

# Cost of Equity Capital and Disclosure Level in Brazilian Companies

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**ABSTRACT:** This paper investigates and correlates disclosure level with cost of capital for Brazilian companies. Theory says that better disclosure results in reduced cost of capital, and prior studies in other countries confirm the theory, but there are reasons to believe that the same effect is not observed in the Brazilian market. The research took into account data obtained from Economática database, referring to 222 enterprises listed in the Stock Exchange. The conclusion drawn from such data shows that, as far as the Brazilian market goes, disclosure level does not influence the cost of capital. These findings require further detailed investigation. Besides, two other results were found, which not only are contrary to the expectations originated from the theory, but also reinforce findings from other existing research: bigger enterprises offer higher return than smaller enterprises, and corporate governance practices have not resulted in a change in cost of capital.

**Key words:** Cost of capital, disclosure, corporate governance.

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## I. INTRODUCTION

Accountancy, when providing information, may perform an important role in managing conflicts of interests and reducing informational asymmetry, a critical barrier that is established between common share issuers and public investors, which are a few among the several contract participants establishing a firm. One of the expected reflexes from a lesser informational asymmetry is the reduction of the cost of capital.

The phenomenon linking information, available and widely known, to the cost of capital can be thus explained: as share buyers are not sure of the credibility of share issuers, they tend to diminish the offering price that they would consider fair for the shares. This protection mechanism, used by investors, increases the cost of equity capital funding. In the opposite direction, it is expected that, by reducing insecurity by investors, providing them with information, the firm may be able to achieve reduction of cost of capital.

Studies involving U.S. (BOTOSAN, 1997, BOTOSAN; PLUMLEE, 2001), Swiss (HAIL, 2002) and Asian (CHEN *et al.*, 2003) companies found a negative ratio between the disclosure level and cost of capital, confirming the theory.

The purpose of this study is to check whether there is a correlation between the disclosure level and cost of capital in Brazilian companies, as has already been found in research conducted in other countries.

The study is justified as a result of particular conditions of the Brazilian market, which have led Lopes (2002b) to find that equity value is higher than profits in terms of value relevance. Since profit is little relevant as an informational asymmetry reducer, would other disclosed information also?

The great difficulty in linking the cost of equity capital to disclosure level is that none of either measure is directly observable. The quality of conclusions largely depends on the skill of the researcher in choosing suitable proxies for both variables.

This article has used the beta of the company as the representation of cost of capital variable and the nomination of companies for transparency award of the National Association of Finance, Management and Accounting Executives - ANEFAC as representation of a higher disclosure level than the other companies.

The use of beta as equity capital proxy is based on the approach of the Capital Asset Pricing Model - CAPM, where this factor differentiating the cost of an asset from the others, and is one more different approach brought to this paper.

Regression has also been added by variables representing the company size, indebtedness level, degree of conservatism, corporate governance and internationalization.

## II. RELATION TO PREVIOUS RESEARCH

The theory basing the expected reverse relation between cost of capital and disclosure level, was described by Botosan (1997) who characterized two lines of research: the first one represented by Amihud & Mendelson (1996) and Diamond & Verrecchia (1991). The theoretical basis of this line of research says that better disclosure increases the stock market liquidity thereby, reducing cost of capital through reduction of transaction costs or increased demand for the company's securities.

The second theoretical research line suggests that better disclosure may reduce cost of capital by reducing non-diversifiable risk estimate. Klein and Bawa (1976) were perhaps the first ones to consider estimation risk. This group also included Barry and Brown (1985), Coles and Loewenstein (1988), Handa and Linn (1993), Coles *et al.* (1996).

## 2.1 Studies conducted in other countries

Botosan (1997) examined the association between cost of capital and disclosure level, by means of specific estimation regression to the firm of cost of capital in relation to beta, company size and a sub-constructed measurement of the disclosure level. The disclosure level measurement is based on the quantity of voluntary disclosures provided in annual reports of 1990, in a sample of 122 industries. The author concluded that, for companies attracting a low reporting level on the part of market analysts, better disclosure is associated with lower cost of capital. Whereas for companies more reported by analysts, the author did not find any evidence of association, and justifies that perhaps it has occurred because of being based on annual reports only.

Afterwards, Botosan and Plumlee (2001), upon reexamining the issue, found that there is negative association between the cost of capital and annual disclosure level, but a positive association with more timely disclosure. The authors stress that, though the latter finding may contradict the theory, it confirms complaints of company managers (that more timely information increases cost of capital) who charge the explanation of this phenomenon to probable price volatility increase.

Hail (2002) used a similar procedure and found in the examination of a sample of 73 non-financial Swiss companies a negative and highly significant association between the two variables.

Chen *et al.* (2003) tested the relation in the Asian market, adding other corporate governance indicators to the issues, having found that both disclosure and governance indicators unrelated to disclosure reduce cost of capital.

The four mentioned studies used similar methodologies for finding cost of capital, which was estimated by finding the discount rate that, applied to future yield projections made by market analysts, equals such flow to current share price.

Francis *et al.* (2003) studied companies from 34 countries belonging to 18 industrial sectors, objectively checking the relation between voluntary disclosure level outside the USA and the need for foreign investment. In addition to verifying a positive correlation between the two variables, researchers also found that companies with better disclosure level have lower cost of capital.

## 2.2 Studies conducted in Brazil

Among studies conducted in Brazil, no study was found specifically testing the relationship between disclosure and cost of capital. However, several studies examined the influence of other factors on returns on shares.

Bruni and Famá (1998) examined the association between returns on non-financial shares listed in BOVESPA between the years 1988 and 1996 and several variables. Results found did not allow evidencing a significant relation between returns and betas, but evidenced a significant relation between return and indebtedness, for common shares, and between return and the relation between book and market value of the share, for preferred shares.

Bruni (2002), examining the behavior of shares of ADR-issuing Brazilian companies in the 1992-2001 period, evidenced a significant reduction of cost of equity capital, expressed by the negative variation of share betas, after ADR issuance. Furthermore, a conducted study of events evidenced the presence of abnormal higher returns in the period preceding the event, significant abnormal and positive returns around the event, and negative returns in the subsequent period, reinforcing the evidence of reductions in cost of capital levels.

Málaga and Securato (2004) applied the Fama and French three-factor model to share portfolios formed by shares listed in the São Paulo Stock Exchange -BOVESPA in the 1995-2003 period, and found out that market return, company size and Book-to-Market index are significant and supplementary to the explanation of company return. Contradicting the expectation based on theory, the relationship between market return and company size found by researchers was positive.

Silveira (2003) investigated whether the Brazilian companies who traded shares in the stock exchange and those who issued ADR in the 90's went through significant change in their cost of capital. Results found suggest that the companies did show reduction. The author quotes papers that reached similar conclusions: Alexander, Eun and anakiraman (1988), Sundaram and Logue (1996), Bekaert and Harvey (1997), Errunza and Miller (2000), Singale Kim (2000), Karolyi and Stulz (2001) in other countries, and in Brazil papers by Rodrigues (1999) and Bruni (2002). In his conclusion, Silveira (2003, p.119) remarks that observed reductions seem to come more from internal operating modifications, more specifically from new governance standards created by the situation.

Lima et al.(2004) studied funding rates of companies that issued debentures between January 2001 and November 2003, and found no significant traces that companies adhering to any Bovespa corporate levels have managed funding at lower rates than the other companies.

### III. ACCOUNTING INFORMATION AND THE BRAZILIAN CAPITAL MARKET

The Brazilian capital market has its own characteristics directly impacting the quality and importance of accounting information. Lopes (2002b, p. 14-18) emphasizes the following characteristics: corporate interest structure and institutional factors, source of funds, and participation of the State in the economy.

Corporate control in Brazil is extremely concentrated, and owners and managers are usually the same. This fact diminishes the importance of outside accounting information, since there is no information asymmetry problem. It also influences the quality of information and protection degree given to minority shareholders. With respect to this point, the development of institutions ensuring suitable protection to minority shareholders is still weak, according to Anderson, quoted by Lopes (2002b, p. 16).

In addition to factors connected to corporate governance structure, the fact that the Brazilian market favors, as its major funding sources, the bank credit market and the high level of State participation in economic activities also affects the quality of accounting quality.

As far as accounting information in itself is concerned, one points out the influence that tax legislation exerts on the information produced and published in Brazil, and also the accounting standard definition model based on the legislation, in detriment of private and self-regulating committees.

All these issues taken as a whole have led Lopes (2002b, p. 18) to assert:

*This overview of the Brazilian accounting system and capital markets clearly indicates that accounting information is expected to be of low quality due to the current stage of the financial reporting system and the capital markets structure.*

#### IV. UTILIZED MODEL AND VARIABLES

Given the peculiarities of the Brazilian stock market, where few companies have their corporate control traded in the stock exchange, accounting result, in other markets used for reducing informational asymmetry, has smaller use in Brazil. Managers and owners either belong to the same group or have common access to privileged information. Before this scenario, the disclosure level is not expected to affect cost of capital in Brazilian companies.

In order to test the connection between disclosure and cost of capital, control variables were introduced in the model, reported in the literature as liable to influence cost of capital.

The adopted model is represented by the following equation:

$$\beta = \gamma_0 + \gamma_1 PRVP + \gamma_2 LNEND + \gamma_3 LNRB + \gamma_4 DISCL + \gamma_5 GOVERN + \gamma_6 ADR$$

The hypotheses to be tested are:

Ho: Disclosure level does not affect cost of capital.

H1,a: Disclosure level affects cost of capital, contributing to its reduction.

H1,b: Disclosure level affects cost of capital, contributing to its increase.

#### 4.1 Cost of capital

According to Pratt (1998, p. 3), cost of capital is the expected return that the market requires to get capital for any investment. It is an expected cost given by the cost of opportunity. Kaufman, apud Pratt (1998), states:

*Since the cost of anything can be defined as the price you have to pay to get it, the cost of your capital is the return you must promise in order to get capital from the market, either debt or equity. A company does not set its own cost of capital; it must go to the market to discover it.*

The cost of capital is not, therefore, observable data. As cost of opportunity, it is the result of expected benefits, weighted by the specific risk of the asset in which one invests and the rates of other assets at a given time.

Botosan (1997) used the Ohlson model to estimate the cost of capital, estimated as being the discount rate equalizing the prize to the equity value of the share plus expectations of future results, the latter given by market analysts' projections. The adopted model, in addition to presupposing that analysts' forecasts are a suitable proxy of market expectations, is also based Ohlson's equation getting main components in price formation.

In a subsequent paper, Botosan and Plumlee (2001) estimated the cost of capital by using the formula used by Gebhardt *et al.*, based on Ohlson's model, which was also used by Hail (2002) and Chen *et al.* (2003).

Before the several alternatives to estimate the cost of capital (*ex-ante*), Botosan (1997, p.337) clarifies that he did not consider the possibility of using realized return average (*ex-post*) because it provided a very contaminated measurement of equity capital by other noises, and with low association level with beta. The author supplements the argument by stating that practice and previous research suggest alternatives incorporating less noise than realized returns.

With respect to CAPM, Botosan (1997, p. 337) states:

*One [alternative] is to estimate cost of equity capital with the Capital Asset Pricing Model [...]. The premise of my study, however, is that cross sectional variation in disclosure level explains variation in cost of equity capital. In contrast, the CAPM assumes that cross-sectional variation in market beta alone drives variation in the cost of capital. As a result, the CAPM approach provides no role for disclosure level, **unless one assumes cross-sectional variation in disclosure level induces variation in beta, a notion that has no theoretical support** (our bold characters).*

Redeeming the CAPM as a theory, in an article arguing that it has been used unduly in the attempt to explain occurred and unexpected returns, Fan (2004) states:

*Sharpe, Linter, et al. created CAPM, the first general equilibrium theory of the capital market, in 1964 and 1965. At the center of the theory is the security market line, which indicates that higher beta-risk assets should carry higher expected returns. As a theory, CAPM is very well received because of its parsimonious elegance and its common sense notion that any risk-averse investors would demand higher expected returns to compensate for taking higher risk.*

Consistent with Fan's assertion, it was opted for using beta/CAPM, since it represents expected return, which is the cost of capital concept (*ex-ante*). The understanding is that beta represents the company's specific risk resulting from a series of factors, including disclosure level.

## 4.2 Disclosure Level

Like cost of capital, the disclosure level of a company is a constructed measure. In this article, the adopted measure reflects the quality of the disclosure: the transparency award by the National Association of Finance, Management and Accounting Executives - ANEFAC.

The ANEFAC award has been awarded annually since 1997 and enhances companies whose financial statements have been more complete and detailed. The analysis is made in two phases: in the first phase, students of the Masters Degree course in Controllship and Accounting of FEA-USP, oriented by a coordinator from FIPECAFI technical staff, analyze financial statements in light of preset technical queries so that financial statements are considered transparent. The triage group examines not only the existence or not of a given topic, but also whether the adopted depth degree is satisfactory. Each financial statement is the object of analysis by several students and only one passes to the following phase if approved by unanimity.

In the second phase a committee consisting of the FIPECAFI specialist and ANEFAC selects the ranked companies, and among them the winner.

The disclosure variable (DISCL) corresponds to the percentage of times in which the company has been indicated for the award, considering the seven editions of the award.

### 4.3 Control variables: company size, degree of indebtedness, share price/equity value ration, corporate governance and internationalization

In addition to the BETA and DISCL variables, other variables have been added to the model, described as follows:

- Company size effect – in order to reflect the size effect a neperian logarithm of gross revenue of companies in the analyzed period (LNRB) was used. The theory determines that companies tend to have a lower cost of funding. In studies conducted overseas, traditionally the measure used for funding the size effect is Market Value. Due to the low level of company share trading in the Brazilian market, it was understood that Gross Revenue would more suitably represent the company size concept. The expected outcome is that the company size and cost of capital show to be negatively correlated.
- Degree of Indebtedness (LNEND) – represented by the neperian logarithm of the relation between Total Liabilities and Net Equity.
- Relation between the share price and equity value (PRVP) – indicates the degree of indebtedness of accounting figures in relation to market appraisal
- Corporate Governance (GOVERN) – indicative dummy of the company adhesion to levels 1, 2 and the new BOVESPA market. Adhesion occurred up to December 31<sup>st</sup>, 2003 were considered. It is expected that companies signal to the market the existence of corporate governance will be able to give greater credibility to their publications, enabling the disclosure effect.
- Internationalization (ADR) – indicative dummy of the existence of ADR issued during or before the considered period. Kim and Singal (2000, p.184) state that the risk associated with share possession of globalized companies, is reduced as a response to changes caused by the process itself demanding better controls and greater transparency, causing the cost of capital to be lower.

## V. EMPIRICAL DATA AND RESULTS

Data related to financial and market indicators, as well as ADR issuing were collected from the Economática database. Companies were selected that contained all data based on financial statements in the December 31<sup>st</sup>, 2003 position, and beta on April 30<sup>th</sup>, 2004, calculated for the 60-month period. The use of only one period expanded the number of companies included in the sample and is in agreement with what is aimed at testing, since disclosure quality improvement tends to be a process occurring in gradual manner. It was opted, therefore, for increasing the size of cross-sectional data, as opposed to a greater number of observations over time. The sample resulted in 242 securities, among common and preferred shares. By eliminating Outliers with variable values exceeding 2.5 standard deviations, the number was reduced to 222 observations.

Information about adhesion to levels 1, 2 and the new market were obtained over the Bovespa website and companies awarded in ANEFAC Transparence Award in a report provided by FIPECAFI.

Descriptive statistics of original and modified variables are presented as follows:

**TABLE 1**  
**Descriptive statistics of variables**

	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
BETA	222	-0.2	1.70	0.6027	0.36236
PRVP (Share Price / Equity Value)	222	-0.6	5.10	1.2014	0.87801
END (Total Liability / Net Equity)	222	1.5	2,173.40	223.714	294.35239
LNEND (LN Indebtedness Index)	222	0.41	7.68	4.8433	1.12153
RB (Gross Revenue)	222	11,408.00	131,988,260.00	4,789,318.34	13,213,298.00
LNRB (LN Gross Revenue)	222	9.34	18.70	14.0717	1.73
DISCL (Percentage of indications to ANEFAC Transparency Award)	222	0	1	0.07	0.178
GOVERN (Dummy – adhesion to Bovespa levels 1,2 and NM)	222	0	1	0.18	0.381
ADR (Dummy – ADR issuing company)	222	0	1	0.24	0.43
<b>Valid N (listwise)</b>	222				

Source: prepared by authors

Given the great difference in the size of Gross Revenue values and indebtedness Index, these variables were modified, by using their logarithms. It is observed that the Mean Share Price/Equity Value ratio is located in a slightly higher threshold to 1, indicating that market appraisal exceeds the share book value by little. Lopes (2001, p.174) found an inverse situation in data from 1995 to 1999, when examining the Book to market index. Reverse conservatism found by Lopes is explained by the end of the Balance Sheet Monetary Correction, occurred as of 1996.

By analyzing the correlation among the variables, it is seen that beta is only not correlated to the Corporate Governance indicator, and that there is a positive correlation with all other variables, which was not expected in relation to the disclosure, size (LNRB) and ADR variables, which were expected to have negative relation with beta.

**TABLE 2**



**Spearman's Correlation Coefficients**

		BETA	DISCL	PRVP	LNEND	LNRB	GOVERN	ADR
BETA	Correlation Coefficient	1.000						
	Sig. (2-tailed)	.						
DISCL	Correlation Coefficient	.171*	1.000					
	Sig. (2-tailed)	.011	.					
PRVP	Correlation Coefficient	.213**	.255**	1.000				
	Sig. (2-tailed)	.001	.000	.				
LNEND	Correlation Coefficient	.182**	.155*	.152*	1.000			
	Sig. (2-tailed)	.007	.021	.024	.			
LNRB	Correlation Coefficient	.378**	.453**	.518**	.268**	1.000		
	Sig. (2-tailed)	.000	.000	.000	.000	.		
GOVERN	Correlation Coefficient	.094	.190**	.239**	.210**	.320**	1.000	
	Sig. (2-tailed)	.164	.005	.000	.002	.000	.	
ADR	Correlation Coefficient	.436**	.344**	.322**	-.013	.493**	.235**	1.000
	Sig. (2-tailed)	.000	.000	.000	.849	.000	.000	.

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

Source: prepared by authors

Regressions were made by using two equations. In the first equation, BETA was regressed as a result of PRVP, LNEND and LNRB variables. Then, the other variables other (DISCL, GOVERN and ADR) were added to the model, in order to check, by means of the adjusted R2 whether the latter had added an explicative power to regression. It was observed that both for the total set of shares, and the groups of common and preferred shares considered separately, the addition of mentioned variables increased the explicative power of regression, as can be observed in Table 3:

**TABLE 3**  
**Adjusted regression determination Coefficients**

Database	Adjusted R2	p-value	Adjusted R2	p-value
All shares	0.133 <sup>(1)</sup>	0.000	0.226 <sup>(2)</sup>	0.000
Common	0.027 <sup>(3)</sup>	0.185	0.104 <sup>(4)</sup>	0.038
Preferred	0.195 <sup>(5)</sup>	0.000	0.310 <sup>(6)</sup>	0.000

(1), (3) and (5) – Independent Variables used: PRVP, LNEND and LNRB

(2), (4) and (6) – Independent Variables used: PRVP, LNEND, LNRB, DISCL, GOVERN and ADR

Source: prepared by authors

It is worth pointing out that the explication power of the complete model is greater for preferred shares than for common ones, and that the model with only three variables is not valid for common shares.

By analyzing the coefficients of regressions (4) and (6) evidenced in Table 4, it is found that, with a significance level of 10%, variable ADR is the only significant one both for common and preferred shares. However, the relation found between cost of capital and ADR is positive, in opposed manner to results found by Bruni (2002) and Silveira (2003). In the case of common shares, this is the only significant variable.

**TABLE 4**

**Coefficients of regression variables (4) and (6)**

<b>Database</b>		<b>Intercepto</b>	<b>PRVP</b>	<b>LNEND</b>	<b>LNRB</b>	<b>DISCL</b>	<b>GOVERN</b>	<b>ADR</b>
Common	Coefficient	0.007	-0.036	0.025	0.033	0.076	-0.173	0.287
	p-value	0.988	0.508	0.565	0.344	0.736	0.157	0.011
Preferred	Coefficient	-0.442	-0.030	0.056	0.054	-0.212	-0.051	0.369
	p-value	0.061	0.353	0.018	0.004	0.260	0.470	0.000

Source: prepared by authors

In relation to preferred shares, variables related to indebtedness, company size and ADR issuing are statistically significant, all with positive coefficient.

Indebtedness shows a result corresponding to the expected, which is to say, greater indebtedness probably generates a greater risk perception on the part of shareholders owning preferred shares, who start demanding higher compensation.

The positive relation between size and beta, contradicting the economic theory, was also observed by Málaga and Securato (2004).

In no case, did the disclosure variable, as well as governance, show to be significant. In the case of governance the result is in agreement with the results obtained by Lima *et al.* (2004) who did not find significant reduction traces in funding costs via debentures as a result of adherence to any Corporate Governance levels.

As to the disclosure level, a likely explanation to its irrelevance comes from Lopes (2002a, p.90):

*The Brazilian capital market is extremely concentrated, with few (most often none) companies having corporate control traded in the stock exchange. In this kind of corporate governance mechanism, the role of accounting as information asymmetry reducer between managers and investors is reduced, since owners have privileged access to company information. Recent literature about the relation between governance models and relevance of accounting information suggests that, in this kind of situation, accounting is not relevant to explain the behavior of prices traded in the market.*

However, further investigations are required. The lack of relationship found may be due to proxy limitations used for disclosure, since only ten companies are indicated per year, which does not necessarily indicate that those placed eleventh or twelfth in the ranking do not have a good disclosure level too.

In order to check whether problems in the dependent variable definition, related to sector differences influencing companies' beta, could have influenced the result, the beta variable was replaced with the difference between the company's beta and average betas of companies in the sector. Resulting regressions show similar results, but with R2 reduction (0.026 for common shares and 0.118 for preferred ones) and of explicative variables, no variable is significant in the beta explanation of common shares, and only indebtedness and ADR influence beta in the case of preferred shares.

## VI. CONCLUSIONS AND SUGGESTIONS FOR SUBSEQUENT RESEARCH

The purpose of this paper is to check whether the disclosure level influences the cost of capital, for companies traded in the Brazilian market. The theory on which studies made in the American, Asian and Swiss markets was based, to mention only a few examples of

conducted research, it is established that a better disclosure level, when reducing the informational asymmetry, reduces cost of capital. The reduction happens through increased marketability of the share in the market, greater demand for the company's share, or estimation risk reduction.

Based on researched data, the conclusion one reaches is that in the Brazilian market the disclosure level does not affect the cost of capital. As a result of the peculiarities of the Brazilian market, the result is not all surprising.

However, a more detailed investigation can be conducted by using a more robust disclosure quality measure than the one used, which can be built by the researcher himself, from a more detailed examination of the content of information published by a chosen group of companies.

Furthermore, two other results contrary to the theory-based expectation were found, but that reinforce the results of other already conducted research: that companies offering higher return than small ones and that implementation of differentiated corporate governance practices did not result in alteration of the cost of capital.

The reason for this reverse behavior is an instigating theme for future papers.

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