MERGERS AND ACQUISITIONS: SHORT AND LONG TERM IMPACT ON DIVIDEND POLICY

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ABSTRACT

In this study, we analyze the influence of Mergers and Acquisitions (M&A) transactions on the dividend policies of companies listed on the Brazilian B3 stock exchange in the short and long term, from 2005 to 2020. We collected financial data in the Economática® and Thomson Reuters® databases. The research sample consists of 124 non-financial companies which were acquirers in the mergers. We carried out the analyzes using multiple regressions, with unbalanced panel data using the Generalized Method of Moments and estimation of the Hausman-Taylor model. The results showed that M&A can positively influence income (dividend yield) and the amount distributed to investors (dividends paid) one year after the occurrence of the mergers. We also identified the relevance of sector similarity between the merged companies and the experience of the bidding companies in previous M&A transactions when analyzing long-term results. The findings highlight the need for companies to reorganize themselves after undergoing M&A transactions until they can once again remunerate their shareholders through dividend distribution. This study contributes to the literature by discussing the creation of value for shareholders regarding the influence of M&A on dividend policy, highlighting the relevance of analyzes in the short and long term. For the capital market, this research demonstrates the importance of companies in balancing decisions aimed at business growth while still serving their shareholders through dividend distribution.

Keywords: Mergers and acquisitions; Dividend policy; Growth opportunity.

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FUSÕES E AQUISIÇÕES: IMPACTO DE CURTO E LONGO PRAZO NA POLÍTICA DE DIVIDENDOS

RESUMO

No presente estudo é analisada a influência dos processos de Fusões e Aquisições (F&A) nas políticas de dividendos das companhias listadas na Brasil, Bolsa, Balcão S/A (B3) no curto e no longo prazo, no período de 2005 a 2020. Os dados financeiros foram coletados nos bancos de dados Economática® e Thomson Reuters®, sendo a amostra da pesquisa composta por 124 empresas não financeiras, adquirentes nos processos. As análises foram realizadas partindo de regressões múltiplas, com dados em painel desbalanceado pelo Método dos Momentos Generalizados, com estimação do modelo de Hausman-Taylor. Os resultados evidenciaram que as F&A podem influenciar positivamente o rendimento (Dividend yield) e o montante distribuído aos investidores (Dividendos pagos) um ano após a ocorrência dos processos, sendo também identificada a relevância similaridade de setores entre as firmas combinadas e da experiência das adquirentes em F&A anteriores ao se analisar os resultados no longo prazo. Os achados da pesquisa ressaltam a necessidade das empresas em se reorganizarem após passarem por processos de F&A até que possam novamente remunerar seus acionistas a partir da distribuição de dividendos. Este estudo contribui com a literatura ao adicionar o debate referente à criação de valor aos acionistas no que tange a influência das F&A na Política de Dividendos, evidenciando a relevância de análises no curto e no longo prazo. Para o mercado de capitais, esta pesquisa demonstra a importância das firmas em equilibrar as decisões que visam o crescimento empresarial sem deixar de atender seus acionistas, a partir da distribuição de dividendos.

Palavras-Chave: Fusões e aquisições; Política de dividendos; Oportunidade de crescimento.

1 INTRODUCTION

Considering the merger of companies operating in the capital market demonstrating their intentions to users of financial information, the dividend policy emerges as an instrument for communicating the financial situation to the capital market (Letaifa, 2016). Among the determining factors of dividend policies, such as profitability, size, and debt, growth opportunities are considered relevant investment decisions, considering that they can represent an increase in distribution through an increase in future results after investment operations (Forti & Freitas, 2020; Galvão et al., 2019; Leite et al., 2017; Silva et al., 2019).

As such, in addition to representing a significant growth opportunity for acquiring and/or bidding companies (which is a unit of analysis in this study) M&A transactions constitute a reconfiguration of the companies involved in the merger (Dereeper & Turki, 2016). There are several reasons why institutions choose M&A as an investment strategy, such as accelerated business growth, cost reductions (economies of scale), and increased sales revenue (Rabier, 2017). Literature also shows criteria such as maximizing shareholder wealth, reach other markets, and cash flow diversification (Angwin & Meadows, 2015). Therefore, Glambosky et al.

(2020) highlight that companies that usually distribute dividends are incentivized to make decisions that seek improvements in post-M&A returns, such as searching for new markets and increased results.

Agency theory can support both research that addresses dividend policy and studies that analyze M&A transaction, considering that both mechanisms can function to reduce agency costs (Dereeper & Turki, 2016; Glambosky et al., 2020). Regarding agency costs arising from the divergence between agents and principals' objectives, Benston (1980) maintains that one of the motivations for firms to seek M&A as a form of investment is because it can represent an alternative to increasing distribution of dividends, as acquirers use M&A to increase their results. This contributes to the adjustment of these objectives, especially in the long term, aligning the expectations of different stakeholders.

Research addresses the relationship between M&A and dividend policies, considering the behavior of firms' dividend policies after the M&A transaction (Dereeper & Turki, 2016); analyzing factors that affect the dividend distribution of companies that carried out the merger (Kaprielyan & Brady, 2018); observing the performance of M&A transactions and the distribution of dividends (Glambosky et al., 2020); and considering M&A as a way to acquire stability and better serve the market through dividend distribution (Cortés et al., 2017; Dereeper & Turki, 2016; Letaifa, 2016; Udeh & Igwe, 2013; Ye & Zhang, 2017). Considering the peculiarities of the Brazilian context, the studies by Bortoluzzo et al. (2014) and Vieira et al. (2017) highlight the effects and performance of M&A on the market, focusing on these mergers' return to shareholders.

Regarding the dividend policy and its role in defining shareholder wealth, and considering the M&A transaction as a growth strategy for the acquiring company, which allows for a better distribution of results, it is believed that analyzing M&A as a growth option for firms is relevant to better predict returns for investors. Based on previous research, such as Dereeper and Turki (2016), Cortés et al. (2017) and Glambosky et al. (2020), a supported argument is that increasing dividends after M&A causes companies to signal to the market that the action was successful.

Considering this scenario, the following question emerges. What is the influence of Mergers and Acquisitions (M&A) transactions on the dividend policies of companies listed on the Brazilian B3 stock exchange in the short and long term? Therefore, this study aims to analyze the influence of M&A transactions on the dividend policies of companies listed on the Brazilian B3 stock exchange in the short and long term. This research differs from others carried out previously in that it attempts to fill the existing literature gap regarding the analysis of M&A transactions in dividend policy in different dimensions of post-merger periods (short and long term).

Regarding its social impact, this research aims to help shareholders diagnose the potential impacts of M&A on the dividend policy after the M&A transactions have occurred. For the market in general, the approach is justified considering the relevance of M&A as a form of investment used to achieve growth goals and increase company value (Verma & Sharma, 2017). As such, Bortoluzzo et al. (2014) analyzed M&A transactions in the Brazilian context and identified that due to management aspects, positive results can be observed in the long term

considering the nature of the investment. A study carried out on M&A stands out, which found that Brazilian companies which went through M&A transactions between 1995 and 2016, achieved an 18% increase per year in returns to shareholders (Grupo BLB Brasil, 2017).

In the academic arena, this research is relevant as it considers that both dividend policies and M&A are fundamental aspects for organizations (Alexandridis et al., 2017). Understanding is still limited on greater returns to shareholders through the results of M&A (Maas et al., 2019). Other aspects that require analysis in theoretical and empirical terms are highlighted, such as the scarcity of studies that consider both the benefits of M&A for companies as well as the forms of return to shareholders through the dividend policy, in addition to the temporal contexts of post-M&A returns (Rouzies et al., 2019). In the Brazilian context, Bortoluzzo et al. (2014) and Vieira et al. (2017) emphasize that even though the Brazilian market presents economic and structural peculiarities, the opportunity to evaluate the impact of M&A operations on the response to shareholders is present mainly when analyzing the temporal nuances of investments and the return to shareholders.

Therefore, this study analyzes Brazilian M&A from a market perspective, considering that, among the reasons why companies choose to merge or acquire others, the transactions analyzed in the researched period presented positive results in the dividend policy, incurring better shareholder remuneration approximately one year after the M&A transaction. We intended to demonstrate what is highlighted by the literature and the market, underlining the need for investors to evaluate the influence of M&A transactions on the dividend policy of acquiring Brazilian companies in the long term.

2 THEORETICAL REFERENCE

We highlight two classic theories as they appear in the literature among the different theoretical contributions that underlie the dividend policy. The first one observes the irrelevance of dividends for companies' values, in which Miller and Modigliani (1961) studied the effects of dividend policies on the value of company shares, starting from a perfect capital market and considering the absence of conflicts or information asymmetry. As a direct counterpoint to the concept of dividends irrelevance, the relevance theory defended by Lintner (1956) and Gordon (1959) supports the relationship between the distribution of dividends and the increase in shareholder wealth according to the value of shares.

Also defending the relevance of dividends, Jensen and Meckling (1976) assumed the existence of conflicts between companies and investors, arising from the informational asymmetry that is inherent to the market, considering companies as sets of contracts signed between related parties—principals (investors) and agents (managers). When considering the informational asymmetry between principals and agents, as asserted by the agency theory, the dividend policy can be an important communication tool between shareholders and companies, in addition to guiding decision makers' actions regarding the use of company resources in investment policies that require large capital contributions (Dereeper & Turki, 2016; Leite et al., 2017) as occurs in M&A.

When successful, these allow companies to better reward shareholders and potential investors through synergy resulting from the relationship between participating firms, which is reflected in business efficiency (Seth, 1990). Therefore, the connection between dividend policies and M&A occurs when managers who go through M&A transactions demonstrate to the market their intention to grow without compromising the distribution of dividends to shareholders. It reduces the agency costs recommended by agency theory (Dereeper & Turky, 2016).

The relationship between dividend policy and its determining factors is observed from different perspectives in the global literature. Regarding the determination of the dividend policy, such as amount, status, frequency, and yield, growth opportunities can represent negative effects due to the retention of resources to enable large investments, such as M&A, or positive effects on the distribution of dividends. However, the literature also indicates that M&A opportunities that add value to companies help business growth and contribute to maintaining dividend payments. Overall, M&A announcements can have positive effects in the long term, especially in dividend-paying firms, as these seek external funds in order to maintain returns for shareholders (Letaifa, 2016).

Studies highlights different aspects of the influence of growth processes, especially M&A, on dividend distribution. Udeh and Igwe (2013) analyzed whether M&A significantly impacts the return on invested capital and dividends per share of acquiring Nigerian companies. When analyzing a period of 10 years previous and 10 years after the M&A, the authors identified that the synergy created by the M&A positively influenced the cash flow of the participating companies, positively impacting the well-being of shareholders and increasing distributed dividends.

In the Brazilian market, Bortoluzzo et al. (2014) carried out a research regarding the theory of value creation, which indicates that acquisition implies a positive effect on companies' performance, supported by the synergy hypothesis. Therefore, they analyzed the financial performance of Brazilian firms that carried out M&A operations with companies from other countries. They identified that international M&A improves the performance of participating companies and that positive results can be observed in the long term due to the management aspect.

Dereeper & Turki (2016) assessed whether the dividend policy of the merged or acquired company impacts the dividend policy after the M&A transaction of American public companies. The results are similar to those of Letaifa (2016), who investigated the dividend policy before and after the merger between two companies in the pharmaceutical sector in 2006, and observed an adjustment in order to meet the expectations of the target company's shareholders. They analyzed 815 mergers between 1985 and 2009, considering the following dividend policy metrics: dividend distribution status, payout index and yield. The authors identified that the target company's dividend policy affects the policy designed for the merged company, which is a strategy for managers to comply with the acquired company's shareholders.

According to Hasan et al. (2017), the role of M&A is encouraging for long-term reforms, such as restructuring, asset reallocation, and wealth growth. The authors collected information from 176 agreements between 2004 and 2015 with acquiring companies operating in Malaysia, intending to observe the effect of M&A on long term shareholder wealth. The research unveiled the performance of

international operations, analyzing abnormal returns in the short (one year post-M&A) and long term (two and three years after the transaction). They identified that the acquirers created value for shareholders in the long term by analyzing the abnormal return weighted by the value of the operation, demonstrating that the effects are different for bidding companies that operate in different sectors.

With the aim of analyzing surges of M&A in Latin countries, such as Argentina, Brazil, Chile, Colombia, Mexico, and Peru, Cortés et al. (2017) researched 2.391 M&A announcements. In their analyses, the authors observed two major waves, one from 1995 to 2002, and another from 2003 to 2010, which are also consistent with waves identified in the American, English, European, and Asian markets. The research results demonstrate that, just as in developed markets, the motivations for M&A activities in Latin countries corroborate the precepts championed by the neoclassical theory of mergers, suggesting that firms carry out mergings seeking to reorganize available assets, increase their efficiency, and meet shareholder expectations.

Amewu and Alagide (2018) contribute to the discussion analyzing M&A announcements in emerging markets in Africa. According to the authors, the literature corroborates that the target company's shareholders benefit from the M&A transaction. Their objective was to assess whether it is possible to observe this phenomenon in emerging markets. The sample included M&A transactions occurred in African countries from 2002 to 2015. Share price and distributed dividends were considered as returns to shareholders. The research results indicate that the African market reacts positively to M&A announcements, considering that investors are influenced by the size of companies. These results reiterate the literature findings in other developed markets, such as Letaifa (2016), Dereeper and Turki (2016), and Ye and Zhang (2017). it is also suggested by Amewu and Alagide (2018) that these findings be extended to other emerging markets.

Extending Dereeper and Turki's (2016) research on the role of the bidding company and the target company's dividend policies, Kaprielyan and Brady (2018) analyzed M&A transactions that occurred in different countries. The main findings indicate that transactions around the world are different from those occurring in the American market, as demonstrated by Dereeper and Turki (2016). The results of Kaprielyan and Brady (2018) indicate that the benefit identified by the market is greater when the acquiring company originates from a country with greater shareholder protection. Also, as demonstrated by Amewu and Alagide (2018), Kaprielyan and Brady (2018), operations have a higher return when carried out in cash compared to those carried out with stocks and asset transfers as a form of payment. However, unlike the study by Letaifa (2016), the research identified that the dividend policy of the merged company is more related to the policy of the bidding company than to that of the target company before the operation.

Glambosky et al. (2020) analyzed whether the acquiring company's dividend policy informs the investors about the quality of its proposals. 1.844 M&A carried out by American domestic companies from 1985 to 2014 were analyzed. The findings confirmed the assumptions of agency theory. The authors observed that dividend payment serves to reassure investors that managers seek M&A transactions that are profitable and generate returns for shareholders soon after the transaction occurs.

Based on the assumption that firms opt for M&A as a way to acquire stability and better serve the market (Letaifa, 2016; Dereeper & Turki, 2016; Cortés et al., 2017; Udeh & Igwe, 2013; Ye & Zhang, 2017), previous studies also demonstrate that operations carried out in cash as a form of payment obtain greater returns for investors (Kaprielyan & Brady, 2018; Glambosky et al., 2020) in the short term—about a year after the mergers occur. Therefore, even though growth opportunities possibly results in a reduction in the dividend distribution due to the contribution necessary for the transaction, the ultimate goal of companies opting for M&A is increasing distribution of dividends in the short term (Kaprielyan & Brady, 2018). As such, dividend policy is apparently influenced by the M&A transactions as long as it has a greater return for the shareholders of the acquiring and/or bidding company in the year in which the M&A takes place (Amewu & Alagide, 2018; Udeh & Igwe , 2013). In this context, we listed Hypothesis 1 (H1) of this research.

H_1: M&A transactions positively influence the dividend policy in the short term.

Among the various motivations that lead a company to undergo M&A transactions, this research focuses on analyzing the motivation of Brazilian companies to undergo M&A with the goal of better rewarding shareholders. Empirically, it is expected that M&A will influence the dividend policy (this research's dependent variable) through an increase in shareholder returns. The literature presents different proxies to represent the dividend policy (Dereeper & Turki, 2016; Forti & Freitas, 2020; Glambosky et al., 2020; Kaprielyan & Brady, 2018; Leite et al., 2017; Silva et al., 2019). In this study, we considered the payment of dividends to shareholders (dividends paid variable: DIVPAG), dividend distribution index (payout index, represented by PAYOUT), dividend yield (DIVYIELD) and the earnings distribution rate (represented by TXDIV).

The relationship between the dividend policy and M&A transactions is expected to present statistical significance, as identified by Udeh and Igwe (2013), Dereeper and Turki (2016), Cortés et al., (2017), and Ye and Zhang (2017). This behavior is expected concerning the assumption of agency theory regarding the companies' goal of better meet the needs of minority shareholders, considering that an increase in their results can encourage managers to pay more dividends, acting as a reducing agency costs between the company and its investors (Kaprielyan & Brady, 2018; Glambosky et al., 2020).

Angwin (2007) also identified positive performance in the periods following M&A. Their research infers that the transactions created long-term value for the companies resulting from the business merger. Other studies have shown that companies that are more experienced in M&A transactions have better long term financial performance (Hu et al., 2020). As a possible explanation for the findings of previous research, Bortoluzzo et al. (2014) and Vieira et al. (2017) highlight that companies results may require medium and long-term periods to be observed, considering the magnitude of M&A transactions and the required company reconstruction.

Regarding the impact on shareholder wealth, Rahman and Lambkin (2015), Miglietta et al. (2018), and Ibrahimi & Meghouar (2019) indicate that the influence of M&A on dividend distribution is observed in the long term due to the increase in

revenue from synergies created in the processes. In the meantime, Akpan et al. (2020) summarize the relationship between value creation for companies participating in mergers and the allocation of resources to shareholders. The authors argue that shareholder value is created in the short term due to the increase in share prices. However, the results develop over the years following the merger and can possibly be observed with the distribution of dividends in the long term. That said, we present Hypothesis 2 (H_2) of this study.

H_2: the impact of M&A on dividend policy is positive throughout the periods following the merger.

As such, we expected to observe the influence of M&A on the distribution of dividends in the long term based on statistical significance over the years following the merger. In this research, the long-term temporal aspect was analyzed up to three years after the M&A transactions. These periods were measured in quarters, as developed in the work of Vieira et al. (2017). According to the authors, the need to evaluate the M&A response time in the dividend policy is relevant given the cultural changes that occur within the companies that go through the merger, as it takes time for synergies to emerge between the merged companies so that the investment can be converted into results that are passed on to investors. Other research reiterates that relationships can be observed in the long term considering the increase in revenue from synergies, as identified by Rahman and Lambkin (2015), Miglietta et al. (2018), Ibrahimi & Meghouar (2019), and Akpan et al. (2020).

3 METHODOLOGICAL PROCEDURES

The population of this study covers all publicly traded companies listed in the different economic sectors of the Brazilian B3 stock exchange, from 2005 to 2020, limited to those with information available in the Economática® database. Although data collection from 2010 onwards presents greater uniformity in the statements resulting from adherence to international accounting standards (Van Tendeloo & Vanstraelen, 2005), we justify starting data collection for this study in 2005 intent on observing phenomena relevant to market movements caused by the sixth wave of M&A, which began in 2003 went through the 2008 crisis and continues to the present day. The years 2007 and 2008 were marked by a 51% increase in operations, compared to 2006 (ANBIMA, 2011).

The sample was composed in a non-probabilistic way, considering companies that participated in horizontal M&A transactions from 2005 to 2020 and acted as M&A acquirers and/or bidders, defined as a institution that acquired control of one or more companies, according to CPC 15 (2011). Therefore, the research analysis units represent companies *i* (acquirers and/or bidders). Table 1 demonstrates the composition of the research sample.

Table 1
Research Sample Composition

Criterion	Population (P)	Sample (A)
Companies active on B3 [a]		**448**
(-) Companies unavailable on Economática®		66
Population	**100%**	**382**
(-) Companies in the "Financial" sector	15.71%	(60)
(-) Companies with inconsistent data for calculating dependent variables	21.47%	(82)
Companies without information on dividends paid	*2.62%*	*(10)*
Companies without information on dividends per share	*18.32%*	*(70)*
Companies without information on dividend yield	*0.52%*	*(2)*
Preliminary analysis	**63%**	**240**
(-) Companies that did not undergo M&A from 2005 to 2020	28.27%	(108)
(-) Companies with less than 4 years of information[b]	2.09%	(8)
Final sample	**32.46%**	**124**

Note. (a) As available in "Listed companies" on the B3 website (http://www.b3.com.br) on 03/01/2021. (b) Companies with less than 4 years of information were disregarded in order to ensure the consistency of the coefficients estimated from the econometric models used.
Source: Authors.

As shown in Table 1, we chose to analyze companies that underwent M&A in the studied period following the methodology used in other international studies, such as Dereeper and Turky (2016), and Kaprielyan and Brady (2018). This selection is also used in studies which analyze other emerging countries besides Brazil, such as Cortés et al. (2017) and in research that considers Brazilian companies, such as Bortoluzzo et al. (2014), and Camargos & Barbosa (2009). Companies that underwent M&A were identified based on the SDC, available from Thomson Reuters®. Figure 1 shows the occurrence of M&A that occurred between 2005 and 2020.

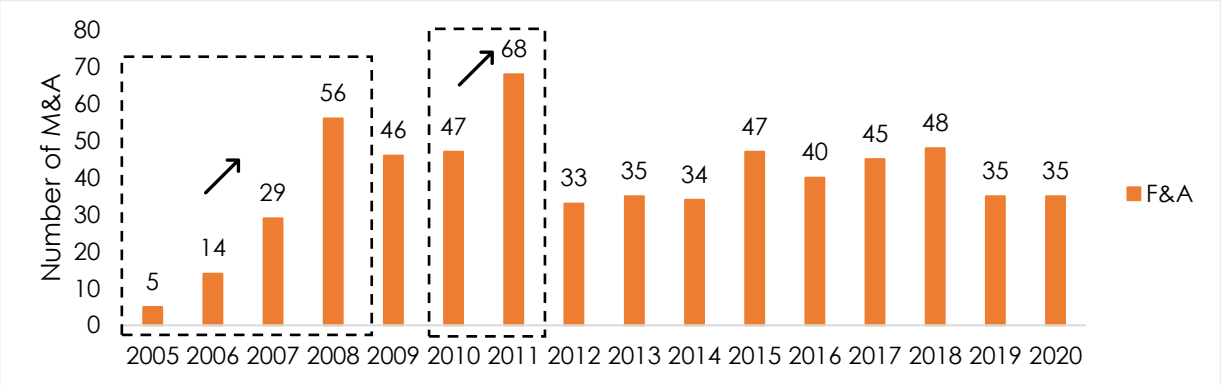

Figure 1 – Occurrence of M&A transactions in the period from 2005 to 2020.
Source: Authors.

The graph presented in Figure 1 shows that public companies went through 617 M&A transactions as acquirers of operations in the period from 2005 to 2020. We observed a significant increase in M&A mergers over the years 2005 to 2008, and then another increase between 2010 and 2011; these were the most representative periods. Due to this behavior throughout the periods shown in Figure 1, it is justified to collect information starting in 2005. This enables analyzing periods in which there was a greater incidence of M&A transactions in the Brazilian market. Also from the graph, it can be inferred that periods during and after financial crises

(represented by the period from 2007 to 2008 in this study) explain the increase in M&A processes, knowing that firms in good standing take the opportunity to acquire others with greater economic weaknesses. It can also be understood that companies with financial issues set precedents for being acquired, thus avoiding their extinction (Reddy et al., 2014).

In order to analyze the influence of M&A on dividend policy, the following were considered as dependent variables: DIVPAG, which represents the amount and regularity of dividends distributed in thousands of dollars, divided by total assets; distribution status, represented by the PAYOUT index, measured by the relationship between dividends paid and net profit; DIVYIELD, which shows the return that shareholders received in dividends, measured by the relationship between dividends and the price per share; TXDIV, related to earnings per share, proving the return of dividends on the result obtained by the acquiring companies (Alves et al ., 2018; Dereeper & Turky, 2016; Galvão et al., 2019; Kaprielyan & Brady, 2018; Leite et al., 2017; Silva et al., 2019).

The factors that positively influence the dividend policy size are as follows: size (TAM) and AGE, represented respectively by the natural logarithm of total assets and the number of the firm's years of existence, as according to Forti et al. (2015), the larger and more mature a company is, the more accessible they become to the market and thus, have a greater capacity to pay dividends. Profit growth (CRESCL: [(Net profit t-Net profit t-1)/Net profit t-1]) and returns (RENT: (Operating profit/Total assets)) are also indicated as incentives for dividend distribution given that, according to the signaling theory, more profitable companies tend to pay higher dividends (Alves et al., 2018; Galvão et al., 2019). The market to book (MKB) and liquidity (LIQ: (Current assets/Current liabilities)) indicate companies that present higher liquidity, positively impacting dividend distribution.

In addition, the following were considered: liquidity squared (LIQ2) and total debt (ENDIV: Total liabilities/Net equity), which tend to negatively influence the dividend policy, considering that companies with higher levels of debt tend to retain resources to cover their needs to the detriment of dividend distribution (Alves et al., 2018; Al-Najjar, 2009; Galvão et al., 2019; Kaprielyan & Brady, 2018). All quantitative variables used in this research were measured in US Dollars.

M&A transactions are represented by binary variables in which 1 represents the occurrence of the transaction in the quarter, and zero otherwise. We expect this process to positively impact dividend policy, given the companies' objective of better serving the market with greater dividend distributions (Amewu & Alagide, 2018; Dereeper & Turki, 2016). Furthermore, we also analyzed the similarity of the activity sector (SIM_SETOR), represented by 1 when the firms are from similar sectors and zero otherwise, and experience in previous M&A transactions (EXP)—equal to 1 if the acquiring company participated in more than one M&A transaction in the period from 2005 to 2020, and 0 otherwise. These represent M&A quality measures that contribute to M&A transactions occurring successfully. For this reason, we expected they will positively impact the return to shareholders concerning the dividend policy (Bomfim & Callado, 2016).

The control variable are as follow: sales growth (CRESCV: [(Revenue t - Revenue t-1)/Revenue t-1]; SECTOR (dummy equal to 1 in the sector of activity and

0 otherwise), and CRISIS (dummy equal to 1 in the financial crisis period [2007 and 2008] and 0 otherwise). The National Bureau of Economic Research (NBER) defines a recession as the period between a peak in economic activity and the subsequent decline. According to Reddy et al. (2014), the 2007-2008 financial crisis significantly affected posterior M&A transactions, with an increase in transactions being observed during the crisis period due to the fact that companies experiencing financial difficulties were more likely to be acquired. As a form of control, we also considered variables for Brazil's adoption of international standards (IFRS: dummy equal to 1 in the period from 2005 to 2010, pre-adoption, and 0 otherwise, post-adoption) and for the the COVID-19 Pandemic that began in 2020 (COVID: dummy equal to 1 for the year 2020, and 0 otherwise).

Regarding data regression, we began the analyzes observing the determining factors of the dividend policy, considering as an independent variable of interest the factor related to growth opportunity represented by M&A (Al-Najjar, 2009). The data were analyzed on a quarterly basis, considering that the dividend distribution, as well as the occurrence of M&A transactions are not restricted to the end of the calendar year; these occur when decision makers consider it to be favorable for the company (Vancin & Procianoy, 2016). Furthermore, we opted for a quarterly periodicity for data collection and analysis considering the complexity of M&A transactions in the market in general, seeking to derive greater sensitivity of the relationships between the dividend policy and M&A.

Therefore, to test H_1 that "M&A transactions positively influence the dividend policy in the short term", we drew Equation (1).

$$DIV_{it} = + \beta 1(FDIV_{it}) + \beta 2(F\&A_{it}) + \beta 3(Control_{it}) + \varepsilon_{it} \quad (1)$$

In which: DIV_{it} = dividend policy of company i in the quarter t; $FDIV_{it}$ = determining factors of company i's dividend policy in the quarter t; $F\&A_{it}$ = M&A characteristic variables related to company i in the quarter t; $Control_{it}$ = control variables of company i in the quarter t. Furthermore, i represents the company, and t represents the quarters.

In order to observe the behavior of the relationship between dividend policy and M&A over time, to meet H_2: "the impact of M&A on dividend policy is positive throughout the periods following the merger", Equation (2) relates the same variables presented in Equation (1), allowing us to observe the temporal aspect of the M&A transactions on the dividend policy, in which M&A was treated using lags distributed over the period t-k, where k represent the quarters (t-4, t-8, t-12), representing 1, 2, and 3 years of lag, respectively.

$$DIV_{it} = + \beta_1(FDIV_{it}) + \beta_2(F\&A_i)_{t-k} + \beta_3(Control_{it}) + \varepsilon_{it} \quad (2)$$

From Equations (1) and (2), we expected that the determining factors are statistically significant in explaining the behavior of the dividend policy, with positive signs for the variables TAM, CRESCL, RENT, MKB, LIQ, and AGE. Furthermore, we expected that LIQ2 and ENDIV may negatively influence dividend policy prediction, as evidenced in several studies (Al-Najjar, 2009; Forti et al., 2015; Galvão et al., 2019). Concerning the M&A, SIM_SETOR, and EXP variables, we expected that these will positively impact the dividend policy in the short term (Equation (1)) and throughout the periods following the M&A transaction (Equation (2)),

considering the resources uses for the merger (Bortoluzzo et al., 2014; Hu et al., 2020).

We initially analyzed the data using Spearman's correlation considering the non-parametric characteristic of the information (which presented a non-normal distribution based on the Shapiro-Wilk test). These were later analyzed using multiple linear regressions in Generalized Method of Moments (GMM) in an unbalanced panel.

To ensure the analyses' robustness, we carried out tests to identify the following questions: multicollinearity was tested using the Variance Inflation Factor (VIF) test, as shown in Table 2.

Table 2
VIF test to evaluate Multicollinearity

Variable	LIQ	LIQ^2	TAM	RENT	AGE	CRESCV	CRESCL	ENDIV	MKB	Average VIF
VIF	2.24	2.21	1.03	1.02	1.00	1.00	1.00	1.00	1.00	1.28
1/VIF	0.4472	0.4526	0.9697	0.9777	0.9964	0.9972	0.9983	0.9986	0.9992	

Note. VIF = Variance Inflation Factor. Interpretation: If VIF greater than 10 for a given variable, it can be said to be highly collinear.
Source: Authors.

From Table 2, we observe that the highest multicollinearity indexes (VIF) resulted in 2.24 for the LIQ variable, and 2.21 for LIQ2. This arises from the relationship between the variables, given that squared liquidity shows a quadratic relationship with the dividend policy. This shows a possible reduction in earnings distribution based on the companies' liquidity behavior (Alves et al., 2018). As such, although it is measured using LIQ, as it does not present similar behavior and does not characterize multicollinearity. Autocorrelation was tested using the Wooldridge test. The hypothesis that there is autocorrelation between the variables was not accepted. We performed the Breush-Pagan test, Wald panel test, and White test to verify heteroscedasticity. The data are heteroscedastic. Thus, it is necessary to evaluate the regression residuals using robust tests.

We considered the existence of endogenous variables in order to guarantee the robustness of the research results, which are recurrent in finance studies due to the fact that the information is generated within the institutions and may present relationships (Forti & Freitas, 2020). Therefore, we carried out the regressions using the Hausman-Taylor (HT) estimator, which is appropriate considering it is based on unbiased estimators of instrumental variables.

4 RESULT ANALYSIS AND DISCUSSION

The variables were treated with statistical methods, which allowed us to analyze the relationships between dividend policies and M&A transactions. The proxies summarized in Section 3 of this paper were initially treated aiming to reduce the influence of atypical observations on the results (i.e. presence of outliers). To this end, the continuous variables were winsorized at 1%. Variables represented by the natural logarithm and dummy variables did not receive this treatment.

Thus, Table 3 shows the descriptive statistics of the research variables before and after the 1% winsorization treatment.

Table 3
Descriptive Statistics of Research Variables

		Variables without winsorization treatment					Winsorized variables at 1%				
Variable	**Note**	**Minimum**	**Maximum**	**Average**	**Median**	**Standard deviation**	**Minimum**	**Maximum**	**Average**	**Median**	**Standard deviation**
DIVPAG	5859	0.000	0.441	0.007	0.000	0.016	0.000	0.069	0.006	0.000	0.013
PAYOUT	5858	0.000	11,882	2.651	-	155.36	0.000	6.609	0.405	0.000	0.987
DIVYIELD	5859	0.000	78.749	3.02	1.853	4.163	0.000	18.29	2.936	1.853	3.579
TXDIV	5858	0.000	41,616	9.641	0.828	544.03	0.000	27.577	1.876	0.828	3.678
TAM	5859	8.332	19.711	14.213	14.155	1.614	8.332	19.711	14.213	14.155	1.614
AGE	5839	0.000	4.727	3.328	3.555	0.885	0.000	4.727	3.328	3.555	0.885
CRESCL	5857	-2,592	13,396	1.827	-0.149	189.98	-34.23	21.088	-0.367	-0.149	5.288
RENT	5859	-1.024	2.41	0.018	0.018	0.052	-0.092	0.091	0.018	0.018	0.027
MKB	5858	-50,077	1.482.03	334.84	39.182	19,441	-729.28	1392.17	62.959	39.182	210.9
LIQ	5859	0.024	85.883	1.958	1.675	1.967	0.196	7.701	1.9	1.675	1.208
LIQ^2	5859	0.001	7,375.96	7.703	2.807	102.16	0.038	59.309	5.068	2.807	8.27
ENDIV	5859	-749.18	740.313	1.863	1.259	18.8	-16.54	24.444	1.797	1.259	4.155
CRESCV	5769	-1	1,296.48	0.4	0.01	17.191	-0.89	3.649	0.095	0.01	0.591

Note. Values expressed in thousands of US Dollars (USD).
Source: Authors.

Regarding the variables representing the dividend policy, we observed in Table 3 that DIVPAG, PAYOUT, DIVYIELD, and TXDIV present relatively high standard deviations, higher than their averages, which demonstrates a high level of data dispersion. The behaviors of the dividend variables were identified by Alves et al. (2018), who highlighted that the asymmetric and dispersed characteristic of the observations corroborates the difference between companies that operate even within the same sectors, considering that there some distribute many dividends and others choose not to distribute them.

Regarding the determining factors of the dividend policy, TAM, AGE, and LIQ present means greater than their standard deviation. This indicates that the values are less dispersed around the mean of the distributions, different from what was identified in CRESCL, RENT, MKB, LIQ2, and ENDIV. These variables, in turn, showed similar behavior to that identified in the dependent variables, presenting a standard deviation greater than the average and higher data dispersion. This may indicate that the sample companies present different characteristics of results, liquidity, profitability, and debt.

Table 4 presents the Spearman correlation (non-parametric, considering the non-normal distribution of the data) between the dividend variables, determining factors of the dividend policy and M&A.

Table 4
Spearman correlation matrix of research variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DIVPAG(1)	1															
PAYOUT(2)	0.901*	1														
DIVYIELD(3)	0.494*	0.469*	1													
TXDIV(4)	0.486*	0.616*	0.730*	1												
TAM(5)	0.180*	0.186*	0.175*	0.172*	1											
AGE(6)	0.085*	0,077*	0.027	0.026	-0,060*	1										
CRESCL(7)	0.127*	0.152*	0.095*	0.102*	0.028	0.007	1									
RENT(8)	0.382*	0.411*	0.359*	0.424*	0.123*	-0.015	0.266*	1								
MKB(9)	0.252*	0.435*	0.188*	0.656*	0.134*	0.032	0.030	0.316*	1							
LIQ(10)	0.174*	0.167*	0.212*	0.225*	-0.081*	0.000	0.060*	0.107*	0.193*	1						
LIQ²(11)	0.174*	0.170*	0.212*	0.225*	-0.081*	0.000	0.060*	0.107*	0.193*	1.000*	1					
ENDIV(12)	-0.092*	-0.075*	-0.058*	-0.098*	0.331*	-0.032	-0.077*	-0.087*	-0.066*	-0.289*	-0.289*	1				
M&A(13)	0.026	0.026	0.048*	0.043*	0.106*	-0.042*	0.014	0.048*	0.055*	0.049*	0.049*	0.016	1			
SIM_SETOR(14)	0.018	0.022	0.047*	0.044*	0.065*	-0.063*	0.016	0.039*	0.050*	0.064*	0.064*	0.006	0.804*	1		
EXP(15)	0.016	0.014	0.021	0.027	0.072*	-0.014	0.002	0.042*	0.043*	0.019	0.019	-0.003	0.455*	0.332*	1	
CRESCV(16)	0.065*	0.051*	-0.031	-0.052*	0.006	0.035*	0.146*	0.102*	-0.045*	-0.027	-0.027	0.006	-0.023	-0.035*	-0.013	1

Note. *statistically significant at 1%.
Source: Authors.

Table 4 highlights that among the dividend variables and their determining factors, the highest degrees of positive linear correlation occur between the dividend variables (DIVPAG, PAYOUT, DIVYIELD, and TXDIV), MKB, and RENT, all of which are statistically significant at 1%. We observe greater strength between MKB and TXDIV, equal to +0.656, considering that both measurements express market movements (market value and dividends per share). Another relationship that showed greater strength refers to RENT and TXDIV (equal to +0.424). This can be explained by the evidence that companies with higher profitability indexes may present greater dividend distributions.

Regarding the other determining factors of the dividend policy, TAM, AGE, CRESCL, RENT, MKB, and LIQ presented positive correlation coefficients, as initially indicated in the literature (Al-Najjar, 2009; Galvão et al., 2019). Furthermore, ENDIV, as underlined by Forti et al. (2015), showed a negative correlation with the variables representing dividend distribution. However, behaving differently, LIQ2 does not show a negative sign. As such, it is not possible to observe the expected behavior that, at a given liquidity level, companies present an inflection point at which they reduce the dividend distribution to shareholders. As for the M&A variables, we observed positive correlations with the dependent variables, indicating that their growth occurs in the same direction despite showing weak correlations.

For the purpose of analyzing H_1 of this research: "M&A transactions positively influence the dividend policy in the short term", Table 5 shows the determinants of the dividend policy, considering M&A as growth opportunities.

Table 5
Relationship between dividend policy, its determining factors and M&A

Variables	(1) DIVPAG	Standard error	(2) PAYOUT	Standard error	(3) DIVYIELD	Standard error	(4) TXDIV	Standard error
TVexogenous								
MKB_{it}	0.00000	(0.000)	**0.00126*****	(0.000)	-0.00020	(0.000)	**0.00851*****	(0.000)
LIQ^2_{it}	0.00010	(0.000)	-0.00014	(0.006)	**-0.05742*****	(0.019)	**-0.05204*****	(0.020)
AGE_{it}	-0.00029	(0.000)	-0.02391	(0.027)	0.05482	(0.135)	0.16072	(0.117)
$M\&A_{it}$	0.00051	(0.001)	0.02625	(0.071)	0.04743	(0.219)	0.19612	(0.235)
SIM_SETOR_{it}	-0.00033	(0.001)	-0.05074	(0,081)	**0.46423***	(0.248)	-0.04624	(0.265)
EXP_{it}	0.0059	(0.001)	-0.01339	(0.090)	-0.32296	(0.276)	-0.39622	(0.296)
$CRESCV_{it}$	**0.00044***	(0.000)	0.00570	(0.021)	-0.04712	(0.063)	**-0.15065****	(0.068)
TVendogenous								
TAM_{it}	-0.00011	(0.000)	**0.04245****	(0.021)	0.10534	(0.082)	0.07104	(0.080)
$CRESCL_{it}$	0.00000	(0.000)	0.00005	(0.002)	-0.00370	(0.007)	-0.01056	(0.008)
$RENT_{it}$	**0.07099*****	(0.007)	-0.08374	(0.576)	**6.36466*****	(1.773)	**9.64005*****	(1.899)
LIQ_{it}	-0.00026	(0.001)	0.00762	(0.042)	**0.48393*****	(0.131)	**0.32185****	(0.139)
$ENDIV_{it}$	**-0.00008***	(0.000)	0.00072	(0.003)	-0.00912	(0.010)	**-0.01903***	(0.011)
TIexogenous								
$CRISE_t$	0.00076	(0.001)	0.00044	(0.060)	-0.13948	(0.184)	0.09246	(0,197)
$IFRS_t$	0.00043	(0.001)	-0.01116	(0.045)	0.03027	(0.146)	-0.06191	(0.152)
$COVID_t$	**-0.00272*****	(0.001)	**-0.13075*****	(0.049)	-0.19145	(0.152)	-0.01603	(0.162)
Constant	0.00568	(0.005)	-0.31697	(0.355)	-0.86549	(1.585)	-1.41643	(1.406)
Sectoral Control	Yes		Yes		Yes		Yes	
Observations	5.747		5.747		5.747		5.747	
Companies	124		124		124		124	
Pseudo-R-squared	0.17967		0.06817		0.32110		0.15696	
F-test	0.00000		0.00000		0.00000		0.00000	
Model	HT		HT		HT		HT	

Note. Models 1 to 4 estimated by Equation (1). ***, **, and * refer to significance at the 1%, 5%, and 10% level, respectively. TV = time varying, indicates variables that vary over time; TI = time-invariant, represents time-invariant variables; Endogenous = endogenous variables of the model according to the literature; Exogenous = exogenous variables of the model (sectoral control). HT = Hausman-Taylor. With the exception of binary variables, coefficients are represented in thousands of US Dollars (USD). Values in parentheses show the standard error. *it* = Company i in period t (quarter).
Source: Authors.

As shown in Table 5, all estimates carried out by Equation (1) (models 1 to 4) were estimated using the HT method. This makes it possible to observe that the independent variables are efficient in predicting the behavior of the dependent variables, according to the 1% significance evidenced by the F-test of global significance.

As for Pseudo-R-squared, we observed that DIVYIELD (model 3), DIVPAG (model 1), and TXDVI (model 4) present higher coefficients (0.3211 and 0.17967, respectively). This allows us to infer that the effect of $M\&A_{it}$ on dividend policy can best be observed by the return to shareholders (DIVYIELD) and the amount (regularity) in which the proceeds are distributed, based on DIVPAG. There is no individual statistical significance regarding the influence of M&A in the dividend policy (analyzed using the t test). Therefore, it is not possible to infer about the relationship between them, different from what indicated by others studies, such as Cortés et al. (2017), and Dereeper and Turki (2016).

Based on the behavior of SIM_SETOR_{it}, we observed a result similar to what is expected in the when investigating DIVYIELD (presents statistical significance at 10%). This may indicate a tendency that when M&A occurs between companies

that operate in the same sector, they may present around USD 0.464 (on average) increase in the return of dividends to shareholders after the transaction. Literature indicates that value creation mechanisms are maximized in cases where companies have similar sectors, as they favor synergies based on scale and scope efficiencies (Bomfim & Callado, 2016). It was not possible to infer any information about the experience (EXPit) of the companies in previous M&A transactions, considering that it did not present statistical significance in predicting the dividend policy.

Regarding the other determining factors of the dividend policy, the significance at 1% of MKBit stands out, which presented the expected behavior in PAYOUT (Model 2) and TXDIV (Model 4). Thus, we can infer that with each increase in MKBit, there is an increase of USD 0.001 in the merged company's PAYOUT, and USD 0.009 in the dividend return rate. From this result, we observed that this behavior is in line with those indicated by Lintner (1956), when highlighting that companies that distribute more dividends are well regarded by the market.

As for the liquidity variables, we observed that LIQit presented a positive and significant sign in predicting the behavior of DIVYIELD (1%) and TXDIV (5%). For every 1 dollar increase in the company's liquidity, there is an increase of USD 0.484 and USD 0.322 in the return to shareholders and the rate of distributed dividends. This confirms what is evidenced by Linter (1956), that companies with higher liquidity ratios have greater cash flows and distribute more dividends. The negative influence of LIQ^2it for DIVYIELD and TXDIV, significant at 1%, indicates that a reduction in the return to shareholders and the dividend distribution rate is observed with each increase in LIQ^2it, by USD 0.057 and USD 0.052, respectively. This behavior corroborates the non-linear behavior of dividend distribution, reaching an inflection point where the distribution starts to reduce as liquidity increases, as underlined by Forti et al. (2015).

Concerning $RENT_{it}$, it presented positive and significant coefficients at 1% in predicting DIVPAG, DIVYIELD, and TXDIV. This makes it impossible to infer about the PAYOUT index. From the results, we identified that with each increase in company profitability, the dividends paid are increased by USD 0.071, the distribution return by USD 6.365, and the average payment rate by USD 9.640. Such inferences are in line with what was identified by Alves et al. (2018), demonstrating the expected behavior that more profitable companies spend greater resources to finance growth processes without compromising dividends distribution.

Regarding business size (TAM_{it}), it presented statistical significance at 5%, indicating an increase of USD 0.042 in the status of distributed dividends in companies with larger total assets. This result corroborates those found by Forti et al. (2015), who state that larger companies have a greater capacity to sustain their activities without presenting a reduction in returns to investors.

The relationship between companies' $ENDIV_{it}$ and dividend policy confirmed the literature by predicting DIVPAG and TXDIV with a negative and significant sign at 10%. Despite low coefficients, indicating reductions of USD 0.000 in dividend distribution (DIVPAG) and USD 0.019 in the average dividend rate (TXDIV), the behavior of this variable corroborates what Dereeper and Turki (2016) and Galvão et al. (2019) demonstrate, highlighting that the higher the companies' total debt level, the lower the distribution of dividends and the average rate.

Furthermore, AGE_{it} and profit growth ($CRESCL_{it}$) did not present statistical significance, making it is impossible to infer about their influence on the dividend policy.

As for the behavior of sales growth ($CRESCV_{it}$), we consider it to control characteristics that are more directly related to the companies' operating sector, given that different activities present revenue records differently (Vancin & Procianoy, 2016). Therefore, statistical significance is observed at 10% in DIVPAG. When presenting a positive coefficient, it may indicate that sales growth positively influences the dividend distribution, contributing to greater results and distributions. However, when observing the relationship between $CRESCV_{it}$ and the average dividend rate, the coefficient indicates a reduction of USD 0.151 in TXDIV. As such, it is impossible to infer about sales growth on the dividend policy, still considering the sectors and businesses diversity that make up the research sample.

When observing the other control variables, we identified that the dummy referring to $COVID_t$ presented statistical significance at 1% in predicting companies' DIVPAG and PAYOUT. This indicated a reduction in the dividend payment index by USD 0.003 and $0.131 in this period. Regarding the adoption of IFRS, the lack of statistical significance makes it is impossible to infer about these periods.

From the results shown in Table 5, it is possible to infer that M&A works as agency cost reducers, especially when the transactions occur between companies that operate within the same sector (SIM_SETOR_{it}), given the statistical significance at 10% in predicting DIVYIELD. This can be analyzed based on the positive effect of transactions between companies within similar sectors in returning shareholders from the dividends distribution, demonstrating some control over decision makers' actions. In this scenario, Jensen and Meckling (1976) infer from agency theory that the fact that companies pay higher dividends can be a demonstration of managers' activities regarding the management of companies' cash flows, considering both the companies' activities and shareholder remuneration.

Regarding the relationship between M&A transactions and dividend policies, we rejected H_1 as the relationships did not show statistical significance individually. Therefore, it is not possible to infer about this relationship. In order to observe the temporal aspect to meet H_2, which indicates that the impact of M&A on the dividend policy is positive throughout the periods following the transactions, we estimated the variables from Equation (2), as highlights Table 6.

Table 6
Relationship between dividend policy, its determining factors and M&A transactions over time

Variables	(5) DIVPAG	Standard error	(6) PAYOUT	Standard error	(7) DIVYIELD	Standard error	(8) TXDIV	Standard error
TVexogenous								
MKB_{it}	0.00000	(0.000)	**0.00143*** **	(0.000)	0.00008	(0.000)	**0.00956*** **	(0.000)
LIQ^2_{it}	0.00008	(0.000)	0.00040	(0.008)	**-0.11571*** **	(0.026)	**-0.07063** **	(0.028)
AGE_{it}	**-0.00136** **	(0.001)	-0.06384	(0.040)	**-0.58903*** **	(0.223)	-0.24412	(0.177)
$M\&A_{it-4}$	**0.00241** **	(0.001)	0.07048	(0.085)	**0.49567***	(0.258)	0.13144	(0.285)
$M\&A_{it-8}$	0.00078	(0.001)	0.05787	(0.086)	0.41212	(0.260)	0.05526	(0.287)
$M\&A_{it-12}$	-0.00026	(0.001)	-0.00622	(0.085)	-0.02162	(0,256)	-0.25525	(0,283)
SIM_SETOR_{it-4}	-0.00169	(0.001)	0.00435	(0.097)	-0.19894	(0.295)	-0.16608	(0.325)
SIM_SETOR_{it-8}	-0.00136	(0.001)	-0.12430	(0.096)	**0.48218***	(0,292)	-0.07378	(0.323)

SIM_SETOR$_{it-12}$	0.00005	(0.001)	-0.03134	(0.095)	-0.13534	(0.288)	0.30537	(0.318)
EXP$_{it-4}$	-0.00054	(0.001)	-0.10275	(0.110)	**0.97579*****	(0.332)	-0.37172	(0.367)
EXP$_{it-8}$	-0.00087	(0.001)	-0.03587	(0.108)	-0.45760	(0.327)	0.20838	(0.361)
EXP$_{it-12}$	-0.00160	(0.001)	0.01524	(0.105)	0.51828	(0.318)	0.40659	(0.351)
CRESCV	0.00037	(0,000)	0.00523	(0.024)	-0.02415	(0.072)	**-0.14006***	(0,080)
TVendogenous								
TAM	-0.00017	(0.000)	0.03616	(0.028)	0.15026	(0.114)	0.08986	(0.108)
CRESCL	0.00001	(0.000)	0.00078	(0.003)	-0.00375	(0.009)	-0.01063	(0.009)
RENT	**0.07094*****	(0.009)	0.27785	(0.730)	**7.02465*****	(2.225)	**11.01706*****	(2.450)
LIQ	-0.00029	(0.001)	-0.01042	(0.057)	**0.82171*****	(0.178)	**0.41643****	(0.194)
ENDIV	-0.00004	(0.000)	0.00089	(0.004)	-0.00937	(0.011)	-0.01409	(0.012)
TIexogenous								
CRISE	0.00142	(0.002)	0.05855	(0.146)	**0.75834***	(0.442)	-0.07350	(0.488)
IFRS	-0.00006	(0.001)	-0.08737	(0.098)	0.09542	(0.301)	-0.20818	(0.329)
COVID	**-0.00259*****	(0.001)	**-0.11706****	(0.052)	0.08366	(0.163)	0.16737	(0.177)
Constant	0.01075	(0.007)	-0.01051	(0.458)	0.81896	(2.245)	-0.26353	(1.865)
Sectoral Control	Yes		Yes		Yes		Yes	
Observations	4129		4129		4129		4129	
Companies	123		123		123		123	
Pseudo-R-squared	0.26200		0.09832		0.44620		0.19942	
F-test	0.00000		0.00000		0.00000		0.00000	
Model	HT		HT		HT		HT	

Note. Models 5 to 8 estimated by Equation (2). ***, **, and * refer to significance at the 1%, 5%, and 10% level, respectively. TV = time varying, indicates variables that vary over time; TI = time-invariant, represents time-invariant variables; Endogenous = endogenous variables of the model according to the literature; Exogenous = exogenous variables of the model (sectoral control). HT = Hausman-Taylor. With the exception of binary variables, coefficients are represented in thousands of US Dollars (USD). Values in parentheses show the standard error. *it* = company i in period t (quarter); *it-4* = company i in period t lagged by 4 quarters (1 year); *it-8* = company i in period t lagged by 8 quarters (2 years); *it-12* = Company i in period t lagged by 12 quarters (3 years).
Source: Authors.

Table 6 presents models 5, 6, 7, and 8, whose coefficients were estimated by Equation (2). As with the results shown in Table 5, the models were estimated using the HT method, maintaining the overall statistical significance of the model (F-test significant at 1%). This makes it possible to infer that the independent variables are generally more efficient in predicting the behavior of the dependent variables.

The models presenting the highest Pseudo-R-squared are DIVYIELD (model 7) and DIVPAG (model 5), equal to 0.44620 and 0.26200, respectively. This confirms the behavior presented in the models estimated by Equation (1). We observed an overall increase in the Pseudo-R-squared of all models. This indicates that improvements in the estimation adjustments of 0.082 percentage points (pp.) for DIVPAG can be observed when analyzing the temporal aspect. We also observed improvements of 0.030pp. for PAYOUT, 0.125pp. in the DIVYIELD-depended model, and 0.042 pp. for TXDIV. This behavior corroborates with the study by Hasan et al. (2017), indicating the creation of value for shareholders based on the analysis of M&A in the long term.

Unlike what was identified in Table 5 (models 1, 2, 3, and 4), we were able to observe the influence of M&A on dividend policy in the long term in Table 6 (model 5, 6, 7, and 8). After one year, it becomes evident the significance of 5% of M&A lagged by four quarters (M&A$_{it-4}$) in predicting DIVPAG. This indicates an increase of USD 0.002 in the amount of dividends paid to shareholders. This behavior is also observed when analyzing the significance at 10% of M&A$_{it-4}$ in

predicting DIVYIELD, which shows that it is possible to observe an increase of USD 0.496 in dividend yield approximately one year after the occurrence of the M&A transaction. It should be noted we observed no statistical significance regarding the influence of the M&A transactions that occurred in the previous two and three years ($M\&A_{it-8}$ and $M\&A_{it-12}$, respectively).

The positive influence of M&A on the dividend policy corroborates what is identified by Amewu and Alagide (2018). They demonstrate that the processes can contribute in some way to increasing returns to shareholders. From the observation of processes that occurred four quarters before the analysis period of the dividend policy ($M\&A_{it-4}$), it is possible to infer that the effect of M&A on the dividend policy positively influences the results that are passed on to shareholders from distribution and dividend yield, highlighting the creation of value by acquiring companies for their investors. This behavior corroborates what is evidenced by previous research (Dereeper & Turky, 2016; Ibrahimi & Meghouar 2019; Kaprielyan & Brady, 2018; Miglietta et al, 2018; Rahman & Lambkin, 2015).

In line with what was identified in the results presented in Table 5, the sector similarity between the merged companies also showed statistical significance in the long term. From Table 6, we can observe that sector similarity also positively influences dividend yield (DIVYIELD), increasing, on average, USD 0.482 approximately two years after the transactions (SIM_SETOR_{it-8}). The literature on similarity between companies comprises the importance of sector similarity between the merged companies, with companies possibly having more agility and efficiency in reorganizing activities, and increasing their chance of success after the merger, considering shared management, organizational and cultural styles, and administrative processes (Bauer & Matzler, 2014)

We observed different behavior regarding the experience of acquiring and/or bidding companies in previous M&A transactions in the long term compared to the short-term analysis. The results indicate that, approximately one year after the merger, shareholders will benefit the greater the experience of the bidding companies (EXP_{it-4}), with an increase of USD 0.976 in dividend yield (DIVYIELD). Experience in previous M&A transactions represent a success indicator. Different studies demonstrate that the greater the experience of bidding companies in M&A, the greater the probability of success of the merged company. This results from the increase in value creation mechanisms when companies have previously gone through M&A transactions (Bauer & Matzler, 2014). Having experience in previous mergers allows bidding firms to minimize integration risks and present greater skills to transform business complexity into value for their shareholders (Bortoluzzo et al., 2014; Hu et al., 2020).

Regarding the determining factors of the dividend policy, we observed that long-term results followed the same behaviors observed in the short-term analyzes (as shown in Table 5). This can be explained by considering that the factors are related to the companies' characteristics as well as their operational activities and the market position in which they operate, as explained in previous research (Forti & Freitas, 2020; Leite et al., 2017).

Therefore, when observing the influence of M&A transactions on dividend policy over the years, the results indicate it is not possible to reject H_2 of the research given the indication that approximately one year after the merger, it may

be possible to observe a increase in the dividend yield (DIVYIELD) and the amount of dividends distributed (DIVPAG). These results are also identified in DIVYIELD when considering industry similarity and the bidding company's experience. The positive sign we identified agrees with the M&A literature, given it analyzes external sources of growth (Rabier, 2017; Thanos et al., 2020; Verma & Sharma, 2017) as factors that contribute to the distribution of resources to shareholders through the dividend policy due to the results achieved by the merged company.

Based on the analysis of long-term value creation for shareholders, the results indicate that although the influence of M&A on the dividend policy is not observed in the short term, it can be observed by investors in the long term, considering the complexity of mergers and regarding the recovery period of the merged companies after the transaction (Rahman & Lambkin, 2015; Miglietta et al., 2018; Ibrahimi & Meghouar, 2019). As such, we indicated that these results can also be observed based on the efficiencies generated from restructuring companies resulting from M&A, taking into account the possibility of reaching new markets, improving production processes, and achieving greater results.

Additionally, other tests were carried out to ensure the research's robustness. The sample was segregated into periods before and after adopting international standards (IFRS). We identified no significant differences in the coefficients. We also analyzed the models concerning the estimation of coefficients, considering ordinary least squares (OLS) with fixed effects and robust standard errors without modifying the research results. Furthermore, as a sensitivity test, we tested the M&A variables separately, presenting the same results as those shown by this study.

5 CONCLUSION

This research aimed to analyze the influence of M&A trasnactions on the dividend policies of companies listed on the Brazilian B3 stock exchange in the short and long term. To this end, we listed two hypotheses to develop the study. We analyzed the variables using descriptive statistics, linear correlations, and linear regressions using GMM, which were estimated using the HT model.

The first formulated Hypothesis (H_1) indicates that the dividend policy is positively influenced by the M&A transactions in the short term. The results indicated that, isolated, M&A are not efficient in predicting the behavior of dividend policies in the year in which the merger occurs. This rejects the first hypothesis of the study, as the results are not being able to confirm what is indicated in the literature (Dereeper & Turki, 2016). However, when evaluating the quality of M&A based on sector similarity(SIM_SETOR), we observed a tendency to increase dividend yield (DIVYIELD). This makes it possible to infer that when bidding firms have previous M&A experience, it can minimize the inherent risks to the processes.

To analyze the influence of M&A on dividend policy over time, the second hypothesis of the study (H_2) indicated that the impact of M&A on dividend policy is positive throughout the periods following the merger. From model estimation, we were able to observe that approximately one year after the M&A transactions, these positively and significantly influence the distribution of dividends (DIVPAG) and dividend yield (DIVYIELD). As such, it is not possible to reject the second

research hypothesis. Furthermore, we highlight the statistical significance identified by experience in previous M&A mergers (EXP) and the sector similarity between the combined companies (SIM_SETOR), which presented increases in dividend yield (DIVYIELD) approximately one and two years after the occurrence of the merger, respectively.

The research results contribute to one of the assumptions of agency theory regarding the reduction of agency costs in terms of aligning objectives between managers and investors in the long term, resulting in the protection of minority shareholders through the dividend policy (Lintner, 1956). The rejection of the first research hypothesis can be explained by the processes' complexity, and it is not possible to observe this impact purely by the occurrence or not of the merger as a binary variable in the short term. In the long term, other factors influence the transactions to be successful and can effectively generate value for shareholders, such as the experience of the bidding company in previous M&A transactions.

Empirically, the research contributes to the literature regarding the analysis of the influence of M&A on companies' dividend policy, corroborating Amewu and Alagide (2018), Dereeper and Turki (2016), who defend the value generation for shareholders from M&A transactions to increase returns to shareholders. The empirical contribution is made by analyzing the nuances of time (short and long term) after the M&A transactions, based on quality measures of the combinations, such as experience in previous M&A transactions and sector similarity between the merged companies (Camargos & Barbosa, 2009; Maas et al., 2018; Ibrahimi & Meguar, 2019). This analysis seeks to fill the existing gap in the Brazilian national literature that concerns different aspects of the processes and highlights the long-term returns of M&A. We underline that even if short term result expectations are not met, these continue to be legitimate strategies for business growth (Vieira et al., 2017).

Regarding society, this research demonstrates how M&A transactions can be positive for organizations and market development, considering that the reasons that lead companies to opt for merge or acquire another may have the purpose of ultimately serving its shareholders. Even though there are numerous goals that lead companies to opt for M&A, we observed that the social aspect benefits from the processes, considering that in their increased size, companies contribute to the political costs of their new constitution, impacting tax payments. For the market, this study is relevant as it highlights the search of publicly traded Brazilian companies to diversify risk and their activities, and assimilate new skills by obtaining synergies in M&A transactions, demonstrating to shareholders their intention to grow without impairing profit distribution.

Regarding the research's limitations, it is worth highlighting the measurement of variables related to the dividend policy, which are represented in the study in a quantitative way. This makes it impossible to analyze the qualitative aspects of the dividend policies as individual aspects of the companies. As for the M&A variables, we analyzes them based on whether they occurred in the quarter in question, and it is not possible to assess the relative size of the operations (measured by the value of the negotiation over the total assets of the bidding company), taking into account the non-disclosure nature of a significant part of the processes and their negotiated amounts. Given this scenario, we suggested future research to analyze

qualitative aspects of M&A transactions and their influence on the capital market based on analysis of share prices and market fluctuations.

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