Revista de Administração e Contabilidade
Volume 12, número 2
Feira de Santana, maio/agosto 2020, p.76 – 87
ISSN: 2177-8426

Regularity of dividend payments in the Brazilian electricity sector: solution to the agency conflict?

Regularidade de pagamentos de dividendos no setor elétrico brasileiro: solução para o conflito de agência?

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ABSTRACT

In Brazil, companies in the electricity sector are leveled at the same level of corporate governance thanks to the regulation of the sector (SOUZA *et al.*, 2015). In addition, they pay high dividends to their shareholders compared to other unregulated companies (SILVA, 2019a). The main hypothesis of this paper is that (a) companies in the electricity sector that pay irregular dividends lead to lower stock prices, as they convey uncertainty to the market by not effectively resolving the agency conflict, mainly present in utilities and (b) electricity companies that concentrate dividend payments pay higher yields than those that pay several dates a year. Conclusions: There was no empirical support to justify hypothesis (a). The yield of companies that pay dividends at various dates in the year is higher than the yield of companies that pay dividends only once a year. Companies that maintain multiple dividend payouts per year have a higher yield than companies with inconsistent dividend payouts, showing the importance of the regularity of dividend payouts relative to yield.
Keywords: corporate finance, electric sector, dividends

RESUMO

No Brasil, as empresas do setor elétrico estão niveladas num mesmo patamar de governança corporativa graças à regulação do setor (SOUZA *et al*., 2015). Além disso, pagam altos dividendos para seus acionistas na comparação com outras empresas não reguladas (SILVA, 2019a). A hipótese principal deste trabalho é de (a) empresas do setor elétrico que pagam dividendos de forma irregular levam a menor cotação das ações, por transmitirem incerteza ao mercado ao não resolverem de forma efetiva o conflito de agência, presente principalmente nas *utilities* e (b) empresas do setor elétrico que concentram o pagamento de dividendos pagam maior *yield* que aquelas que pagam em várias datas ao ano. Conclusões: Não houve suporte empírico para justificar a hipótese (a). O *yield* de empresas que pagam dividendos em várias datas no ano é superior ao *yield* de empresas que pagam dividendos somente uma vez ao ano. Empresas que mantém vários pagamentos de dividendos ao ano possuem um *yield* maior que as empresas com pagamentos inconstantes de dividendos, mostrando a importância da regularidade do pagamento de dividendos em relação ao *yield*.
Palavras chave: finanças corporativas, setor elétrico, dividendos

Introduction

Natural monopoly companies, such as the electricity sector, lead to a variety of economic performance problems: excess prices, production inefficiencies, costly duplication of facilities, poor quality of service and potentially undesirable distributional impacts (ŠKAPA, 2012). According to Kim and Horn (1999), developing and transitional economies need to establish adequate regulatory policies and institutions to provide incentives for private sector participation and to protect public interests. New regulatory policies involve creating competition in the market for these industries or, alternatively, creating competition for the market. The privatization of the natural monopoly sector, for example, is a relatively new and still evolving field, and it would be premature to draw definitive conclusions about privatization models and "best practice" regulation for natural monopolies (KIM and HORN, 1999).

These companies are subject to regulatory oversight, a feature that most often differentiates them when studying dividend policy (BREMBERGER *et al.,* 2013). The common explanation is that dividend behavior is not reconciled with current textbook explanations because regulated sectors are less risky, isolated from the product and even from the capital market discipline, and where regulators can directly or indirectly influence how many dividends can afford (BREMBERGER *et al.,* 2013). Regulated companies, therefore, use the dividend policy to mitigate agency conflicts (LOZANO, DE MIGUEL and PINDADO, 2002).

In Brazil, companies in the electricity sector are leveled at the same level of corporate governance thanks to sector regulation (SOUZA *et al.,* 2015). In addition, they pay high dividends to their shareholders in comparison with other non-regulated companies (SILVA, 2019a). Silva and Kirch (2019), when comparing the shares of the electric system with those belonging to the Bovespa index, demonstrated that the shares of the electric system are more likely to generate increases in share prices above 2% than those of the Bovespa index group, after payment of dividends. Silva (2019b), studying the dividend policy of the Brazilian electricity system during the period from 1994 to 2007 showed that the dividend distribution is detached from investments. Companies, especially the larger ones, because they have greater access to credit, often subsidized, can afford this greater payment of dividends. This greater payment of dividends, in turn, could be used as a sign of the company's good functioning (Signaling Effect).

The main hypothesis of this paper is that (a) companies in the electricity sector that pay dividends irregularly lead to lower share prices, as they transmit uncertainty to the market by not effectively resolving the agency conflict, present mainly in utilities. Another hypothesis is that (b) companies in the electricity sector that concentrate the payment of dividends pay higher yield than those that pay on several dates a year, similar to the work of Silva (2019a), who demonstrated this occurrence of higher yield in companies in the sector concentrating dividend payments in relation to companies listed on the BOVESPA.

This work is divided as follows: the introduction, followed by the theoretical framework, where it is contextualized and gives greater depth to the theme; the methodology follows, which describes the outline of the empirical part of the work and its form of analysis. Next are the results, where they are discussed in the light of the literature. The work is ended by the conclusions, where the central ideas of the work are resumed under the analysis of the results.

1. Theoretical Reference

An electrical company is a classic example of a natural monopoly, where competition can lead to an inefficient market outcome. Once the huge fixed cost involved in generation and power lines has been paid, each additional unit of electricity costs very little. The fact that two electricity companies share electricity production, each with its own energy source and power lines, would almost double the price, due to low marginal costs, high sunk costs and decreasing average costs. The natural monopoly, therefore, presents the difficult dilemma of how to organize these industries, in order to obtain the advantages of the production of a single company, while minimizing all the vices resulting from non-competitive markets (KIM and HORN, 1999).

The free flow cash hypothesis suggests that the price reacts favorably to the announcement of an increase in dividends because that increase reduces the agency cost of free cash flow (that is, the potential for overinvestment). Likewise, the stock price reacts negatively to an announcement of reduced dividends because it increases the potential for overinvestment (BAKER, 2009). In general, it appears that regulated companies use the dividend policy to mitigate two agency conflicts: on the one hand, in relation to the analysis of the conflict between shareholders and regulators, it follows that, given the regulator's initiatives to limit the price growth, regulated companies respond by distributing more dividends and, consequently, on the other hand, going to the capital market to obtain external financing as a defensive measure against the regulator (LOZANO, DE MIGUEL and PINDADO, 2002).

Ahmed and Javid (2010) demonstrated that there is a positive relationship between corporate investor ownership policy and dividend payments in Pakistan, similar to Silva (2019) results in Brazil. They claim that when corporate ownership increases, the dividend also increases. Due to the high and positive shareholding concentration, the conflict between the large shareholder (corporate investor), the controlling shareholders and the small external shareholders (individuals) is one of the most important focal points in the corporate governance literature. Ahmed and Javid (2010) also showed empirically that ownership is one of the most important variables that can influence dividend payment policy. However, the relationship is different for distinct classes of shareholders, that is, directors, foreign investors, financial institutions and property of corporate investors. They conclude that the ownership structure in Pakistan informally influences dividend payment policy and shareholder identities also play an important role. The results support the hypothesis that there is a relationship between the shareholding structure and the dividend payment policy. In countries like Pakistan, therefore, with little protection for investors, corporate ownership has a significant impact on dividend policy.

On the other hand, the conflict of managerial shareholders has peculiar characteristics for regulated companies. According to Lozano, De Miguel and Pindado (2002), from the alternative mechanisms to the dividend policy to resolve the conflict between shareholders and managers, only debt is efficient in the context of regulated companies. The rest of the mechanisms[1] are not, because they are not efficient, even for the unregulated ones (as is the case of concentration of ownership), or because the mechanism is inefficient for regulated companies (as is the case in the participation of managers in the property). Consequently, in

[1] The other factors: participation of property managers, concentration of ownership and increase in prices of goods and services.

this context, regulated companies are more encouraged to go to the capital market using the dividend policy (LOZANO, DE MIGUEL and PINDADO, 2002).

Bremberger *et al.* (2013) also shows that regulation is a factor that comes into play when analyzing the dividend policy of large companies. Starting from the demand side for public utility services, the State has two options for providing them. First, the State itself can provide the services and own the assets involved. As a second option, the State can privatize the companies that provide these services and the regulation accompanies this process: to avoid the abuse of natural monopoly positions, regulatory authorities are usually established that subject public services to regulation. An interesting hybrid construction, according to Bremberger *et al.* (2013) is the state-owned company partially subject to regulation. The question that arises with these constructions is whether effective regulation can be expected if the State owns part of the assets and establishes the regulatory framework. When analyzing these configurations in the electricity sector, in particular, Bremberger *et al.* (2013) compared the dividend policy of companies that partially belong to the State and are subject to regulation with totally private and also regulated companies.

These companies are subject to regulatory supervision, a feature that most often differentiates them when studying dividend policy. The common explanation is that dividend behavior is not reconciled with current textbook explanations because regulated sectors are less risky, isolated from the product and even from the capital market discipline and where regulators can directly or indirectly influence how much dividends can pay. For example, Moyer, Chatfield and Sisneros (1989) showed that the monitoring activities of security analysts are lower when the company is public. In general, the financial literature that examined the dividend behavior of regulated companies focuses on the role that dividend payments play in the monitoring process to reduce stock agency costs in the capital markets (MILLER, 1986; SMITH, 1986; HANSEN, KUMAR and SHOME, 1994).

Regulated companies and, among them, electric power concessionaires, generally distribute very generous dividends to their shareholders. According to Bremberger *et al.* (2013), however, the dividend policy in regulated companies has attracted little attention from the existing literature. Bremberger *et al.* (2013) argue that this neglect is erroneous, since regulated industries provide a rich testing ground for company theories, such as the relationship between regulation and ownership, and the effects on key corporate financial decisions, such as the payment decision. of dividends.

By estimating the Lintner dividend model (1956) for an unbalanced panel of 106 companies from seventeen European countries operating in the regulated segments of the electricity market (distribution and transmission), Bremberger *et al.* (2013), found important differences in the dividend payment policy, that is, the smoothing of dividends, impact effects and target payment indices, of companies subject to different regulatory regimes (incentive *versus* non-incentive) and corporate governance (state *versus* private control). The period of time observed varies from 1986 to 2010 and covers a period of deep market reforms for the European energy sector.

The authors extended the "behavioral" model of partial adjustment by Lintner (1956) to take into account the potential effect of a change in the regulatory regime on corporate earnings and its variability. Their results showed that dividend smoothing, impact effects and, therefore, target payment rates are sensitive to the regulatory regime that companies face. Bremberger *et al.* (2013) conclude that electric utilities subject to incentive regulation

decrease their dividends less and respond more readily to changes in profits than those subject to cost-based regulation. This implies that the regulation of incentives makes the dividend policy more responsive to the variability of profits and more consistent with the pressures to increase efficiency. These results are confirmed when the potential endogeneity of the regulatory mechanism was also considered, when using cash flows instead of net profits and when performing subsample analyzes.

The lesser smoothing of dividends under incentive regulation is entirely due to private companies. The authors (BREMBERGER *et al.* 2013) even found some evidence that private companies operating under incentive regulations stop directing dividends and exclusively link current dividends to current earnings. In contrast, state-controlled companies (that is, partially owned by the state) continue to smooth their dividends, despite moving from cost-based regulation to regulation of incentives. One reason may be that obtaining excessive and stable dividends is a more hidden way of reinforcing political preferences than direct taxation (BREMBERGER *et al.* 2013).

The study of Cambini, Rondi, and De Masi (2015), by using a representative sample of large and highly valued European energy companies, offer insights to pay attention not only to remuneration schemes, but also to regulatory regimes. According to the authors, regulatory regimes are important and companies subject to high-powered incentive schemes are more similar to unregulated companies. On the other hand, the adoption of contracts related to the performance of energy services companies under cost-based schemes does not appear to bring benefits to companies and only additional costs for shareholders.

Souza *et al.* (2015) showed that the shares from Brazilian companies belonging to the electricity sector listed on the Differentiated Levels of Corporate Governance of Bovespa[2] did not perform better than those of companies that did not fit in at any level. This "standardization" of shareholding behavior may be related to the regulation of the Brazilian energy sector, through the National Electric Energy Agency (ANEEL), which imposes differentiated quality standards and intervenes in the sector in an active and intense way, to guarantee production, energy storage and distribution in the country, unlike other sectors in which the law of the market predominates: strong competitiveness and extreme competition.

According to Armitage (2012), as conventional theories do not adequately explain the large regular dividends, their existence is at least approximately consistent with Baker & Wurgler's (2004a) theory of dividend policy. According to this theory, there is a demand for dividends on the part of investors, and the demand exists mainly for behavioral and institutional reasons, and the strength of the demand varies over time. Baker and Wurgler (2004a, 2004b) presented American evidence that changes over time in measures of companies' willingness to pay dividends are linked to proxies for changes in investor demand for dividends, especially the logarithm of the difference between the market average, book value of payers and non-payers (the "dividend premium").

Baker and Wurgler (2004a), in turn, propose a new theory of dividends. They argue that investor demand for dividend-paying stocks varies over time, causing the relative prices of dividend-paying and non-dividend shares to fluctuate (assuming arbitrage limits). As a result, managers meet investors' demand for dividends by paying dividends when investors value shares that pay dividends and vice versa. Based on a large sample of dividend reductions and

[2] Bolsa de Valores de São Paulo; currently B3.

increases from 1963 to 2000, Li and Lie (2006) consistently supports a continuous level of dividends. In particular, when the dividend premium is high, companies are more likely to increase dividends, that dividend increases tend to be higher, and that the reaction of the stock price to news of dividend increases is more favorable. However, when the dividend premium is low, companies are more likely to buy back shares (which is an alternative means of increasing payments) and decreasing dividends; dividend decreases tend to be greater and the reaction of the stock price to news of dividend decreases is more favorable. Collectively, the results suggest that managers consider variable investor demand in their dividend decisions and that this behavior tends to inflate stock prices. An additional implication is that managers who disregard the demand for dividends are penalized by a relatively lower share price. Given the frequency with which dividends decrease and, in particular, dividend increases occur, this implication is highly relevant for corporate decision makers.

Labhane and Das (2015) examined the trend and determinants of the dividend payment rate of 239 companies listed on the National Stock Exchange (NSE) in India during the period 1994 to 95 and 2012 to 2013. The percentage of paying companies of dividends decreased from 81.05% in 1995 to 65.38% in 2013. Considering that the average dividend paid by dividend paying companies increased many times during the study period, this suggests that dividend paying companies paid higher amounts dividends in subsequent years. The average rate of dividends paid and dividend yield showed a volatile trend throughout the study period. The electricity sector had the lowest payment rate of 4.57% and the manufacturing sector has the highest payment rate of 49.55%. Larger and more profitable companies and companies with low investment opportunities had a comparatively higher dividend payout rate than smaller, less profitable companies with high investment opportunities throughout the study period.

2. Methodology

The stock prices and dividend payments of shares in the electricity sector listed on the São Paulo Stock Exchange (B3) were collected from the Yahoo Finance website during the period from January 1, 2009 to December 31, 2018. Dividend payments were grouped within their respective year of payment; when multiple payments occurred within a year, their yield was added up. Dividend payments made in a single period of the year allocated the share in that specific year to the group of concentrated payers. The asset with several payments during the year was included in the group of diluted payers. Each year in which a dividend was paid featured a year 0, or index year.

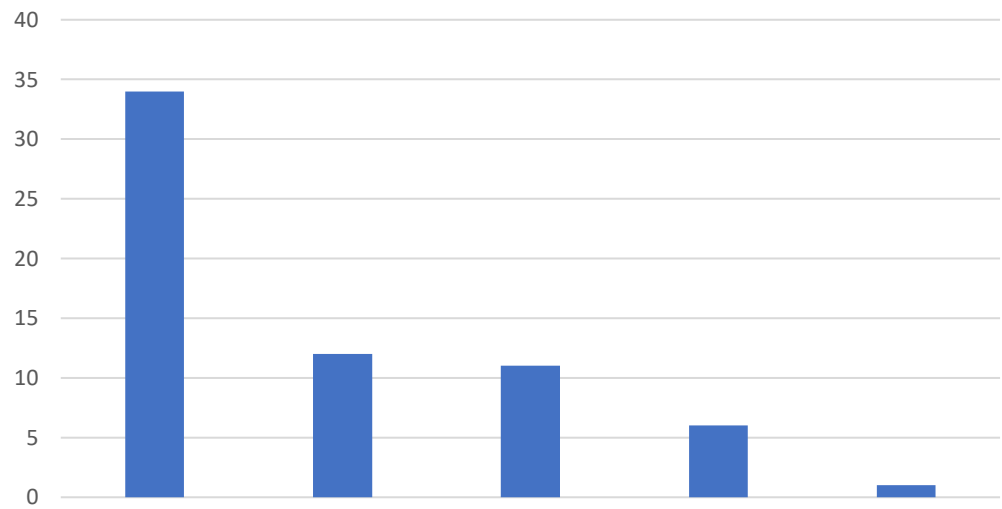
The share price on the dividend payment day in the concentrated group was also recorded and also became an index year. In the group of several payments per year (diluted), an arithmetic average of the share prices on the respective payment dates was made. Based on year 0, the variation in prices and yield was calculated for successive years 1, 2 and 3. The concentrated and diluted groups in their respective years were compared using the Student's t test with significance level established at 0.1 to assess possible discrepancies.

The persistence of the pattern of dividend payments (either concentrated or diluted) in years 1, 2 and 3 was tested using the Chi-square test with a level of statistical significance set at 0.1. The variation of prices and yield in years 1, 2 and 3 between rigid payers (those who did not change their annual payment amount) and flexible payers, whose payments varied between concentrates, was also tested using Student's t test. (once a year) and diluted (above an annual payment).

3. Results

From a total of 17 selected companies, a total of 293 dividend payments were found during the study period. In 80 cases the payment was single in the year, being considered as a concentrated group of payments[3]. The remaining payments (213) were grouped within the year in which they occurred, making a total of 64 cases. These multiple payments varied between 2 to 6 times during the year (figure 1).

Figure 1: Multiple annual dividend payments



[3] There was an initial controversy about placing dividend payments on two annual dates as a form of concentrated dividend payment. However, separate analysis of two annual payments cases showed that their behavior was closer to the group of multiple annual payments.

Table 1 compares the yield and the variation in the price of companies with concentrated payments (once / year) with companies with diluted payments (more than once / year). Companies with diluted payments had a higher yield in all years (except for year 1), contrary to hypothesis b. However, the variation in the price was significant only in year 3, with a greater gain in value in the group of concentrated payments.

Table 1 - Concentrated vs diluted payments

	year	Concentrated payments (mean ± standard error)	diluted payments (mean ± standard error)	p value
Yield	0	0,058±0,0023	0,107±0,0064	0,03**
	1	0,1±0,01	0,1±0,01	0,93
	2	0,045±0,0013	0,154±0,014	0,02**
	3	0,041±0,002	0,109±0,008	0,01**
Δ price*	1	0,037±0,0074	0,05±0,009	0,77
	2	0,089±0,012	0,004±0,013	0,23
	3	0,151±0,019	-0,03±0,019	0,088**

* in relation to the year 0; ** statistical significance

Table 2 shows the regularity of payment of dividends from a certain point (year 0) for the following 3 years. The results show that once the company pays its dividends in a concentrated manner, it tends to remain this way, the same being true for companies paying dividends at various dates in the year (diluted).

Table 2 - Persistence of the pattern of dividend payments

	Year 0	Year 1	p value	Year 2	p value	Year 3	p value
Concentrated	80	68%*	< 0,01**	68,7%	< 0,01**	66,7%	< 0,01**
Diluted	54	67,2%	< 0,01**	67,2%	< 0,01**	58%	< 0,01**

* in relation to the year 0; ** statistical significance

Table 3 compares the yield and price variation between companies with rigid payments (those whose payments have always been concentrated or diluted over a 4-year period) with companies with flexible payments (relaying 1 payment in the year with more, without a defined order). There were no differences between groups, rejecting hypotheses a and b.

Table 3 - Dividend payments on rigid (or regular) vs flexible (or irregular) dates

	Year	Rigid payments (mean ± standard error)	Flexible payments (mean ± standard error)	p value
Yield	0	0,07±0,002	0,05±0,009	0,22
	1	0,158±0,017	0,054±0,01	0,39
	2	0,109±0,01	0,059±0,01	0,5
	3	0,112±0,011	0,047±0,008	0,4
Δ price*	1	-0,03±0,01	-0,028±0,069	0,96
	2	-0,053±0,02	-0,114±0,087	0,68
	3	-0,048±0,22	-0,085±0,108	0,83

* in relation to the year 0; ** statistical significance

Table 4 compares the yield and price variation between companies with concentrated and rigid payments (those whose payments have always been concentrated over a 4-year period) with companies with flexible payments (relaying 1 payment in the year with more, without a defined order). There were no differences between groups, contradicting hypotheses a and b.

Table 4 - Dividend payments on rigid (or regular) and concentrated vs flexible (or irregular) dates

	Year	Rigid and concentrated payments (mean ± standard error)	Flexible payments (mean ± standard error)	p value
Yield	0	0,049±0,0037	0,05±0,009	0,98
	1	0,192±0,04	0,054±0,01	0,39
	2	0,046±0,004	0,059±0,01	0,48
	3	0,039±0,004	0,047±0,008	0,64
Δ price *	1	-0,012±0,025	-0,028±0,069	0,89
	2	0,017±0,036	-0,114±0,087	0,42
	3	0,061±0,04	-0,085±0,108	0,43

* in relation to the year 0; ** statistical significance

Table 5 compares the yield and price variation between companies with diluted and rigid payments (those whose payments have always been diluted over a 4-year period) with companies with flexible payments (relaying 1 payment in the year with more, without a defined order). The yield in the group of rigid and diluted payments was higher in all years, but there was only statistical significance in years 0 and 1, which is in line with hypothesis b. As for the stock prices, in both groups there was a drop in the price, but without statistical differences between the groups, which goes against hypothesis a. It follows that those who pay dividends several times a year on a regular basis pay, on average, higher yields, despite the fact that their prices are less valued than the companies that concentrate the payment of dividends, thus opening space for choices between shares that provide the payment of an income and of shares that gain value. These results contradict those shown by Dewenter and Warther (1998), when they demonstrate that the sensitivity to the agency conflict decreases the price in the face of omission of dividends.

Table 5 - Rigid and diluted payments vs Flexible payments

	year	Rigid and diluted payments (mean ± standard error)	Flexible payments (mean ± standard error)	p value
Yield	0	0,103±0,005	0,05±0,0093	0,01**
	1	0,113±0,0068	0,054±0,01	0,02**
	2	0,189±0,034	0,059±0,01	0,22
	3	0,204±0,035	0,047±0,008	0,16
Δ price*	1	-0,058±0,03	-0,028±0,069	0,8
	2	-0,143±0,04	-0,114±0,087	0,84
	3	-0,189±0,047	-0,085±0,108	0,57

* in relation to the year 0; ** statistical significance

4. Conclusions

The intra-sectoral study allows a better understanding of the functioning of the companies contained in it, comparing them to each other. The way companies in the electricity sector pay their dividends, and not just the amount they pay, give subsidies to the market on how healthy and attractive they can be to potential investors. In short, this work reached the following conclusions:

1. The yield of companies that pay dividends on several dates in the year is higher than the yield of companies that pay dividends only once a year, showing that within the electric sector, the behavior of companies when compared to each other is different. This finding offers a different standpoint in comparison to an intersectoral assessment, as shown by Silva (2019a).
2. Companies that concentrate the payment of dividends once a year obtain greater capital gain than companies that pay dividends on several dates in the year.
3. Companies show a tendency to maintain their payment frequencies, both in those that concentrate and in those that pay on several dates per year.
4. Companies that maintain multiple dividend payments per year have a higher yield than companies with inconsistent dividend payments (ranging from 1 or more payments). The same, however, did not occur in the comparison between the group of dividend payments on a single date and the group of inconstant payments. These findings show the importance of regular dividend payments, especially in relation to yield.
5. Although differences were found between the yield of companies whose payments were regular in relation to the companies with irregular yield payment, there were, however, no differences in the price variation between both groups, which shows that neither the yield nor the irregularity of payments interfered with the share price. This could be in line with the "leveling" of corporate governance demonstrated by Souza *et al.* (2015), which could be resolving the agency conflict demonstrated by Bremberger *et al.* (2013) and Cambini, Rondi, and De Masi (2015) together with the payment of high dividends as demonstrated by Miller (1986), Smith (1986) and Hansen, Kumar and Shome (1994).

The prospects for continuity in this line of research include the use of analysis tools intrinsic to companies, such as payout, debt rate and cash flow, aiming at a better understanding of the payment of dividends in the Brazilian electric sector.

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