sample period was therefore restricted to the quarters between 1997/1 and 2009/2 (50 quarters). Of the 1483 observations excluded because of the unavailability of data, 863 (58%) refer to data related to the ownership structure. After the exclusions, the final sample consisted of 1585 observations from 83 different companies for an average of approximately 19 observations per company. With the exception of the dependent variable, all of the data necessary for the production of the explanatory variables was collected from the Economática® database.

3 It is worth stressing that the results are robust to the exclusion of the years 2008 and 2009, which is a period in which several changes in Brazilian financing rules came into effect (Law 11,638 and Accounting Pronouncements issued by the Brazilian Accounting Pronouncements Committee (Comitê de Pronunciamentos Contábeis – CPC). We thank an anonymous evaluator for this suggestion.

3.3 Empirical Model.

To analyze the effects of the previously defined explanatory variables on the timing of disclosure of financial statements, the following linear model was estimated:

$$Y_{i,t} = \alpha_i + \Sigma_{j=1}^{13} \beta_j X_{ji,t} + \Sigma_{k=2}^{4} \gamma_k T_k + \mu_t + \varepsilon_{i,t}, \quad (1)$$

where $Y_{i,t}$ is the dependent variable (disclosure timing of the statements) of the i^{th} company in quarter t; α_i is the specific unobserved and constant effect over time of the i^{th} company; $X_{ji,t}$ is the j^{th} explanatory variable of the i^{th} company in quarter t; T_k is a categorical (dummy) variable for the k^{th} quarter, k = 2, 3, or 4; μ_t captures specific effects for each period (years), represented by a set of dummy variables for the period; β_j and γ_k are parameters to be estimated; and $\varepsilon_{i,t}$ is the idiosyncratic error term.

Model (1) will be estimated by panel data methods. Because the Regulated Sector explanatory variable is constant over time, the random effects method was used, which assumes orthogonality between the specific unobserved effect (α_i) and the explanatory variables among other assumptions. To obtain consistent estimates in the presence of arbitrary correlations between the specific unobserved effect and the explanatory variables, the Hausman-Taylor estimator was also used[4]. Because the dependent variable only assumes non-negative integer values, the parameters were also estimated through a Poisson Regression Model[5] with random effects. This last estimation technique, which may be considered the most appropriate because of the nature of the data analyzed, has not been used in previous studies and is therefore a methodological innovation of our study.

4 RESULTS

The results of the estimations are presented in Table 5. Before any analysis, it is important to note the following details: (i) after estimating model (1) with the random effects model, the residual analysis indicated the presence of autocorrelation, and the model was consequently estimated again using error correction with a 1st order autoregressive structure [AR(1) random effects estimator, column 2]; and (ii) the coefficients of the Poisson regression model have a different interpretation than the coefficients from the other estimators. According to Wooldridge (2002, p. 648), the coefficients of the Poisson regression model are the semi-elasticities of the conditional expectation of the dependent variable in relation to the explanatory variables. Thus, according to this author, for small changes in the explanatory variable x_j, Δx_j, the percentage change in the conditional expectation of the dependent variable, $E(y|x)$, is approximately 100 x β_j x Δx_j.

A general analysis of Table 5 indicates that with few exceptions, the results do not differ qualitatively among estimators. This finding, in turn, suggests that the results are robust for the selected estimation method and that possible problems stemming from autocorrelation in the residuals and arbitrary correlation between the unobserved specific effect and the explanatory variables are of a lower order.

Table 5 *Results of the estimation of the empirical model*

Dimensions ↓	Dependent Variable:	Timing			
	Estimator →	Random Effects	AR(1) Random Effects	Hausmann – Taylor	Poisson
Complexity of the Operations	Size	0.2902	0.2115	0.6763	0.0136
		(0.5565)	(0.3656)	(0.8615)	(1.3129)
	Consolidated Statements	3.4169***	3.9642***	4.5594***	0.0677***
		(3.1868)	(3.4916)	(4.0234)	(4.3628)
	Regulated Sector	0.8379	1.1150	1.4371	0.0226
		(0.5012)	(0.6208)	(0.3860)	(0.4737)
	ADR	-1.2450	-2.2695	1.2814	0.0189
		(-0.9025)	(-1.5633)	(0.7178)	(0.7970)
Corporate Governance	Level of CG	1.1606	1.2946	0.3349	0.0145
		(1.1342)	(1.0066)	(0.2766)	(0.8518)
	Leverage Control	-1.8771*	-1.4073	-2.5072**	-0.0577***
		(-1.6601)	(-1.3038)	(-2.3765)	(-3.8266)
	% Institutional Prop.	-0.4619	0.2912	-1.8755	-0.0320
		(-0.1580)	(0.0787)	(-0.5241)	(-0.6417)
	% Private Prop.	-8.4745***	-8.4819**	-2.2900	-0.0817
		(-2.9609)	(-2.4693)	(-0.5396)	(-1.4987)

continuous

[4] For more information see, for example, Wooldridge (2002, p. 325).
[5] For more information see, for example, Wooldridge (2002, p. 645).

continued

Dimensions ↓	Dependent Variable:	Timing			
	Estimator →	Random Effects	AR(1) Random Effects	Hausmann – Taylor	Poisson
Information Asymmetry	Turnover	0.0006	0.0003	0.0006	0.00002*
		(0.6643)	(0.4018)	(0.7109)	(1.7993)
	Volatility	1.6306***	1.4679***	1.4267***	0.0319***
		(3.5078)	(5.1692)	(4.8362)	(8.2241)
Proprietary Costs and Content of the Statements	Market to Book	0.0076	-0.0185	0.0483	0.0012
		(0.1256)	(-0.2018)	(0.4997)	(0.8147)
	Loss	3.1429***	2.9607***	3.0869***	0.0660***
		(2.9662)	(3.1866)	(3.4052)	(5.1388)
	Good News	-0.6064	-0.5305	-0.6466	-0.0114
		(-1.0541)	(-0.8905)	(-1.1074)	(-1.3376)
Constants and dummies for year and quarter	Constant	47.1476***	47.0450***	35.7712***	3.6356***
	Year 1998	-7.2221	-5.8932	-7.0804*	-0.1393***
	Year 1999	-7.9294*	-7.2009*	-7.6981**	-0.1504***
	Year 2000	-7.5841*	-6.4549	-7.0765**	-0.1335***
	Year 2001	-7.1630*	-5.7091	-7.2732**	-0.1355***
	Year 2002	-8.8893**	-7.8711*	-8.9428***	-0.1687***
	Year 2003	-8.6415**	-7.4701*	-8.8338**	-0.1671***
	Year 2004	-9.6932**	-8.6611**	-9.9196***	-0.1908***
	Year 2005	-10.1552**	-9.5055**	-10.6186***	-0.2056***
	Year 2006	-10.1957**	-9.2208**	-11.0898***	-0.2115***
	Year 2007	-12.5987***	-11.6789***	-13.6468***	-0.2719***
	Year 2008	-13.7402***	-12.1930***	-14.4379***	-0.2993***
	Year 2009	-10.1909**	-9.0274**	-11.1405***	-0.2084***
	2nd Quarter	-1.0650**	-1.1574*	-1.0736	-0.0272**
	3rd Quarter	-1.0202*	-1.0856	-0.9996	-0.0248**
	4th Quarter	22.7169***	22.6746***	22.5609***	0.4533***
	Nº. Observations	1585	1585	1585	1585
	R2 (between)	0.3622	0.3531		
	Rho (AR)		0.2317		

***, **, and * denote statistical significance at the levels of 1%, 5%, and 10%, respectively. The *t* statistics are between parentheses (only for the main variables).

The only variable among those that represent the complexity of operations that appears to affect disclosure timing significantly is the consolidated statements variable. This variable's coefficients are positive and statistically significant at the 1% level, independent from the estimator used, and are coherent with the theoretical expectations. Consolidated statements increase the complexity and therefore increase the time before disclosure.

Based on the Poisson regression model coefficient, when disclosure refers to consolidated statements, the expected timing increases by approximately 7% (or by approximately three days, using the average timing of 44 days). With respect to size and the ADR variables that did not display statistically significant coefficients, as well as the regulated sector, it is possible that they represent dimensions with effects on disclosure timing that are antagonistic (and cancel one another out). On the one hand, large companies and issuers of ADRs have more complex operations and/or financing. On the other hand, such companies are under greater scrutiny by the market and therefore must provide timely disclosure.

With respect to the corporate governance dimension, the leverage control variable displayed negative and statistically significant coefficients in three of the four estimators (the level of significance also differs among these). This result suggests that timely disclosure may, in a way, "compensate" for the greater propensity by the largest shareholders to extract private control benefits (greater leverage), indicating that there may be a substitution relationship between leverage control and timely disclosure. Based on the coefficient of the Poisson regression model, a variation of the standard deviation of the leverage control variable decreases the expected timing by approximately 3% (-0.0577 x 0,53 x 100 or approximately 1.4 days based on average timing). The private ownership variable also displayed negative coefficients, corroborating the theoretical expectation, but these coefficients are statistically significant only in the case of the estimations by the random effects model. Based on these estimators, a variation of one standard deviation of the private ownership variable decreased the expected disclosure timing by approximately two days (-8.48 x 0.24). The other variables in this dimension did not show statistically significant coefficients, suggesting that

the proportion of institutional investors and the listing at special corporate governance levels are not motivating factors for timely disclosure.

With respect to the information asymmetry dimension, the turnover variable displayed positive coefficients, contrary to the theoretical expectation that a greater volume of business would be inversely related to disclosure timing, as an indicator of the number of investors who more closely monitor the company's operations. However, the relationship is statistically significant only in the Poisson regression model (at the 10% level) and its economic effect is limited; a variation of one standard deviation of the turnover variable increases the expectation of the timing by approximately 1% (0.00002 x 590.96 x 100).

The volatility variable, contrary to the theoretical expectations, displayed coefficients that were positive and statistically significant at the 1% level for all the estimators. Based on the coefficient of the Poisson regression model, a variation of one standard deviation in the volatility variable increases the expected timing by approximately 4% (0.0319 x 1.3 x 100, or approximately 1.8 days based on average timing). In the study by Sengupta (2004), the volatility also displays a positive and statistically significant effect on the timing. This phenomenon may be caused by simultaneity between disclosure timing and the volatility of the firm's returns, as discussed in the previous section. To verify whether simultaneity between these variables affects the estimates, the model was estimated by the instrumental variables method; the implementation details and main results for this method are discussed at the end of this section.

Among the variables representative of the proprietary costs and statement content dimension, only the loss variable affects disclosure timing in a statistically significant manner. Its coefficients are positive and statistically significant at the 1% level for all the estimators, corroborating the hypothesis that the benefits of delaying the disclosure of losses ("bad news") exceed possible associated costs. With regard to the economic effects, the disclosure of losses increases the expected timing by approximately 7% (or approximately 2.9 days based on the average timing), which is similar to the effect of the disclosure of consolidated statements. As expected, the good news variable displayed negative coefficients but without statistical significance. The lack of statistical significance for the coefficients of this variable may be the result of the simultaneous inclusion of the loss variable, a proxy for "bad news"[6]. The market to book value variable, a proxy for proprietary costs, did not display statistically significant coefficients in the regressions either. This variable is most likely not an adequate proxy[7]; for future studies, we suggest variables that indicate the degree of concentration in product markets as proxies for proprietary costs (see Bamber & Cheon, 1998).

Statistically significant coefficients of the dummies for the year and quarter reinforce the conclusions obtained previously in the analysis of the descriptive statistics. First, disclosure timing has decreased considerably throughout the years, most likely as a function of technological progress and of companies' growing desire to meet investors' informational demands. Second, the fourth quarter displays the greatest time lag compared to the other quarters. With regard to the quality of the fit, Table 5 (random effects only) indicates that the proposed model displays a good fit with the data, explaining between 35% and 36% of the variations in disclosure timing between firms [R2 (between)]. It is noteworthy that the *rho* coefficient of autocorrelation of the residuals is positive and significant, which may indicate that there is certain "habit formation" with respect to the release date of financial statements, which is a topic that deserves to be investigated in more depth in a future study.

The methods utilized to date for the estimation of empirical model (1) are inconsistent in the presence of simultaneity between the dependent variable and any of the explanatory variables. It is possible that disclosure timing and the volatility of a firm's returns are simultaneously determined, as discussed above. To obtain consistent estimates of the parameters in the presence of simultaneity between these variables, the empirical model was estimated by the instrumental variables method. A variable is a candidate as an instrumental variable if it satisfies the following conditions[8]: (i, inclusion restriction) the variable has a direct effect over the endogenous explanatory variable, i.e., in controlling for the other exogenous variables, an instrumental variable must be partially correlated with the endogenous variable; and (ii, exclusion restriction) the variable has no direct effect over the dependent variable, such that the correlation between the model residual (1) and the instrumental variable should equal zero.

Among the variables that are determinants of return volatility, the operational leverage is most likely to satisfy the above conditions, given that it is not likely that the operational leverage has a direct effect on the timing of disclosure of financial statements. Therefore, we chose to use this variable as an instrument for return volatility. Operational leverage is commonly defined as the percentage variation in the operating profit, given a percentage variation in the amount of sales; this variation measures the degree of use of fixed costs in a firm's cost structure. Given our definition, this variable was computed by means of the following expression:

$$Operational\ Leverage = ABS\left(\frac{\Delta EBIT_{i,t}/EBIT_{i,t-1}}{\Delta Revenue_{i,t}/Revenue_{i,t-1}}\right)$$

where $EBIT_{i,t}$ is earnings before interest and income tax of the i^{th} firm in quarter t; $Revenue_{i,t}$ is the net sales revenue of the i^{th} firm in quarter t; and $ABS()$ is the absolute value function. In the calculation of operational leverage, it is assumed that the positive (negative) variations in the amount of sales positively (negatively) affect the operational earnings, with everything else being constant. As a function of this assump-

[6] Estimates of model (1) without the loss variable confirm this hypothesis. Results not reported but available by request.
[7] Sengupta (2004) also did not find a statistically significant relationship between the market to book value variable and the disclosure timing of financial statements.
[8] See Wooldridge (2002, p. 84).

tion, the variable was computed only for the observations (firm-quarter) in which the sign for the variation of the earnings before interest and income tax was equal to the sign for the variation in net sales revenue, i.e., for the observations in which $sign\ (\Delta EBIT_{i,t}) = sign\ (\Delta Revenue_{i,t})$.

Once operational leverage was computed at the firm level, the mean for this variable was taken within each sector of activity (in each quarter of the sample) to obtain a measurement of operational leverage at the sector level. The use of operational leverage at the sector level is justified by the following: (i) operational leverage is largely determined by sector characteristics (such as technology) and (ii) its use avoids the loss of observations for which it was not possible to compute operational leverage at the firm level. The results of model estimation (1) using the instrumental variables method with random effects are shown in Table 6 in addition to the results of the first-stage regression (columns 1 and 2).

Table 6 *Results of the estimation of the empirical model by instrumental variables*

First-Stage Regression	**Second-Stage Regression**		
Dependent Variable:	**Volatility**	**Dependent Variable:**	**Timing**
Size	-0.0081	Size	0.5569
	(-0.15)		(0.7470)
Consolidated Statements	-0.1385	Consolidated Statements	2.7286*
	(-1.35)		(1.6463)
Regulated Sector	0.1070	Regulated Sector	2.2280
	(0.55)		(0.8189)
ADR	0.0134	ADR	-1.9593
	(0.09)		(-0.9976)
Level CG	-0.0891	Level CG	0.2698
	(-0.83)		(0.1689)
Leverage Control	-0.0269	Leverage Control	-2.2973*
	(-0.30)		(-1.8980)
% Institutional Prop.	0.0812	% Institutional Prop.	-0.8266
	(0.27)		(-0.2015)
% Private Prop.	0.0709	% Private Prop.	-7.8826*
	(0.22)		(-1.7840)
Turnover	0.0007***	Turnover	0.0060
	(11.09)		(1.2261)
Operational leverage	0.0002**	Volatility	-5.5065
	(2.08)		(-0.8446)
Market to Book	-0.0247***	Market to Book	-0.1348
	(-3.05)		(-0.6826)
Loss	0.4125***	Loss	6.0955**
	(5.06)		(2.0536)
Good News	-0.0247	Good News	-0.4801
	(-0.45)		(-0.6276)
Constant	3.3502***	Constant	63.5954**
Year 1998	0.8419**	Year 1998	1.6160
Year 1999	0.4460	Year 1999	-1.4864
Year 2000	-0.2843	Year 2000	-7.1799
Year 2001	-0.1734	Year 2001	-6.1300
Year 2002	-0.4965	Year 2002	-10.1386
Year 2003	-1.0504***	Year 2003	-13.9415
Year 2004	-0.9293**	Year 2004	-14.4281*
Year 2005	-0.8499**	Year 2005	-14.2188*
Year 2006	-1.0846***	Year 2006	-15.9299*
Year 2007	-0.9726**	Year 2007	-17.7778**
Year 2008	0.2075	Year 2008	-10.3772*
Year 2009	-0.5741	Year 2009	-12.2948*
2nd quarter	-0.3061***	2nd quarter	-3.3439
3rd quarter	-0.1344*	3nd quarter	-1.8930
4th quarter	0.1670**	4th quarter	25.6330***
No. Observations	1364	No. Observations	1364
Wald (chi2(28))	662.0	R2 (overall)	0.3441
Prob > chi2	0.0000	R2 (within)	0.4519
		R2 (between)	0.1310

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The *t* statistic is between parentheses (only for the main variables).

In the first-stage regression, in which the dependent variable is return volatility, the operational leverage variable displays a positive coefficient that is statistically significant at the 5% level, corroborating the theoretical expectation of a positive relationship between operational leverage and the volatility of the firm's returns. The direct effect of operational leverage over volatility is a necessary (but not sufficient) condition for the use of this variable as an instrument for volatility (inclusion restriction). In the second-stage regression, where the dependent variable is disclosure timing and the variable of operational leverage is used as an instrument for return volatility, there are few differences from the previous results with the exception of the volatility variable (see Table 5, Random Effects column). Although the level of statistical significance is not exactly identical, the consolidated statements, leverage control, private ownership, and loss variables display statistically significant coefficients that have the same sign as those in the previous estimation. The volatility variable, conversely, displays a negative coefficient (previously positive) that is therefore consistent with a priori expectations but not statistically significant. The inversion of the sign of the coefficient of the volatility variable suggests that ignoring the simultaneity between this variable and disclosure timing leads to biased estimations and false conclusions regarding the effect of return volatility on the timing of financial statement disclosure.

5 FINAL CONSIDERATIONS

This article has sought to investigate the determining factors in the timing of the disclosure of financial statements, which is a research topic that is still in its infancy in Brazil. Based on a literature review, we defined the following four dimensions that potentially affect the disclosure timing: i) the complexity of the company's operations; ii) corporate governance characteristics; iii) the level of information asymmetry in the stock market; and iv) proprietary costs and the content of the statements. These dimensions were represented by 13 explanatory variables in an empirical model in which the dependent variable is the disclosure timing.

With a sample containing 1585 observations from 83 different companies, which are representative of the Brazilian capital market, the empirical model was estimated using panel data methods. The main findings suggest that the disclosure of consolidated statements and/or statements that report losses positively affects the expected timing, corroborating the hypothesis that greater complexity of operations and the content of the statements (in this case, "bad news") positively affect the timing of disclosure of financial statements. The leverage control variable, in turn, proved to be negatively related to disclosure timing, suggesting that there may be a substitution relationship between leverage control and timely disclosure. Contrary to theoretical expectations, the volatility variable displayed positive and statistically significant coefficients. This phenomenon may have been caused by a problem with simultaneity between volatility and disclosure timing. By using the instrumental variables method to obtain consistent estimations in the presence of simultaneity between volatility and disclosure timing, the volatility variable displayed a negative coefficient that was not statistically significant. The inversion of the sign of the coefficient of the volatility variable suggests that ignoring the simultaneity between the variables leads to biased estimations and false conclusions regarding the effect of return volatility on the timing of disclosure of financial statements.

The results found in our study allow for the conclusion that selection of the disclosure date of financial statements by managers is not performed "randomly" and that the benefits and costs associated with the selection appear to play a significant role, which is consistent with arguments in the literature on corporate disclosure. It can also be argued that these costs and benefits are related to the previously defined dimensions. Considering the incentives and costs that companies have to disclose their financial information in a timely manner, these findings are important to signal to investors that these companies' decisions appear to be rational and may even seek to exploit the behavioral factors of investors.

The results of our study also indicate that the average time lag in the disclosure of financial statements decreased considerably over the investigated period (1997: 56 days; 2009: 40 days). This result, by itself, reflects a potential increase in the quality of financial information because the faster that companies disclose their financial information, the less uncertainty there is for users.

The limitations of this research are mainly related to the unavailability of data for the operationalization of the variables identified in the literature as potential determinants of disclosure timing, such as predictions of profits by analysts, the number of analysts observing the company, and the number of independent board members. Additionally, for future research, we suggest the inclusion of control variables that consider features related to the external auditing of companies. The literature contemplates empirical evidence that relates the content of audit reports (with or without reservations) to a longer or shorter time lag in the disclosure of financial statements.

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