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Taxation, corporate governance and dividend policy in Brazil

Timóteo Zagonel^{a,*}

^a*Universidade Federal do Rio Grande do Sul, Porto Alegre/RS, Brazil*

Paulo Renato Soares Terra^b

^b*Fundação Getúlio Vargas, São Paulo/SP, Brazil, and*

Diogo Favero Pasuch^c

^c*Universidade Caxias do Sul, Caxias do Sul/RS, Brazil*

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Abstract

Purpose – This study aims to analyze the influence of taxes and corporate governance on the dividend policy of Brazilian companies.

Design/methodology/approach – The authors identify the changes of the tax legislation in Brazil in the period 1986-2011 and check their effect on corporate dividend policies for preferred and common shares. The authors use panel data Probit and Tobit estimation to verify the probability of companies to pay dividends under different tax regimes. The final sample comprises 672 companies, 1,159 traded stocks and 30,134 observations

Findings – The authors' results suggest that changes in the tax legislation have a significant influence on dividend payments. Also, firms do not follow target payout ratios, but dividends are moderately dependent on past payments. Dividend payouts are affected by stock voting rights, privatization and dividend deductibility. Changes in regulation that reduce the agency problems among shareholders affect positively payout ratios.

Practical implications – For managers, maximizing shareholders' value requires taking into account the consequences of the taxation when designing financial policies for the firm. For investors, stock portfolio selection should take into account payout behavior and how changes in dividend taxation affect stocks' value. For policymakers, the effects of changes in the tax code on corporate behavior are of utmost importance to stimulate private investment and economic growth.

Originality/value – There are several tax law changes in Brazil within the period analyzed, creating a good opportunity to study the effect of taxation on dividend policy and its dynamics over time.

Keywords Dividends, Corporate governance, Taxes, Interest on equity

Paper type Research paper

1. Introduction

One of the main and more complex corporate financial decisions deals with the definition of the firm's dividend policy, that is, the trade-off between distributing funds to shareholders



and retaining the profits within the company. Marginal corporate and individual tax rates are one of the main factors that corporations ponder in such decision. Among emerging markets, Brazil is known as a country where such marginal tax rates are high, which suggests that companies pursue active tax planning strategies, which include changes in their dividend policies in response to changes in the tax legislation. This paper tests the influence of the tax preference theory on public Brazilian companies and is motivated, fundamentally, by the many changes in the tax legislation that Brazil has been through in this period, which makes for a good laboratory to study this problem.

Another relevant aspect of this paper is the legal framework of corporate law in Brazil, which allows a firm to issue up to two-thirds of its total equity in nonvoting preferred shares. Therefore, to hold complete sway over a public corporation in Brazil, the controlling shareholders may have as little as 16.7 per cent of firm's total equity. Such disproportional power raises obvious agency problems between majority and minority shareholders.

Such legislation was originally established in 1976 by Act 6404/1076. It has been changed in 2001 by Act 10303/2001, which limited the maximum proportion of nonvoting shares to one-half. However, the new legislation preserved the status of existing companies. Thus, the new requirement applies only to firms, who were either created or went public after 2001, preserving the statutory privileges of existing ones.

To investigate such problem, we collect data on 672 firms listed in the São Paulo Stock Exchange (*Bovespa*) between 1986 and 2011, making up a total of 30,134 observations. We identify the pertinent changes of the tax legislation and check the effect of such exogenous changes on corporate dividend policies of preferred and common shares of listed firms.

The paper proceeds as follows: Section 2 presents a brief history of taxation law applied to dividend payments in Brazil. Section 3 summarizes previous empirical literature on this subject in Brazil. Section 4 presents the research method and describes the sample. Section 5 presents the results of our analysis. Section 6 concludes the paper.

2. Tax legislation on dividends and capital gains in Brazil (1986-2011)

Brazil has gone through several changes in its taxation regarding dividend payments in the past couple of decades. Between 1986 and 2004, there were four major changes in such legislation. Also, taxation on capital gains from stock trading has changed once for individual investors and has not changed for corporations. In addition, two other legislation changes that indirectly affect firm's dividend policies have been implemented in this period. Here, we briefly summarize such legislation.

2.1 *Tax treatment of dividends and capital gains in Brazil*

In the period between January 1, 1980 and December 31, 1988, dividend payments to individuals were taxed according to three different tax rates (according to Decree 1790/1980, Articles 1 and 2; Decree 2065/1983, Article 1-I and Decree 2303/1986, Article 7): 23 per cent if the distributing company was publicly listed (except for firms from the agriculture industry whose profits originated from these activities); 15 per cent if the distributing company was from the agriculture industry (whose profits originated from these activities); and 25 per cent for all remaining cases.

If the beneficiary was a firm, then there were two tax rates: 23 per cent if the beneficiary was a publicly traded company, a tax-exempt firm (except for pension funds), a subsidiary of a publicly traded corporation or when the distributing firm was from the agriculture sector (whose profits originated from these activities); and 25 per cent for all remaining cases.

From January 1, 1989 to January 1, 1996, several changes have occurred in the tax legislation. [Table I](#) summarizes such legislation changes in the case of an individual or corporate beneficiary, including legal basis.

Regarding taxes on capital gains in Brazil, corporations have been taxed on capital gains also at the flat rate of 15 per cent since 1977, according to Decree 1598/1977, Article 31 ([Brazil, 1977](#)). Such legislation has not changed since. Individuals, on the other hand, were exempt from capital gains taxes until 1988. Since 1988, however, individuals have been taxed also at the flat rate of 15 per cent, according to Act 7713/1988, Articles 2 and 3 ([Brazil, 1988](#)) and Act 8981/1995, Article 21 ([Brazil, 1995a, 1995b](#)). [Table II](#) summarizes the legislation on capital gains taxes.

The reader should keep in mind that this paper refers to periods of taxation as follows: TAX2 – exempt, except for the net income; TAX3 – exempt; TAX 4 – taxation; TAX5 – exempt. The Brazilian legislation becomes complex in the case where shares are transferred to the heirs of a deceased individual. If the heirs opt for the transference according to market value, then they are subject to tax incidence, according to Act 9532/1997, Article 23, § 1 ([Brazil, 1997](#)). However, if the transference is made according to the historic value recorded in the previous tax returns of the deceased, then there is no taxation according to Act 9532/1997, Article 23 ([Brazil, 1997](#)).

Compared to the USA, the Brazilian taxation may be considered generous, as its rates are well below the ones practiced in the USA. [Table III](#), based on [Elton, Gruber and Blake \(2005\)](#), revised with recent Internal Revenue Service (IRS) data, reports the changes in dividends and capital gains tax rates in the USA in the period of our study. Brazilian tax rates are roughly half of those in the USA.

2.2 Dividends for nonvoting preferred stocks

Preferred shares in Brazil were introduced by Decree 21536/1932 and modified by Act 6404/1976. According to this piece of legislation, preferred nonvoting shares are entitled to either of the following preferences:

- preference in dividend payouts;
- preference in share repurchases with or without a premium; and
- both of the previous preferences.

In 2001, Act 10303/2001, Article 17 ([Brazil, 2001](#)) rewrote the dividend preference, explicitly calling for a *fixed* or *minimum* dividend instead of the vague “preference” of the previous legislation. Moreover, its first paragraph went further in restricting the trading of preferred nonvoting shares in case they did not include at least one of the following preferences:

- a dividend of a least 25 per cent of net earnings or 3 per cent of book equity and equality of treatment to common stocks regarding dividends;
- a dividend at least 10 per cent higher than the one to common stocks; or
- equality of treatment to common stocks regarding dividends, share repurchases and takeover offers with or without a premium (mandatory bid rules or tagalong rights).

Which such preference each company attributes to its preferred shares must be explicitly stated in the company’s acts of incorporation. Therefore, the new legislation aimed to reduce the discretion of majority (voting) shareholders in the expropriation of minority (nonvoting) shareholders through the dividend policy. Nonetheless, the legislation is still timid to fully address the agency problem between majority and minority shareholders in Brazil.

Period of earnings accrual	Beneficiaries: individuals			Applied fiscal regimen			Tax periods used in the study	
	Tax retained on distribution?	Treatment on the beneficiary's tax returns	Tax retained on distribution?	Beneficiaries: corporations				
				Earnings	Firms taxed under the real profit method	Withholding income tax		Other firms
Up to December 31, 1988	Yes	Exclusive taxation on the income source (non-compensable)	Yes	Nontaxable by the corporate income tax	Compensation of the corporate income tax retained over earnings or distributed dividends	—	Decreces 1.790/1980 Articles 1 and 2; 2.065/1983 Article 1, I; and 2.303/1986 Article 7	(1) 1986-1988
From January 1, 1989 to December 31, 1992	No	Exclusive taxation on the net income at a flat tax rate (8%)	No	Nontaxable by the corporate income tax	—	—	Income Tax Regulation 1999, Article 660	(2) 1989-1992
From January 1, 1993 to December 31, 1993	No	Nontaxable	No	Nontaxable by the Corporate Income Tax	—	—	Income Tax Regulation 1999, Article 659	(3) 1993

(continued)

Table I.
Summary of changes in the tax legislation on dividends in Brazil

Period of earnings accrual	Beneficiaries: individuals		Applied fiscal regimen				Tax periods used in the study	
	Tax retained on distribution?	Treatment on the beneficiary's tax returns	Tax retained on distribution?	Earnings	Treatment on the beneficiary Firms taxed under the real profit method	Other firms		Legal basis
From January 1, 1994 to December 31, 1995	Yes (15% Flat Rate)	Addition of dividends to taxable income and compensation of the tax retained or, optionally, declaration of dividends as subjected to exclusive taxation on the income source	Yes (15% flat rate)	Nontaxable by the corporate income tax	Compensation of the corporate income tax retained upon redistribution	Non-compensable	Income Tax Regulation 1999, Articles 655 and 656	(4) 1994-1995
From January 1, 1996 onward	No	Nontaxable	No	Nontaxable by the corporate income tax	-	-	Income Tax Regulation 1999, Article 654	(5) 1996-2011

Source: adapted from [IOB Thomson \(2005\)](#), p. 8

2.3 Deductible “interest on equity capital”

In 1996, Act 9249/1995 (Brazil, 1995) came into effect introducing the concept of “Interest on Equity Capital” (*Juros Sobre o Capital Próprio* – henceforth IOEC). This legislation in its Article 9, §7, allows firms to partially deduct payments of dividends as operating expenses. Article 9 of the Act, incorporating Articles 347 and 668 of the Income Tax Regulation of 1999 (Brazil, 1999a), limits the deductibility to a maximum of twice the amount of interests paid or received by the firm, as well as to the amount resulting from the computation of the official long-term interest rate on book equity. IOEC paid out, according to the Internal Revenue Service’s Instruction 11/1996 (Brazil, 1996, Article 30), is subject to a flat tax rate of 15 per cent retained at the source. Such legislation in effect created a tax incentive to equity capital – however limited – equivalent to the tax benefit of debt that is usual elsewhere in the world. To the best of our knowledge, such legal provision is unique to Brazil.

Therefore, Brazil offers a peculiar legal frame to test the tax preference theory of dividends. As dividends have become gradually tax-free while capital gains have become more taxable over time, with different tax rates in different periods, we expect that dividend payouts increase when the tax rate on dividends decreases and/or the tax rate on capital gains increases. Also, until recently, dividend policies for common (voting) and preferred (nonvoting) stocks have been subject to the discretion of controlling shareholders at the expense of minority shareholders.

2.4 Stock voting rights and corporate governance regulations

Stock voting rights in Brazil have been established by Act 6404/1976 (Brazil, 1976) in its Article 15, §2, which allowed firms to issue up to two-thirds of its shares in nonvoting preferred classes. Such legislation allowed shareholders to hold absolute controlling interest in any public firm with as little as one-sixth of its shares plus one share. Of course, such disparity between voting and cash flows rights increased the agency problem between majority and minority shareholders, where the latter may be subject to wealth expropriation by the former.

Taxpayer	Period	Rate (%)	Legal basis
Individuals	1976-1988	Exempt	Decree 1510/1976, Article 4
Individuals	1989-2011	15	Act 7713/1988, Articles 2 and 3
Corporations	1977-2011	15	Decree 1598/1977, Article 31

Source: Authors of the paper

Table II.
Taxes on capital
gains in Brazil,
1977-2011

Year	Tax rate on dividends (%)	Tax rate on capital gains (%)
1988-1990	28.00	28.00
1991-1992	31.00	28.00
January 1996 to June 1997	39.60	28.00
July 1997 to December 2000	39.60	20.00
January 2001 to December 2001	39.10	20.00
January 2002 to May 2003	38.60	20.00
May 2003 to 2011	15.00	15.00

Source: Elton *et al.* (2005) and Internal Revenue Service (IRS), USA

Table III.
Maximum tax rates
on dividends and
capital gains in the
USA

In 2001, Act 10303/2001, Article 2 (Brazil, 2001), modified the previous legislation reducing the maximum proportion of nonvoting shares to 50 per cent. However, such change applies only to firms that go public (Initial Public Offering) and to those public firms that prepare seasoned equity offerings after the promulgation of the Law (Brazil, 2001, Article 8, §1). Moreover, the minimum capital that any shareholder must commit to a public firm to have absolute control over it is still only 25 per cent.

Also in 2001, *Bovespa* launched its “Novo Mercado” (New Market), a special listing segment designed for shares issued by companies that voluntarily undertake to abide by corporate governance practices and transparency requirements in addition to those already requested by the Brazilian Law and the Brazilian Securities and Exchange Commission, from 2004 to 2011, 103 companies entered the “Novo Mercado”. Such special segment requires, among other things, one vote–one share rule. In that year, *Bovespa* also launched two intermediary listing segments for firms wishing to gradually improve its corporate governance standards. These levels (Level I and Level II), however, tolerate the existence of nonvoting shares even though they introduce new disclosure and floating requirements. Despite being an improvement over the previous regulation, the new rules are still timid steps toward the international corporate governance standards.

3. Previous empirical evidence on dividend policy in Brazil

Several empirical studies on dividend policy have been conducted in Brazil. The pioneer study by Brito and Rietti (1981) replicated the well-known study by Elton and Gruber (1970), testing the Clientele Effect in the Brazilian market, between years 1973 and 1976. Their study did not find any evidence of the existence of this effect in the Brazilian stock market. The authors concluded that, in opposition to the North American stock market, in Brazil, it does not seem to have any association between marginal levels of investors’ taxation and the preference for retention or distribution of dividends.

Procianoy and Poli (1993) discussed the possibility of a dividend policy that could simultaneously produce large tax savings to investors and encourage more liquidity in the stock market and, as a consequence, higher share values. The authors concluded that companies that would adopt their suggested policy would get a substantial increase in share prices. The investors would look for shares that could give them the larger possible net earnings, as a result of tax savings. The clientele effect was central to this new outfit, and, in such case, the dividend policy was relevant and maximized the value of the company.

In another study, Procianoy and Snider (1994) observed that changes in the tax legislation on dividends and capital gains, in 1989, offered an opportunity to test the maximization of shareholder wealth through dividend payouts. At the time of the legislation change in 1989, there was an inversion of tax burden: up to that year, dividends were taxed and capital gains were not, and, from 1990 on, capital gains were taxed and dividends were tax-free. The study tried to determine if an increase in payout ratios by companies listed in *Bovespa* has really happened after the tax legislation changed. The authors identified that, for the period from 1987 to 1988, the average dividend payout ratio was 25 per cent when dividends were taxed. Meanwhile, from 1990 to 1992, when the dividends were tax-free, the average payout ratio was 40 per cent. Therefore, the authors concluded that after the tax legislation has changed the dividend payouts have generally increased. However, the increase has not been verified in all companies, as suggested by the observed decrease of the minimum dividend. The authors also cautioned that their sample was small. In conclusion, Procianoy and Snider (1994) observed that, after the Brazilian tax legislation change, there was an increase of dividend payouts, but they were not increased to the 100 per cent level, which, according to the authors, would be the ideal rate. They also stated that companies

that had more controlling shareholders had a more significant increase in dividend payout ratios than the companies that had just a single controlling shareholder.

Another study about dividend policy and taxes in Brazil is the paper of [Procianoy \(1996\)](#), motivated by the change in the Brazilian legislation with respect to dividends that happened in 1988 and 1989. This change stopped taxing the dividend distribution by the companies (23 per cent on dividend value retained at the source) and instead started taxing capital gains in 25 per cent, which should be calculated from the difference between the sale and purchase prices (including adjustment for inflation), a tax rule that was effective from 1990 to 1993. Using data from *Bovespa* from the years 1987 to 1992, [Procianoy \(1996\)](#) tested two hypotheses: the changes in dividend policies by the companies listed in *Bovespa*; and the maintenance of a new dividend policy, in the period between 1990 and 1992. The author concluded that taxation is one of the factors that influence the companies' dividend policy. In his conclusion, the author also highlighted that the agency conflict between managers and shareholders may be responsible for the adoption of non-maximizing shareholders' wealth dividend policies.

In a recent paper, [Vancin and Procianoy \(2016\)](#) find that the legislation has an important role in the determinants of dividend policy. They find that there is strong empirical evidence that companies paying dividends above the legal mandatory level present different determinants from those that only pay the minimum level. Thus, the samples that mix companies that pay both the mandatory minimum dividend and above the minimum influence regression coefficients, resulting in significant biases in dividend determinants in Brazil. As companies that pay above the mandatory levels are the real decision makers of dividend policies (given that other companies simply comply with the legislation), this aspect must be taken into account when studying dividend policy in countries where minimum mandatory dividend legislation is in place.

[Ramos \(1997\)](#) studied the influence of taxes on dividends in the Brazilian stock market, adjusting the returns for systematic risk levels. Following [Litzenberger and Ramaswamy's \(1979\)](#) method of augmented capital asset pricing model, the author focused on two distinct periods: from 1984 to 1987 and from 1988 to 1992. The model states that, in equilibrium, the expected net return of a stock is linearly related to its systematic risk and its dividend–price ratio. [Ramos's \(1997\)](#) results indicated a significant and positive coefficient for the two subperiods. His conclusions support the hypotheses that dividend taxation influences the stock returns in *Bovespa*.

[Nossa and Nossa \(2007\)](#) investigated the economic performance of *Bovespa's* listed companies that distributed dividends or repurchased their shares in the period 1995–2004. The authors found that firms that paid dividends had comparatively increased positive returns in every single year of the sample, while firms that repurchased shares increased their returns only in the years 1997, 2002, 2003 and 2004.

[Mota and Eid \(2007\)](#) analyzed the choice of the method of payout policy of companies listed in *Bovespa* from 2002 to 2005. From the three distribution options (dividends, IOEC and shares repurchases), they found that dividends are preferred to IOEC, in spite of the latter's tax deduction advantage. Also, share repurchases are usually used as a complement to dividends and IOEC, mainly because of its higher transaction costs and lack of legal obligation.

[Decourt et al. \(2007\)](#) test if the changes of the payout ratios point to variations on net earnings in the year prior to and subsequent of dividend payment. Using a sample of listed companies from 1997 to 2005, the authors document that an increase of dividend payout does not signal future earnings, but reductions are correlated to the increasing in

contemporaneous net earnings and also signal increase in the future earnings. Apparently, earnings retentions signal good investment opportunities.

Cioffi and Famá (2010) analyzed if dividends could be used as a proxy for other information that contribute for the prediction of future returns, to test the effect of signaling on the market value of companies. The authors found that dividends affect positively the value of the companies, in accordance with other studies from Brazil and other countries.

Forti and Schiozer (2011) found a positive relationship between dividends and past earnings, when looking at dividend policy of Brazilian banks. This evidence reinforces the use of dividends to inform the quality of assets when sending a sign that the bank is capable of making profits with assets that perform well. Furthermore, privately held banks pay more dividends than publicly traded banks, which complies with the purpose of dividend signaling.

In contrast, Fiorati *et al.* (2007) studied whether the variation in earnings distribution policy (dividends and IOEC) had any relationship to the firm's profitability in subsequent years. Using a sample of public firms from 1994 to 2004, the authors could not document a significant relationship between earnings payouts and future firm profitability. The authors suggest that such result may be because of market conditions and the legal and institutional politic-economic organization.

Futema *et al.* (2007) have performed a solid analysis of the capital structure, dividends and IOEC of Brazilian companies in the period 1995-2004, following the Fama and French (2002) model. They aimed to contribute to the joint understanding of capital structure and dividend policy in Brazil. They concluded that, as predicted in the static trade-off and pecking order theories, the profitability and growth options are the most influential variables on earnings distribution.

Pohlmann and Iudicibus (2010) show that there is a positive relationship between the tax level on income and debt level. This was also observed for companies with high debt and low profit taxation. These results support the theory of trade-off regarding the impact of taxation on profit over debt decision, and consequently over the capital structure.

Nakamura *et al.* (2007) investigate the basis of dividend policy definition by Brazilian companies. Their results indicate that companies with better growth opportunities tended to pay lower dividends, and larger companies tended to pay larger dividends, under the hypotheses that they would face less future restrictions to banking loans, as well as lower transaction costs in case of an eventual issue. The authors conclude that dividends are deemed relevant by Brazilian firms along the lines of the Lintner's (1956) and agency theories.

Futema *et al.* (2009) confirm the predictions of pecking order, that is, the distribution of earnings varies positively with profitability and negatively with investment, but that do not happens with grow opportunities, which have a negative relationship with earnings distribution. Another positive factor for pecking order is the negative relationship observed between leverage and profitability, confirming that companies use retained earnings to finance their investments and only use debt after running out of internal sources.

As it has been shown above, the study of dividend policy in Brazil raises interesting questions regarding the relationship among dividends, capital structure, taxation, corporate governance and institutions. Moreover, Benetti *et al.* (2007) document that 62.9 per cent of Brazilian firms surveyed affirm to pay dividends, a larger sample share than Graham and Harvey (2001) report in their sample of North American firms (53.9 per cent). Such is the motivation of this study.

3.1 Previous empirical evidence on corporate governance and dividends in Brazil

Agency problems have a central role in the definition of dividends policy (Ferreira *et al.*, 2010). The commitment to corporate governance practices can reduce the risk for investors because of a raise in shares value caused by best practices, ultimately increasing the liquidity and trading volume of the shares because of increased demand.

With the increase in the value of a company stock, there may be, consequently, a reduction in their cost of capital. For the company, it means fundraising at lower costs, with the likelihood of higher returns on investments, and for shareholders, higher dividends (Rabelo *et al.*, 2007).

Silva (2004) shows that there is a relationship, often statistically significant, between governance structure, market value, leverage and dividend policy of the Brazilian companies. Gonzaga and Da Costa (2009) show that there is a relationship between accounting conservatism and conflicts over dividend policies between controllers and minority shareholders in Brazilian companies.

The financial corporate governance model seems to address the greatest number of features that apply to the Brazilian reality, given the importance it assumes the agency conflict (even if not always explicit) between controlling and noncontrolling shareholders and the importance attached to returns on investments (Bertucci *et al.*, 2006).

Companies who have American depository receipts Level II or participation in the “Novo Mercado” segment of *Bovespa* have higher returns in periods of crisis and distribute more dividends (Srour, 2005).

Bellato *et al.* (2006) show that there is a negative and significant relation between excess vote power in possession of the controllers and the dividend rate of the companies. Their study reinforces the arguments of the codes of good governance practices that the distance from the one share–one vote principle is detrimental to minority shareholders.

Through these studies, we can see that there may be a relationship between the levels of corporate governance and dividend policy. In companies where governance levels are higher, the tendency is that the dividend policy is more aggressive to distribute more dividends to its shareholders.

4. Research methods

We test the hypothesis of the influence of the Brazilian tax changes on the dividend policy of its listed companies. The sample is made up of companies whose shares are traded in São Paulo Stock Exchange (*Bovespa*), in the period 1986–2011. The data source is from *Econômica*® (2012) database. The final sample comprises 672 companies in the period 1986–2011, making up a total of 1,159 traded stocks of both common and preferred classes. We have also included companies with multiple classes of preferred stock, but kept in the sample only those whose dividend rights are similar, for homogeneity. As we used annual data frequency, the total sample contains 30,134 observations over the sample period.

Firms whose government or governmental bodies have a controlling stake are classified as state-owned. Privatized firms are coded as state-owned up to (and including) the privatization year, and as privately controlled henceforth. Some companies of the sample had a relevant ownership – but not the controlling stake – of the national development bank (*Banco Nacional de Desenvolvimento Econômico e Social – BNDES*), through its holding subsidiary *BNDESPAR*. In spite of having such a relevant stake from a government institution, these companies are treated as private companies.[1]

Firm-level data are the dividends per share and earnings per share, both adjusted for inflation using the Augmented Consumer Price Index, which is the default inflation index of *Econômica*® (2012) database. Dividend per share values are year sums obtained in

December 31st of the respective year from 1986 to 2011 and include the values of IOEC, paid in the same year. The variables are standardized by their book value of assets, to remove any systematic size effect.

A panel data analysis is performed according to the following model:

$$\begin{aligned}
 DPS_{it} = & \beta_0 \beta_1 EPS_{it} + \beta_2 DPS_{it-1} + \beta_3 COMMON_i + \beta_4 STAT_i + \beta_5 IOEC_{it} \\
 & + \beta_6 GOV_i + \sum_{k=1}^4 [\beta_{6+k} TAX_k + \beta_{10+k} (EPS_{it} \times TAX_k)] \\
 & + \beta_{15} (EPS_{it} \times GOV_{it}) + \varepsilon_{it}.
 \end{aligned} \tag{1}$$

Where DPS_{it} is the firm's i dividend per share in period t ; EPS_{it} is the firm's i earnings per share in period t ; $COMMON_i$ is a dummy variable for common stocks; $STAT_i$ is a dummy variable for state-owned companies (privatization dummy); $IOEC_{it}$ is a dummy variable when firm i paid IOEC in year t ; GOV_{it} is a dummy variable when firm i was listed on any corporate governance listing level in year t ; TAX_k is the dummy variable for each taxation period (1986-1988; 1989-1992; 1993; 1994-1995; 1996-2011); β_j are the coefficients to be estimated and ε_{it} is the regression residual.

Equation (1) is estimated as pooled panel data model (simple stacking of time series and cross-section data) using Probit and Tobit estimation. To verify the probability of companies to pay dividends, we use probit, which transforms the dependent variable in a dummy variable, being equal to 1 for firms that distribute dividends in that year or equal to 0 for firms that did not distribute. In the Tobit model, which is applied to variables strictly positive, with the accumulation of values at 0, the dependent variable can take any positive value in its probability distribution, being used in a manner similar to the probit. In this study, Tobit will provide the determination of the amount of distributed dividends, not just the propensity pointed by probit. For treatment of outliers, we applied the winsorization process on DPS and EPS . Winsorization has the advantage of reducing the extreme values of the sample without reducing the number of observations as other alternative outlier treatments such as simple trimming for instance. Descriptive statistics are presented in Table IV.

A panel data specification is useful in this case because it allows the use of a larger number of observations, therefore increasing the degrees of freedom, reducing the collinearity between exogenous variables and reducing the missing variable bias (Hsiao, 1986). We choose the Tobit specification based on Kim and Maddala's (1992) findings that suggest the importance of accounting for the large number of zero observations in empirical dividend studies. Also, the authors conclude that Tobit estimates, including lagged dividend dependent variables and earnings per share independent variables as well as industry, firm-specific and time effects, seem better equipped to deal with heteroskedastic errors and other specification problems in models of dividend behavior.

We expect that firms would increase their dividend payments in relation to earnings whenever the taxation on dividends decreased (1989-1993 – TAX2 – and 1996-2011 – TAX5) and/or taxation on capital gains increased (1989-2011). The coefficients β_j of EPS_{it} and any interaction terms of this variable in equation (1) represent payout ratios under different taxation regimes. We also expect an increase in payout ratios for the companies that are under corporate governance rules introduced by the new legislation and special listing segments, indicating whether corporate governance has any impact on the agency problem between majority and minority shareholders.

Variable	N	Without winsorization					With winsorization ($\phi = 0.01$)				
		Mean	Median	SD	Minimum	Maximum	Mean	Median	SD	Minimum	Maximum
DPS	30,129	4.60	0.00	180.67	0.00	17,751.42	0.48	0.00	2.24	0.00	18.65
EPS	16,429	-4.89	0.19	3,029.30	-125,797.90	310,714.00	0.53	0.19	33.37	-191.17	186.19

Source: Authors of the paper

Table IV.
Descriptive statistics
of firm-level data

5. Results

5.1 Estimation results

The estimation results using Probit and Tobit methods for [equation \(1\)](#) are presented in [Tables V](#) and [VI](#), respectively. Analyzing probit first, we have similar results to other empirical works on the performance of portfolios comprising companies with high levels of corporate governance ([Rabelo et al., 2007](#)) and on dividend payment ([Srouf, 2005](#)), which brings evidence that companies with higher levels of corporate governance are more prone to pay dividends. The coefficients of the variable *GOV* were statistically significant and robust in all regressions.

Companies that distribute IOEC are more likely to distribute dividends too, as shown by the variable *IOEC*, which remained statistically significant and positive in all regressions. The variable *STAT* suggests that there is a statistically significant and negative relationship between state-owned companies and dividends payment, i.e. the probability of state-owned companies to pay dividends is lower.

We find a lower probability of common stocks to pay dividends, as we observe a negative and significant coefficient for the *COMMON* variable. This does not come as a total surprise given that the legislation change of 2001 (Act 10303/2001) required that firms with preferred nonvoting stock should choose one among three possible preferences: a minimum dividend, a dividend at least 10 per cent higher than the common stock dividend or tagalong rights. Nevertheless, as our sample covers a large period before this regulatory change (1986-2011), this result is an indication of the behavior of firms toward nonvoting stocks in a more ample perspective[2].

Although the results for the variable *EPS* are not statistically significant for the probit model, they are significant for the Tobit model, as we will see further. For now, it is worth only to observe the positive sign of the coefficients, pointing to a positive relationship between dividends and earnings per share. *Lag Dep*, which is the lagged dependent variable (*DPS*), shows that if the company paid dividends in the previous period, then the probability of paying them again increases.

TAX3 period suggests that the likelihood of paying dividends increases in 1993, perhaps because it is exempt from taxation. The interactions *TAX3-EPS* and *TAX5-EPS* suggest that the effect of earnings per share in the likelihood of dividend payments is higher in these two tax periods, i.e. as predicted, an increase in earnings per share in periods which are exempt from taxation also increases the probability of dividend payments.

The interaction between the variables *GOV-EPS* is statistically significant and positive in all regressions, strongly suggesting that firms in special corporate governance listing segments that had increases in their earnings per share increase the likelihood to pay dividends. This result complies with other empirical work on corporate governance and performance of companies listed in *Bovespa* ([Freire et al., 2010](#)).

The results of Tobit regressions ([Table VI](#)) show that the *EPS* is positive and significant, unlike the probit model, suggesting that an increase in earnings per share of a company increases the amount of dividends distributed. The lagged dependent variable (*Lag Dep*) showed the same results of the probit model, suggesting that if the company paid dividends in the earlier period, then it would pay larger amounts too. That is an indication that firms pursue a persistent dividend policy.

The interactions *TAX2-EPS* and *TAX3-EPS* for Tobit regressions are also aligned with the probit, showing that, in periods of less taxation *TAX2* and *TAX3*, an increase in earnings per share would increase the amount distributed as dividends. The interaction *TAX4-EPS* shows that during *TAX4*, there would be a reduction of the amount distributed, which makes sense because such period was one of higher taxation. For the period *TAX5*,

Variables	Expected sign	REG1	REG2	REG3	REG4
EPS	+	0.00136 (1.50)	0.00137 (1.50)	0.00132 (1.35)	0.00131 (1.35)
Lag Dep	+	1.836*** (72.75)	1.848*** (71.91)	1.356*** (46.21)	1.378*** (46.18)
TAX2 (1989-1992)	+	-0.266*** (-4.10)		-0.194*** (-2.93)	
TAX3 (1993)	+	0.183** (2.10)		0.157* (1.72)	
TAX4 (1994-1995)	-	0.0495 (0.70)		0.102 (1.38)	
TAX5 (1996-2011)	+	-0.260*** (-4.61)		-0.0617 (-1.00)	
TAX2 × EPS (1989-1992)	+	0.00203 (1.63)	0.00122 (0.97)	0.00134 (1.01)	0.000343 (0.25)
TAX3 × EPS (1993)	+	0.0106*** (3.26)	0.0106*** (3.27)	0.00779** (2.40)	0.00781** (2.42)
TAX4 × EPS (1994-1995)	-	-0.000817 (-0.48)	0.000595 (0.34)	-0.00267 (-1.39)	-0.00119 (-0.61)
TAX5 × EPS (1996-2011)	+	0.00257** (2.48)	0.00278*** (2.68)	0.00256** (2.26)	0.00274** (2.41)
COMMON	-	-0.00690 (-0.27)	-0.00173 (-0.07)	-0.133*** (-4.35)	-0.139*** (-4.54)
STAT	-	-0.150*** (-3.25)	-0.203*** (-4.31)	-0.665*** (-6.60)	-0.721*** (-7.02)
IOEC	+	1.652*** (20.29)	1.763*** (21.63)	1.806*** (18.44)	1.885*** (19.32)
GOV	+	0.334*** (6.58)	0.514*** (9.38)	0.586*** (7.78)	0.717*** (8.99)
GOV × EPS	+	0.0628*** (3.13)	0.0625*** (3.10)	0.0551*** (2.60)	0.0566*** (2.62)
N		16,099	16,099	14,534	14,534
Pseudo R ² (%)		41	42	45	46
Chi ²		9,209.9	9,439.8	9,025.0	9,208.9
Year effect		No	Yes	No	Yes
Industry effect		Yes	Yes	-	-

Notes: This table presents the results for probit regressions with grouped data (pooled) and fixed effects, for the dependent variable DPS. This variable assumes value "1" if the company paid dividends and "0" otherwise. Regressions REG1 and REG2 represent grouped data (pooled), and regressions REG3 and REG4 represent the fixed effects. We used dummy variables for each year (for regressions without the variable TAX_{it}) and industry (not for fixed effects) to capture these effects. The coefficients are shown for each variable, and *t* statistics follow in brackets. ***, ** and * represent the levels of statistical significance at 1, 5 and 10%, respectively

Source: Authors of the paper

Table V.
Probit regressions

Table VI.
Tobit regressions

Variables	Expected sign	REG1	REG2	REG3	REG4
EPS	+	0.0145*** (6.88)	0.0146*** (6.95)	0.0141*** (6.80)	0.0140*** (6.79)
Lag Dep	+	0.716*** (81.90)	0.718*** (82.17)	0.537*** (52.33)	0.536*** (52.29)
TAX2 (1989-1992)	+	-0.259* (-1.78)		-0.436*** (-3.13)	
TAX3 (1993)	+	-0.0575 (-0.29)		-0.335* (-1.74)	
TAX4 (1994-1995)	-	0.201 (1.27)		0.00122 (0.01)	
TAX5 (1996-2011)	+	-0.246* (-1.94)		-0.316** (-2.48)	
TAX2 × EPS (1989-1992)	+	0.00913*** (3.08)	0.00752** (2.51)	0.00916*** (3.18)	0.00723** (2.48)
TAX3 × EPS (1993)	+	0.0447*** (6.52)	0.0446*** (6.53)	0.0248*** (3.94)	0.0248*** (3.96)
TAX4 × EPS (1994-1995)	-	-0.0189*** (-4.76)	-0.0182*** (-4.56)	-0.0249*** (-6.21)	-0.0239*** (-5.92)
TAX5 × EPS (1996-2011)	+	0.0166*** (6.82)	0.0170*** (7.03)	0.0116*** (4.81)	0.0119*** (4.97)
COMMON	-	-0.125** (-2.34)	-0.107** (-2.01)	-0.278*** (-4.90)	-0.284*** (-5.02)
STAT	-	-0.395*** (-4.12)	-0.473*** (-4.91)	-1.482*** (-7.36)	-1.555*** (-7.68)
IOEC	+	1.598*** (19.67)	1.857*** (21.55)	1.162*** (13.10)	1.345*** (13.84)
GOV	+	0.164* (1.70)	0.394*** (3.89)	0.501*** (4.10)	0.604*** (4.73)
GOV × EPS	+	0.100*** (2.98)	0.0890*** (2.69)	0.110*** (3.02)	0.109*** (2.99)
N		16099	16099	16099	16099
Pseudo R ²		14%	14%	19%	19%
Chi ²		7735.9	7911.2	10753.3	10900.4
Year effect		No	Yes	No	Yes
Industry effect		Yes	Yes	-	-

Notes: This table presents the results for Tobit regressions with grouped data (pooled) and fixed effects, for the dependent variable DPS. This variable represents the amount of distributed dividends. Regressions REG1 and REG2 represent grouped data (pooled), and regressions REG3 and REG4 represent the fixed effects. We used dummy variables for each year (for regressions without the variable TAX_{it}) and industry (not for fixed effects) to capture these effects. The coefficients are shown for each variable, and *t* statistics follow in brackets. ***, **, * and * represent the levels of statistical significance at 1, 5 and 10%, respectively

Source: Authors of the paper

when there was no incidence of taxes, the interaction suggests that an increase in earnings per share would also increase the amount distributed, which is consistent with the tax preference theory.

The variables *COMMON*, *STAT*, *GOV* and *IOEC* for Tobit regressions were statistically significant, as was the probit model, suggesting that common stocks and state-owned enterprises pay less dividends, companies that distribute *IOEC* also have higher total payouts, as do companies with higher levels of corporate governance. Also consistent with our probit results, the interaction *GOV-EPS* for Tobit regressions suggests that the effect of corporate governance increases the amount distributed by companies that had an increase in their earnings per share.

5.2 Robustness tests

To check for the robustness of the findings, we reestimate [equation \(1\)](#) using three different dependent variables as follows: *DBV* (the ratio between dividend/book value of the share), *Payout* and *Yield* (results omitted for the sake of concision but available upon contact with the authors).

Using *DBV* as the dependent variable, we observe the same results as the original model for almost all independent variables, for both methods probit and Tobit, only with a few changes in the significance level. The dependent variable *Payout* also kept the same results as the original model, presenting only a few changes in the significance level, and the interaction *TAX4-EPS* presented signal changing. The dependent variable *Yield* also kept the results practically constant, presenting only a few changes in the significance level, and signal changes for the interaction *TAX2-EPS* and for *TAX4* and *TAX5* in the probit method with fixed effects.

6. Conclusions

This study aims to investigate the tax preference theory of dividends in a sample of 672 Brazilian public firms for the period 1986-2011. We documented several changes in the tax legislation of dividends over the sample period and tested their effect on dividend payments using probit and Tobit regression analysis. Our findings suggest that the Brazilian firms do not follow target payout ratios, but they do try to pay dividends that are moderately dependent on past payments. The level of dividend payment is affected by stock voting rights, privatization, dividend payments deductibility provisions and changes of corporate governance rules. Changes in the tax legislation have a significant influence on dividend payout ratios, corresponding to the theoretical prediction. Payout ratios are positively affected by changes in regulation that reduce the agency problems among shareholders of the firm.

We have documented that the tax preference theory found empirical support in the Brazilian environment, given the numerous changes in the tax regulations over the year. Our results highlight the influence of taxation in the payout policies pursued by publicly listed firms. These results have a range of implications for managers, investors and policymakers. For managers, it is clear that maximizing shareholders' value requires taking the consequences of the taxation – at the corporate and personal levels – into account when designing financial policies for the firm. For investors, the choice of which stocks to include in their portfolios should take into account their payout behavior and how it is affected by changes in dividend taxation. Finally, for policymakers, it becomes clear that taxes drive firms to change their payout policies and, possibly, their investment and financing strategies as well. Therefore, a careful study of the effects of changes in the tax code on

corporate behavior is of utmost importance if the goal to stimulate private investment and economic growth is in the agenda of the authorities.

Another important aspect raised by our results is that of the role of agency conflicts in dividend policies. We found significant positive effects in dividend payouts for firms that belong to special corporate governance segments of the stock exchange – firms that voluntarily adopt better practices toward its outside shareholders, thus reducing agency problems. Also, state-owned companies seem to systematically and significantly less likely to pay dividends. These firms are known to be generally more opaque and less accountable to outside investors than privately held enterprises – thus more prone to exacerbate agency conflicts. Therefore, we find evidence that agency problems are also important determinants of dividend decisions in Brazil, along the lines of [Easterbrook \(1984\)](#).

In sum, we conclude that taxation does affect dividend policy, as shown by the coefficients of the regressions, and also that agency problems are an important issue when it comes to dividend payments. Further studies in the field of corporate governance of Brazilian listed corporations may provide a better understanding of this subject and guide future regulation reforms.

Notes

1. Although relevant, such ownership is clearly of a minority nature (between 5 and 40 per cent of voting shares – 22.45 per cent on average – in only 11 out of 672 firms in our sample). Therefore, we choose to treat such firms as privately owned. We thank an anonymous referee for pointing this out.
2. We are thankful to an anonymous referee for pointing this out.

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*Corresponding author

Timóteo Zagonel can be contacted at: timzagonel@gmail.com