

The Influence of Agency Costs on the Dividend Policy of Brazilian Listed Companies

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Abstract

This study investigates the influence of agency costs on the dividend behaviour of companies listed on the São Paulo Stock Exchange (BOVESPA) by using regression analysis of pooled observations on a sample of 71 firms during the period of 1998 to 2001. The analysis starts by using a classical model on dividends devised by Lintner in 1956. Subsequently, three other explanatory variables, expected to be good proxies of the agency conflicts, are added for evaluating the influence of agency costs on the dividend policy of the sample companies. The empirical results indicate that the foremost variables influencing the dividend behaviour of Brazilian companies are current earnings and dividends of the previous year which is entirely consistent with former research. However, agency costs also appear as having some participation in explaining the level of current dividends. Indeed, the empirical evidence offers strong support to the hypothesis that there is a negative and significant association between dividends and external monitoring. A positive relationship between dividends and participation of outside investors on the capital is revealed significant when the constant term of the regression estimate is suppressed. Conversely, there seems to be no linear relationship between dividends and participation of institutional investors on the capital.

1. Introduction

In a world of perfect capital markets, dividend policy is alleged to be irrelevant as it is expected to be independent of investment decisions (Miller and Modigliani, 1961). Any dividend strategy adopted by the firm can be easily neutralised by investors' attitudes, such as reinvesting excess dividends or selling off extra shares.

However, in the presence of some market imperfections or uncertainty, dividend policy seems to be of great value and has incited several empirical studies and discussions. One area of particular interest has been the investigation of the influence of agency conflicts on dividend policy (e.g., Rozeff, 1982; Easterbrook, 1984; Lewellen et al., 1987; Lambert et al., 1989; Jensen et al., 1992; White, 1996; Mollah et al., 2000; Fenn and Liang, 2001; Short et al., 2002). The theoretical discussion and empirical evidence offer strong support to the hypothesis that dividends are effective instruments on reducing agency costs:

'(...) dividends set in motion mechanisms that reduce the agency costs of management and that prevent one group of investors from gaining, relative to another, by changes in the firm's fortunes after financial instruments have been issued.'
Easterbrook (1984, p. 655)

Indeed, the payment of dividends is claimed to reduce agency costs as it may reduce the amount of resources under managers' control and discretion and keep companies going to capital markets to raise funds, where monitoring of managers is offered at lower costs. Shareholders, therefore, would be interested in reducing those discretionary funds in order to better align managers' with shareholders' interests. Conversely, managers would make efforts to avoid the cash reduction (Williamson, 1974; Ross, 1973; Jensen and Meckling, 1976; Easterbrook, 1984; Jensen, 1986).

Despite the vast empirical evidence on the relationship of dividends and agency costs, there are still many issues to be further explored. One particular point is the investigation of

the dividend behaviour of firms operating in emerging markets. Considering that those companies have their peculiarities, it is worthwhile to evaluate whether the growing general finance theory on dividends applies to such markets and, in particular, whether agency costs have a significant influence in their dividend policy.

The purpose of this study is to analyse the influence of agency costs on dividends of firms operating in emerging markets using a sample of Brazilian public companies listed on the São Paulo Stock Exchange (BOVESPA) during the period of 1998 to 2001. The choice of BOVESPA can be justified by its relative importance among the emerging market stock exchanges. It is currently considered the major stock-trading centre in Latin America.

This paper is divided into 4 remaining parts. The second section presents a review of the theory and empirical studies on dividends with particular emphasis on the influence of agency costs. The third section discusses the research paradigm and methodology. The following section analyses the empirical results. The last section presents the conclusions and suggestions for future research on the subject.

2. Literature Review

2.1 Why firms pay dividends

Considering the market imperfections and some incentives for reducing or eliminating dividend payouts highlighted in the previous sections, it might be argued why firms pay dividends at all (Black, 1976; Feldstein and Green, 1983). Indeed, the dividend behaviour of companies is essentially an enigmatic issue with many important questions still unresolved which confer it characteristics of a puzzle.

In order to clarify some of the issues behind the dilemma faced by the firm of whether to pay dividends or not, several studies have investigated the determinants of dividend policy. Lintner (1956), in his seminal work, conducted a detailed survey on the dividend behaviour of a set of companies. The results suggested that the foremost factors affecting management's decision regarding dividends appeared to be current earnings and previous year dividends. Consequently, a simple theoretical model was proposed through the following reasoning. The target dividend (D_{it}^*) is expected to be a function of the earningsⁱ generated by the company (E_{it}):

$$D_{it}^* = r_i E_{it}, \quad (2.1)$$

where r_i is the target payout ratio of the company.

Assuming that the target ratio is adjusted only by a certain proportionⁱⁱ in any given period, the change in dividends from period $t-1$ to period t (ΔD_{it}) can be described as follow:

$$\Delta D_{it} = D_{it} - D_{i,t-1} = a_i + c_i (D_{it}^* - D_{i,t-1}) + u_{it}, \quad (2.2)$$

where $D_{i,t-1}$ is the lagged dividend, a_i is a constant, c_i is the speed-of-adjustment coefficient and u_i is the random error term.

The subscripts i and t identifies the individual company and year, respectively. The parameter c_i indicates the proportion of the difference between the target dividend and the previous year dividend the company intends on average to be reflected on the current dividends. The constant a_i , although zero for some companies, is expected to be positive suggesting that managers are reluctant to reduce dividends.

Substituting equation 2.1 into 2.2 gives:

$$\Delta D_{it} = \alpha_i + \beta_{1i} E_{it} + \beta_{2i} D_{i,t-1} + u_{it}, \quad (2.3)$$

where $\alpha_i = a_i$, $\beta_{1i} = c_i r_i$, and $\beta_{2i} = -c_i$.

The equation can be modified as follows without affecting the error term:

$$D_{it} = \alpha_i + \beta_{1i} E_{it} + \beta_{2i} D_{i,t-1} + u_{it}, \quad (2.4)$$

where $\beta_{1i} = c_i r_i$ and $\beta_{2i} = 1 - c_i$

Lintner's model has been the starting point of most studies on dividend policy (e.g., Brittain, 1964; Fama and Babiak, 1968; Watts, 1973; Fama, 1974; White, 1996; Adaoglu, 2000; Fama and French, 2000; and Short et al., 2002). Brittain (1964) and Fama and Babiak (1968), for instance, have utilised Lintner's model in their analysis and suggested some adjustments to enhance its explanatory power, particularly by suppressing the constant term and adding lagged earnings as one of the independent variables.

2.2 Dividends and agency theory

Although Lintner's model has proved to be robust for predicting dividends, there are other factors that may be important on examining the dividend behaviour of companies. One complementary view of the dividend policy determination relies on the agency theory fundamentals.

Agency theory is heavily based on economic concepts. The main assumption is that individuals act in their self-interest to maximise their own utility. When individuals face constraints or a limited set of alternatives, they are expected to use their resources and abilities to relax those constraints and generate a larger opportunity set in order to maximise their wealth with the minimum effort. In that context, individuals are supposed to come together to form a firm because firms can presumably produce more goods or services collectively than individuals and, additionally, can generate a larger opportunity set. Therefore, people choose to enter contracts because they are made better off (Coase, 1937; Williamson, 1974; Ross, 1973, Jensen and Meckling, 1976; Easterbrook, 1984; Jensen, 1986; Watts and Zimmerman, 1986; Jensen and Smith, 2000).

By similar reasoning, owners/investors (principals) hire executives/managers (agents) to manage the organization on their behalf. Owners will probably be better off by having someone who is more specialised running the business and executives will be reimbursed for the job through pecuniary and non-pecuniary compensations (perquisites). This contract, usually referred to as an agency relationship, requires that some decision-making authority be delegated from the principals to the agents.

There are many aspects which may interfere in that relationship so that agents are supposed to pursue goals other than those desired by the principals referred to as goal incongruence. First, it is very difficult to select managers with the appropriate skills for a required task (adverse selection problem). Second, managers and owners have access to different levels of information (information asymmetry). Managers may not disclose all the information they have, which can lead to problems of moral hazard and information impactedness. Hence, the owners can never be sure about how managers' efforts and skills are actually contributing to the performance of the business. Third, managers are supposed to prefer leisure to hard or routine work.

Another aspect is that agents and principals are alleged to have different risk preferences. Managers have a lower tolerance for risk than owners and hence will choose more conservative actions. Besides, considering that managers are expected to leave the organization before the owner, who is supposed to remain in the business indefinitely, they

will tend to focus on short-term actions, which may lead to a horizon problem. Thus, how can principals ensure that agents are performing the contract in the best interest of the organization? As asserted by Jensen and Meckling (1976, p. 308), *'it is generally impossible for the principal or the agent at zero cost to ensure that the agent will make optimal decisions from the principal's viewpoint'*.

Indeed, the conflicts arising from the agency relationship are alleged to generate real costs, referred to as agency costsⁱⁱⁱ, in order to align managers' with shareholders' interests. Agency costs correspond to the total money expended in structuring, administering and enforcing contracts plus residual losses (Jensen and Meckling, 1976). The main goal is to establish a set of contracts able to simultaneously reduce the costs of conflicts and increase the value of the company. The success on ascertaining that set of contracts with minimal costs will possibly guarantee the survival of the organization over time (survivorship principle).

In that context, the payment of dividends is claimed to reduce agency costs. Investors can use dividends as a way of reducing the ability of managers to squander the company resources (e.g., investing in negative Net Present Value projects). Managers, as self-interested individuals, are motivated to avoid high dividend payouts since it reduces the amount of resources under their control and discretion. In contrast, shareholders may be interested in reducing those discretionary funds in order to better align managers' with shareholders' interests and minimize agency costs (Williamson, 1974; Ross, 1973, Jensen and Meckling, 1976; Easterbrook, 1984; Jensen, 1986; Fama and French, 2001).

Several studies have evaluated that issue and analyse mechanisms able to better align managers' with stockholders' interests which have yielded plenty of evidence that agency costs somewhat influence dividend behaviour of companies. Rozeff (1982), for instance, found evidence of relationships among growth, profitability, and dividends. Easterbrook (1984) emphasized the usefulness of dividends in reducing agency costs since dividend payouts may keep companies seeking resources in the market, where monitoring of managers is available at lower costs.

Furthermore, Jensen, Solberg and Zorn (1992), assuming that insider ownership, debt policy, and dividend policy are interdependent, undertook a simultaneous analysis of the determination of those policies. They applied three stage least squares (3SLS) to a system of three equations in order to identify the effects of these three interdependent decisions faced by a firm. The findings seemed to offer support to the hypothesis that insider ownership is negatively related to levels of both debt and dividends.

The relationship between ownership structure, capital structure and dividend policy was also examined by Bromberg and Cooper (1998). The study evaluated a sample of a hundred companies quoted on the UK market during the period 1978-1994. Although it provided only a preliminary view of the data, the findings suggested a significant link between capital structure and ownership.

Short, Zhang and Keasey (2002) examined the link between ownership (i.e., institutional and management ownerships) and dividend policy in the UK. Four types of dividend models were used for a sample of 211 firms listed on the London Stock Exchange (LSE) during the period 1988-1992. The results revealed a significant relationship between institutional ownership and dividends and, towards the end, further research on the impact of ownership on dividends in non-UK markets was also suggested.

Mollah, Keasey and Short (2000) investigated the influence of agency costs on dividend policy in an emerging market. The study analysed 153 non-financial companies listed on the Dhaka Stock Exchange during the period 1988-1997 using Ordinary Least Squares (OLS). The results indicated that the most significant variables on explaining dividends were insider ownership and collateralizable assets. The dividend payout ratio of those companies was revealed to be positively associated with collateralizable assets and

negatively related to insider ownership. The variable free cash flow, although supposed to be positively associated with dividends, was shown not statistically significant for the estimate.

Finally, it is important to mention that similar conflict is expected to exist between shareholders and bondholders which may affect agency costs and hence the dividend policy. Shareholders are likely to make a great effort to expropriate bondholders by paying themselves dividends (Black, 1976). On the other hand, bondholders may try to inhibit this wealth transfer by restricting dividend payments with bond covenants or other instruments (Kalay, 1982). Bondholders may also act as external monitors, reducing agency costs. Companies that go frequently to capital markets to raise funds are more likely to face this sort of control and may have less reason to pay dividends.

In spite of the vast empirical support of the relationship between agency costs and dividend behaviour of companies, there are still several areas to be further explored, particularly the investigation of whether that association also exists in emerging markets. Hence, this research focuses on the examination of the dividend behaviour of companies operating in one particular emerging market, Brazil, as an attempt to offer support to the hypothesis that agency costs have a significant influence on the determination of dividends.

3. Research Paradigm and Methodology

In order to evaluate the influence of agency costs on the dividend behaviour of Brazilian listed companies, the present study starts using a classical model of dividends devised by Lintner in 1956. The main objective is to assess how powerful that model is to predict the dividend behaviour of Brazilian companies before testing for the influence of agency costs. Thereafter, another model is proposed by adding three explanatory variables, expected to be good proxies of the agency conflicts. Tests of significance, multicollinearity and heteroscedasticity are also performed.

3.1 Theoretical framework and research paradigm

The study is supported by agency theory as the theoretical framework. As discussed above, the main assumption is that individuals act in order to maximise their own utility and thus potential conflicts between investors and managers are expected to arise, particularly due to differences in risk-bearing, managers' specialization, and information asymmetry. Those conflicts will generate real costs, referred to as agency costs, in order to ensure alignment of the interests of investors and managers.

Accordingly, the payment of dividends is claimed to be able to reduce those agency costs as it reduces the amount of resources under managers' control and discretion, and keep companies going to capital markets to raise funds, where monitoring of managers is offered at lower costs (Jensen and Meckling, 1976; Easterbrook, 1984; Jensen, 1986; Fama and French, 2001).

For evaluating the influence of agency costs on dividend policy, the proposed study is undertaken under the principles and methodologies of the functionalist paradigm, also known as the positivistic paradigm (Burrell and Morgan, 1979; Hussey and Hussey, 1997). Regression analysis of pooled observations is conducted in order to test the proposed hypotheses.

3.2 Formulation of hypotheses

Taking into account the literature review presented in section 2, the research question is: what influence do agency costs have on the dividend policy of Brazilian public listed companies? Thus, the hypotheses to be tested can be expressed as follow:

- H_0 : There is no significant influence of agency costs on dividends.
 H_1 : There is a significant influence of agency costs on dividends.

3.3 Sampling and data collection

The empirical analysis of the influence of agency costs on the dividend policy of Brazilian listed companies was conducted on a sample of 71 companies listed on BOVESPA for the period 1998-2001, which built up 284 observations. The first step was to select the companies from the official list divulged by the Securities and Exchange Commission of Brazil (Comissão de Valores Mobiliários - CVM) in the electronic address <http://www.cvm.gov.br>. A sample of 250 firms was randomly selected. However, to be included in the study the company had to satisfy some further conditions: (i) be listed on BOVESPA during all the analysed years; (ii) have non-zero dividends during at least two years; and (iii) have no missing data. The main reason was to have enough years of non-zero cash dividends for empirical analysis^{iv}.

In order to meet those conditions, 101 companies were excluded for presenting an incomplete set of financial reports, 56 firms for holding successive losses and no dividends for more than two periods, and 22 companies due to missing data. The final sample was made up of 71 companies. Considering the four-year period, it represented 284 observations.

The data was manually collected from the annual reports electronically available on both CVM and BOVESPA web sites, <http://www.cvm.gov.br> and <http://www.bovespa.com.br>, respectively. Both Annual Information (IAN – Informações Anuais) and Standardized Financial Reports (DFP - Demonstrações Financeiras Padronizadas) related to the period 1998-2001 were used to compute the variables. Information on dividends for the year 1997 was also collected since the proposed models include lagged dividends as one of the explanatory variables.

3.4 The dependent and explanatory variables

The study considered current dividends (**DPS**) as the dependent variable and five other variables as independent or explanatory variables. The dependent variable **DPS** was calculated as the total amount of cash dividends and interests on capital^v on ordinary shares divided by the number of those shares. The explanatory variables, correspondingly selected proxies^{vi} and the expected relationship with the dependent variable (current dividends - **DPS**) are summarized on table 3.1.

Table 3.1 Brief descriptions of the explanatory variables

Variable	Proxy	Calculation	Expected Relationship
EPS Current earnings	Earns per share	Net earnings of the current year divided by the total number of shares	<i>Positive</i>
LDPS Dividends of the previous year	Lagged dividends per share	Total amount of cash dividends and capital interests on ordinary shares of the previous year divided by total number of ordinary shares	<i>Positive</i>
OUTSIDE Participation of outside investors on the capital	Size	Logarithm of total assets	<i>Positive</i>
INSTINV Participation of institutional investors on the capital	Presence of institutional investors	1 – participation of institutional investors on the capital 0 – otherwise	<i>Positive</i>
EXTMONIT External monitoring	Debt per share	Total debt divided by total number of shares	<i>Negative</i>

The level of current earnings and the dividends of the previous year, symbolized respectively by **EPS** and **LDPS**, are expected to have a positive relationship with the current level of dividends **DPS**. Those variables were adjusted to reflect the level of dividends and earnings per share in order to comply with the same measure used for the dependent variable.

The size of the company was chosen as a measure of the participation of outsiders on the capital. Firms with greater participation from outside shareholders are expected to have higher agency problems. A reduction in managers' incentives to dedicate significant time and effort to productive and profitable activities is expected to occur when the management's ownership claims diminishes (Jensen and Meckling, 1976). Thus, assuming that dividends are effective instruments for reducing agency costs, firms with greater participation of outside investors on the capital are expected to present higher dividend payouts.

Considering former empirical studies, a positive relationship between dividends and the participation of institutional investors on the capital is also expected. Although those investors are claimed to be indifferent to dividend policy, in particular for tax reasons, there might be other aspects influencing their preference. Dividends can be used as a way of reducing the available cash to be squandered by managers and signalling to the market an outstanding performance. This aspect was represented by a dummy variable where *1* stood for participation of institutional investors on the capital and *0*, otherwise.

Considering the conflicts between shareholders and bondholders discussed previously, bondholders are likely to act as external monitors, reducing agency costs. Companies that go frequently to capital markets are more likely to face this sort of control and may have less reason to pay dividends (Easterbrook, 1984). The ratio of debt per share was chosen as a proxy for external monitoring. As the level of debt increases, there is an expectation of higher external monitoring and less motivation to pay dividends. Hence, a negative relationship is expected between dividends and external monitoring.

3.5 Proposed models

Considering the dependent and independent variables described in section 3.4, the first model for testing the influence of current earnings and previous year dividends on predicting the current level of dividends can be expressed by the following equation:

$$DPS = \alpha + \beta_1 EPS + \beta_2 LDPS + v \quad (3.1)$$

where the dependent and explanatory variables are those described in the previous section, α is a constant (intercept) and v is a random error.

Thereafter, three other explanatory variables are added to test the influence of agency costs on dividend behaviour of Brazilian firms. Thus, the model adjusted to reflect the influence of agency costs becomes:

$$DPS = \alpha + \beta_1 EPS + \beta_2 LDPS + \beta_3 OUTSIDE + \beta_4 INSTINV + \beta_5 EXTMONIT + v \quad (3.2)$$

where the dependent and explanatory variables are those described in the previous section, α is a constant (intercept) and v is a random error.

The relationship between dividends and the explanatory variables was investigated by OLS regression analysis of the pooled observations. The adjusted R-square and the F-Statistics were used as a measure of goodness of fit of the models (Lewis-Beck, 1993). Additionally, considering the regression estimates, the null hypothesis that there is no significant influence of agency costs on dividends was tested.

Tests of multicollinearity and heteroscedasticity were also performed. It is claimed that a multiple regression can only produces the ‘best linear unbiased estimates (BLUE)’ in the absence of perfect multicollinearity and heteroscedasticity (Lewis-Beck, 1993).

4. Empirical Results and Discussion

4.1 Descriptive analysis of the data

Table 4.1 contains summary descriptive statistics of all interval variables for the sample firms. As can be noticed, the mean of current dividends (**DPS**) is slightly higher than the mean of the dividends paid in the previous year (**LDPS**), which might be an indication that Brazilian companies pursue a gradual growth in dividends. This result is consistent with other empirical studies which have pointed out that managers are reluctant to reduce dividends (e.g., Lintner, 1956). It can also be observed that most variables present a rather high dispersion which might be a consequence of the sample diversity.

Table 4.1 Summary descriptive statistics of the dependent and interval independent variables

	DPS	EPS	LDPS	OUTSIDE	EXTMONIT
Mean	0.500	1.162	0.422	5.705	9.337
Median	0.010	0.023	0.008	5.661	0.194
Std. Deviation	2.579	5.675	1.767	0.720	36.517
Minimum	0.000	-1.678	0.000	3.432	0.001
Maximum	34.881	53.525	11.993	7.900	305.250
Percentiles					
25	0.001	0.003	0.001	5.220	0.033
50	0.010	0.023	0.008	5.661	0.194
75	0.137	0.344	0.107	6.119	2.655

Number of observations = 284

Missing values = 0

The Pearson’s correlations among all interval variables are presented in table 4.2. As can be noted, all independent variables, except **OUTSIDE**, appear to have a statistically significant relationship with the dependent variable **DPS** at the 1% level. However, only the variables **EPS** and **LDPS** exhibit signals in the expected direction.

Table 4.2 Pairwise correlations of all interval variables

	DPS	EPS	LDPS	OUTSIDE	EXTMONIT
DPS	1				
EPS	.908**	1			
LDPS	.847**	.904**	1		
OUTSIDE	-.104	-.137*	-.152*	1	
EXTMONIT	.497**	.630**	.709**	-.250**	1

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

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

Investigating the relationship between **DPS** and **INSTINV**, the results presented on table 4.3 indicate that there is no significant difference at the 5% level between those two groups in terms of dividends ($F=2.308$; $p=0.130$). Moreover, the expected relationship between the variables **DPS** and **INSTINV** is revealed notably low or rather inexistent (eta-squared=0.008).

Table 4.3 Test of difference of means of dividends relating to participation of institutional investors on the capital – ANOVA table

		Sum of Squares	df	Mean Square	F	Sig.
DPS * INSTINV	Between Groups (Combined)	15.286	1	15.286	2.308	.130
	Within Groups	1867.552	282	6.623		
	Total	1882.838	283			

Eta-squared = 0.008

The descriptive statistics also indicated that one observation was completely divergent from the others. It corresponded to a dividend level of 34.881 which represented 12.5 standard deviations from the mean. Considering that the revision of the data did not reveal any specific error and yet an extreme observed value may affect the analysis, that particular observation was considered an outlier for the purpose of this study and received special handling. In the first instance, the exclusion of the outlier on the descriptive statistics is evaluated. Then, during the analysis of the regression models, the outlier is excluded for evaluating the best linear unbiased estimate.

The major alterations on the measures of central tendency and dispersion were in the mean and standard deviation of the dependent variable **DPS** and the explanatory variable **EPS**. The means decreased from 0.500 and 1.162 to 0.378, 0.977, respectively. Correspondingly, the standard deviations also diminished from 2.579 and 5.675 to 1.572 and 4.750.

The impact on the pairwise correlations (Pearson's coefficients) can be perceived by comparing tables 4.2 and 4.4. Although the changes were not on a great scale, it is worth mentioning that the correlation between the independent variable participation of outsider investors (**OUTSIDE**) and the dependent variable **DPS** became statistically significant at the 5% level.

Table 4.4 Pairwise correlations of all interval variables after excluding outlier

	DPS	EPS	LDPS	OUTSIDE	EXTMONIT
DPS	1				
EPS	.928**	1			
LDPS	.959**	.897**	1		
OUTSIDE	-.135*	-.145*	-.153*	1	
EXTMONIT	.625**	.661**	.714**	-.249**	1

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

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

4.2 Regression analysis of the proposed models

Firstly, the regression analysis is conducted considering the two models presented as equations 3.1 (*Model 1*) and 3.2 (*Model 2*). In Model 1, the current level of dividends is regressed on current earnings and previous year dividends. It is an attempt to evaluate the effect of current earnings and dividends of the previous year on the current level of dividends before evaluating the influence of agency costs on the dividend policy of Brazilian firms. As discussed before, according to the findings of prior research, current dividends are expected to be positively associated with both current earnings and previous year dividends.

Model 2 was devised by adding three other explanatory variables to the first equation: **OUTSIDE**, participation of outside investors on the capital, **INSTINV**, participation of institutional investors on the capital, and **EXTMONIT**, external monitoring. As considered previously, dividends are expected to be positively associated with current earnings, previous year dividends, participation of outsiders on the capital and participation of institutional investors on the capital, and negatively associated with external monitoring.

4.2.1 Evaluating the relationship between current dividends with current earnings and previous year dividends (*Model 1*)

The results reported in table 4.5 correspond to the OLS estimates for *Model 1*. As can be perceived, current earnings (**EPS**) and previous year dividends (**LDPS**) seem to explain rather well the current level of dividends (adjusted $R^2=0.943$ and $F=2315.496$). Moreover, the coefficients of both variables **EPS** and **LDPS** are statistically significant at the 1% level ($p<0.0001$). The intercept is nearly zero and statistically insignificant at the 1% level suggesting that Brazilian companies do not often pay dividends when earnings and the dividends of the previous are nonexistent.

Table 4.5 Estimates from regression Model 1

Equation			
$DPS = \alpha + \beta_1 EPS + \beta_2 LDPS + v$			
	Beta	Standardized Beta	t-statistic
α	2.834E-02		1.232
EPS	.115	.348	10.792**
LDPS	.624	.647	20.089**
Adjusted R-square = .943			
Std. Error of the estimate = .376619			
F-statistic = 2315.496**			

** Significant at the 0.01 level.

* Significant at the 0.05 level.

Those results are somewhat consistent with prior research and the discussed hypotheses (e.g., Fama and Babiak, 1968; Watts, 1973; Adaoglu, 2000; Short et al., 2002) and seem to reflect the mandatory dividend policy imposed to Brazilian companies.

Tests^{vii} for evaluating the presence of high multicollinearity among the independent variables, suggest that there is no indication of high multicollinearity.

For evaluating whether the variance of the error term is constant (homoscedasticity), the White's test (1980) was performed. Taking 5% level as the cut-off point for statistical significance, the results presented indicate that the null hypothesis of homoscedasticity cannot be rejected ($p=0.0790$). Hence, the residuals seem to be homoscedastic.

To sum up, current earnings (**EPS**) and previous year dividends (**LDPS**) seem to explain most of the current level of dividends (**DPS**) of companies listed on BOVESPA.

4.2.2 Evaluating the influence of agency costs on the level of dividends (*Model 2*)

Table 4.6 reports the OLS estimates of *Model 2*. It can be noticed that the addition of the independent variables related to agency conflicts increases the prediction of current level of dividends (**DPS**). The adjusted R-square shifts from 0.943 to 0.951 (F-statistic=1100.883, $p < 0.0001$). Moreover, the standard error of the estimate diminishes from 0.377 to 0.347. It indicates that agency costs seems to influence the dividend policy of Brazilian companies to some extent.

Table 4.6 Estimates from regression Model 2

Equation			
$DPS = \alpha + \beta_1 EPS + \beta_2 LDPS + \beta_3 OUTSIDE + \beta_4 INSTINV + \beta_5 EXTMONIT + v$			
	Beta	Standardized Beta	t-statistic
α	.141		.784
EPS	.120	.362	12.169**
LDPS	.703	.729	22.744**
OUTSIDE	-1.988E-02	-.009	-.606
INSTINV	3.284E-02	.010	.693
EXTMONIT	-5.888E-03	-.135	-7.000**
Adjusted R-square = .951			
Std. Error of the estimate = .34711191			
F-statistic = 1100.883**			

** Significant at the 0.01 level.

* Significant at the 0.05 level.

The relationship of **DPS** with the variable external monitoring (**EXTMONIT**) is statistically significant ($p < 0.0001$) and in the expected direction which indicates that higher levels of debt in Brazilian companies are associated with lower dividends. The negative coefficient associated with the explanatory variable participation of outside investors on the capital (**OUTSIDE**) is not entirely consistent with the discussed hypotheses, but it is not statistically significant at the 5% level ($p = 0.545$). The participation of institutional investors on the capital (**INSTINV**) seems also to be statistically not significant on predicting dividends ($p = 0.489$), but it exhibits a coefficient in the expected direction.

Examining the other components of the equation, it can be observed that the intercept remains statistically insignificant at the 5% level. Conversely, current earnings (**EPS**) and previous year dividends (**LDPS**) appear as the independent variables with greater explanatory power of **DPS** as can be noted by looking at their standardized coefficients (0.362 and 0.729, respectively). Their signals are also in the expected direction showing a positive association with the dependent variable **DPS**.

Evaluating the degree of multicollinearity, by using the variance inflation factors (VIF) and the analysis of the structure of the $X'X$ matrix, the results suggest a moderate to high multicollinearity among the independent variables.

The results of the White's test (1980), considering 5% level as the cut-off point for statistical significance, indicate that the null hypothesis of homoscedasticity can probably be accepted.

Considering the results presented above, it might be concluded that the foremost variables influencing the dividend behaviour of Brazilian companies were current earnings (**EPS**) and dividends of the previous year (**LDPS**). However, agency costs also appeared to participate in predicting dividends (**DPS**) with the variable **EXTMONIT** showing a negative association with current level of dividends statistically significant at the 1% level.

4.3 Seeking a better estimate for dividends of Brazilian companies

Since the preceding discussion has indicated that agency costs have a fair contribution on explaining dividends of Brazilian listed companies, this section aims to broaden the discussion on *Model 2* as an attempt to evaluate whether a variation of that model is able to enhance the estimate.

In order to identify that variation, an automatic procedure for selecting the variables during the regression estimate (STEPWISE method) was performed. Additionally, the intercept of the estimate was excluded, based on the fact that the intercept has been revealed statistically non-significant. The exclusion is consistent with previous empirical studies on dividends (e.g., Fama and Babiak, 1968; Watts, 1973).

The elected variables for explaining current dividends (**DPS**) are, in the order of selection, dividends of the previous year (**LDPS**), current earnings (**EPS**), external monitoring (**EXTMONIT**) and participation of outside investors on the capital (**OUTSIDE**). Hence, the model becomes:

Model 3:

$$DPS = \beta_1 EPS + \beta_2 LDPS + \beta_3 OUTSIDE + \beta_4 EXTMONIT + v$$

where **DPS**, **EPS**, **LDPS**, **OUTSIDE** and **EXTMONIT** correspond to the definitions presented previously and v is a random error.

Table 4.7 reports the OLS estimate of *Model 3*. The adjusted R-square of the regression increases to 0.954 with a standard error of the estimate of 0.346. The goodness of fit of *Model 3* is very high and statistically significant (F-value=1,466.062; $p < 0.0001$).

Table 4.7 Estimates from regression Model 3

Equation			
$DPS = \beta_1 EPS + \beta_2 LDPS + \beta_3 OUTSIDE + \beta_4 EXTMONIT + v$			
	Beta	Standardized Beta	t-statistic
EPS	.120	.360	12.205**
LDPS	.704	.729	22.970**
OUTSIDE	7.720E-03	.028	2.101*
EXTMONIT	-5.849E-03	-.135	-7.185**
Adjusted R-square = .954			
Std. Error of the estimate = .3463943			
F-statistic = 1466.062**			

** Significant at the 0.01 level.

* Significant at the 0.05 level.

The independent variables **EPS**, **LDPS** and **EXTMONIT** exhibits coefficients statistically significant at the 1% level ($p < 0.0001$) and in the expected direction. The sign of the coefficient associated with the variable **OUTSIDE** is also in the predicted direction and statistically significant at the 5% level ($p = 0.0365$).

These results are consistent with prior research (e.g., Fama and Babiak, 1968; Watts, 1973; Adaoglu, 2000; Mollah et al. 2000; Short et al., 2002) and indicate that all those variables are important in explaining dividends of companies listed on BOVESPA. However, the greatest contribution is still from dividends of the previous year (**LDPS**) and current earnings (**EPS**) with standardized betas of 0.729 and 0.360, respectively.

The results obtained when testing for the presence of multicollinearity suggest there is no indication of severe multicollinearity. The results of the White's test (1980), taking 5%

level as the cut-off point for statistical significance, indicate that the null hypothesis of homoscedasticity cannot be rejected.

In conclusion, the results of *Model 3*, where the independent variables were selected automatically and the intercept was excluded from the equation, seemed to be quantitatively superior to those obtained for *Model 2*, particularly considering the tests for multicollinearity and heteroscedasticity. Furthermore, the variable participation of outside investors on the capital (**OUTSIDE**) was revealed positively associated with the dependent variable **DPS** and statistically significant at the 5% level ($p=0.0365$) which is coherent with prior research (e.g., Mollah et al. 2000; Short et al., 2002).

5. Summary and Conclusions

This study investigates the effect of agency costs on the dividend behaviour of companies listed on the São Paulo Stock Exchange (BOVESPA) on a sample of 71 firms for the period 1998-2001. The payment of dividends is claimed to reduce agency costs as it reduces the amount of resources under managers' control and discretion and keep companies going to capital markets to raise funds, where monitoring of managers is offered at lower cost. Therefore, companies with higher agency problems are expected to have higher dividend payouts. The empirical evidence offers support to the hypothesis that there is a significant influence of the agency costs on the level of dividends paid by Brazilian companies.

The analysis started by using a classical model on dividends devised by Lintner in 1956. The main objective was to assess the influence of current earnings and previous year dividends on the current level of dividends before testing the influence of agency costs. Subsequently, three other explanatory variables, expected to be good proxies for the agency conflicts, were added to evaluate the influence of agency costs on the dividend policy of companies listed on BOVESPA.

Current dividends (**DPS**) was instituted as the dependent variable and five other variables as independent or explanatory variables: current earnings (**EPS**), dividends of the previous years (**LDPS**), participation of outside investors on the capital (**OUTSIDE**), participation of institutional investors on the capital (**INSTINV**) and external monitoring (**EXTMONIT**). The analysis, discussion and conclusion were based on the results obtained from the regression estimates of pooled observations using Ordinary Least Squares (OLS).

The empirical results indicate that the foremost variables influencing the dividend behaviour of Brazilian companies were current earnings and dividends of the previous year which is entirely consistent with former research (e.g., Brittain, 1964; Fama and Babiak, 1968; Watts, 1973; Adaoglu, 2000). However, agency costs also appear to have a reasonable participation on explaining the level of current dividends of those companies. The insertion of the independent variables related to agency costs enhanced the prediction power and goodness of fit of the dividend estimate.

Indeed, in all models that accounted for agency conflicts, the explanatory variable external monitoring (**EXTMONIT**) exhibits a negative association with **DPS** statistically significant for the estimate at the 1% level ($p<0.0001$). This result is consistent with prior research (e.g., Easterbrook, 1984) and suggests that higher levels of external monitoring inhibit the payment of dividends by companies listed on BOVESPA.

The variable participation of outside investors on the capital (**OUTSIDE**) is revealed positively associated to the dependent variable **DPS** and statistically significant at the 5% level ($p=0.0365$) when excluding the intercept of the equation (*Model 3*). This finding is somewhat consistent with prior research (e.g., Mollah et al. 2000; Short et al., 2002) and can be a sign of the influence of outsiders on determining dividend policy of Brazilian companies. The higher the participation of outsiders on the capital, the higher the level of dividends is expected to be.

Conversely, participation of institutional investors on the capital (**INSTINV**) appears to have no linear relationship with current level of dividends (**DPS**) in Brazilian companies. This result is inconsistent with the empirical evidence presented by Short, Zhang and Keasey (2002), but offers some support for the hypothesis that this sort of investor should be neutral to dividends or capital gains due to their tax exemptions.

However, it is worth mentioning that the present study faced some limitations which may have some effect on the attained conclusions. The major limitations were the relatively short period of analysis (1998-2001), the exclusion of some potential explanatory variables (e.g., insider ownership, management incentive schemes, growth opportunities) and the adoption of pooled estimation rather than panel data. Those limitations are supposed to have restricted the analysis to some extent. However, their influence on the final conclusions is difficult to judge.

Despite those constraints, the empirical findings might contribute to the existing literature on the influence of agency costs on dividend policy, particularly by offering some evidence that such a relationship exists in emerging markets.

Nevertheless, further research is imperative to better examine the influence of agency costs on dividend policy, for instance, investigating the link between dividends and agency costs in other emerging markets or considering other explanatory variables which may enhance the prediction. Other improvements are certainly the use of a greater number of observations in a more extensive period of time and the use of panel data which can enhance the prediction. The use of panel data is claimed to result in several benefits, such as controlling for individual heterogeneity, less collinearity among the variables, and better ability for generating more informative data.

Moreover, different research paradigms and methodologies might be useful for obtaining a complementary and more detailed view of the dividend policy in both developed and emerging markets. Thus far, most studies have used a positive approach which cannot embrace all the dividend behaviour features. Quoting Jensen and Smith (2000, p. 31) ‘*The major weakness in all of the agency hypotheses about dividend policy is that they only explain distributions to stockholders, they do not explain why they take the form of cash dividends.*’ Likewise, there might exist other historical, economic, political and social attributes, which have been neglected by the positivistic investigations and hence by the present study, able to explain dividend decisions. Indeed, those aspects merit further scrutiny for a better understanding of the dividend behaviour.

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ⁱ In this model, earnings are net profits (after depreciation and taxes) generated by the company.

ⁱⁱ Lintner pointed out stability in the dividend policy of companies, which try to avoid any sudden and large change in their dividend payouts.

ⁱⁱⁱ As highlighted by Jensen and Smith (2000), agency costs include all costs commonly referred to as contracting costs (monitoring, bonding and incentives), transactions costs, moral-hazard costs and information costs.

^{iv} Similar procedure was used by Adaoglu (2000).

^v Brazilian companies can also distribute interests on capital and compute them as dividends, whilst keeping them below the threshold of an official interest rate called TJLP (Long Term Interest Rate). Interests on capital are considered as deductible expenses and therefore reduce tax payments by firms. Conversely, those interests are considered taxable gains for investors.

^{vi} Similar proxies were used in Fama and Babiak (1968), Jensen et al. (1992), Fenn and Liang (2001) and Short et al. (2002).

^{vii} Two sets of statistics were used for determining the degree of multicollinearity: (i) the variance inflation factors (VIF) and (ii) the analysis of the structure of the X'X matrix.