PRÊMIO CFA Society Brazil DE MONOGRAFIAS EM FINANÇAS

Concurso de Monografias em Finanças • Edição 2019

Menção Honrosa:

Effect Earnings Management on Dividend Persistence in Latin American Capital Markets

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EFFECT OF EARNINGS MANAGEMENT ON DIVIDEND PERSISTENCE IN LATIN AMERICAN CAPITAL MARKETS

ABSTRACT

We investigated the relationship between earnings management and dividend persistence in companies traded in the main Latin American stock markets, based on the Dividend Relevance Theory and the Bird-in-Hand Theory. We used the Lintner (1956) model to interact the dividend persistence with earnings management (discretionary accruals) identified by Dechow, Hutton, Kim, and Sloan (2012) model. Our sample consisted of 363 companies in 8 countries, from 2001 to 2015. To control the heterogeneity and outliers without losing the information we used quantile regressions. Our main results indicate that dividend persistence was influenced by the level of the firm's earnings management, especially in firms with lower dividend payout. This payout volume was positively influenced by the Return on Equity (ROE) and the growth opportunities (market-to-book) while being negatively influenced by indebtedness. However, these relationships change from quantile to quantile in our regressions, especially for the firm's size. We noticed that firm's payout ratio is persistent in all quantiles analyzed, and in the presence of higher level of earnings management the payout ratio is more persistent - though this result was found only in those firms that distribute fewer dividends (quantiles 0.25 and 0.50). We conclude that there is a persistence of dividends between companies, especially those that distribute smaller dividends and manage their results. On one hand, more persistent dividends are better inputs for valuation models, in line with Graham and Dodd's view. On the other hand, the existence of earnings management raises the concern about the regulation efficiency in these countries.

Keywords: Payout, Dividend Payout, Discretionary Accruals, Quantile Regression, Latin America.

RESUMO

Investigar a relação entre o gerenciamento de resultados e a persistência dos dividendos em empresas negociadas nos principais mercados acionários da América Latina, com base na Teoria da Relevância de Dividendos e na Teoria do Pássaro-na-Mão. Nós utilizamos o modelo de Lintner (1956) para interagir a persistência dos dividendos com o gerenciamento de resultados (*accruals* discricionários) identificados pelo modelo de Dechow, Hutton, Kim e Sloan (2012). Nossa amostra consistiu em 363 empresas negociadas em 8 países, entre 2001 e 2015. Para controlar a heterogeneidade e os *outliers* sem perder informações, nós usamos regressões quantílicas. Os principais resultados indicam que a persistência dos dividendos foi influenciada pelo nível de gerenciamento de resultados da empresa, especialmente em empresas com menor pagamento de dividendos (*payout*). Este volume de *payout* foi positivamente influenciado pelo Retorno sobre o Patrimônio Líquido (ROE) e pelas oportunidades de crescimento (*Market-to-Book*), sendo influenciado negativamente pelo endividamento. No entanto, essas relações mudam de quantil para quantil, em nossas regressões, especialmente para o tamanho da empresa. Nós percebemos que o índice de *payout* da empresa é persistente em todos os quantis analisados e, na presença de maior nível de gerenciamento de resultados, o índice *payout* é mais persistente - embora esse resultado tenha sido encontrado apenas naquelas empresas que distribuem menos dividendos (quantis 0,25 e 0,50). Concluímos que há persistência dos dividendos entre empresas, especialmente entre aquelas que distribuem menor volume de dividendos e que gerenciam seus resultados. Por um lado, dividendos mais persistentes são melhores inputs para os modelos de valuation, em linha com a visão de Graham e Dodd. Por outro lado, a existência de gerenciamento de resultados levanta a preocupação com a eficiência da regulação nesses países.

Palavras-chave: Payout, Pagamento de Dividendos, *Accruals* Discricionários, Regressão Quantílica, América Latina.

1. INTRODUCTION

Different studies in financial literature have investigated the distribution of profits by firms. The product of this distribution is called dividend, and, in this study, we consider it like the total volume of profits distributed to shareholders, corresponding to dividends, share repurchases and interest on net equity, the latter being common in the Brazilian market. The discussion about dividends began with the Dividend Relevance Theory (LINTNER, 1956; GORDON, 1963), which broadly states that the distribution of profits is a factor of relevance in the company's valuation. The assumed view is that decisions to retain corporate profits rather than distribute them would be riskier for the investor, who does not know whether these retained earnings will be applied to good projects that will generate future capital gains.

This argument is also supported by the Bird-in-Hand Theory, which assumes that the investor believes that it is better to have a bird in hand now, which would be the dividends received, than capital gains in the future, which represents uncertainty of a possible increase in their equity in the future (LINTNER, 1956; GORDON, 1963). Moreover, this theory also supports the argument that investors prefer receiving dividends rather than giving up their pay in current periods. On the other hand, there is the Dividend Irrelevance Theory (MILLER; MODIGLIANI, 1961). This theory is supported by the argument that investors and shareholders do not mind giving up dividends in the current period for future capital gains since the valuation of the company's stock in the future would compensate for the abdication of receiving dividends in the current period. Therefore, the policy of dividend distribution would be irrelevant.

Raising the dividend payments without being sure that profits will increase continuously would be unwise since there would be a possibility that dividends would be reduced in the future, which would provoke discontent among shareholders (MARSH; MERTON, 1987). On the other hand, to keep shareholders satisfied, managers can preserve certain levels of dividend payments on a constant basis, making the distribution of dividends persistent over the periods,

since dividing such dividends would not be a decision acceptable to the shareholders (CHAN; POWELL; SHI; SMITH, 2018).

The literature on earnings persistence points out that “persistence” is a concept that refers to the earning’s sustainability over time (DECHOW; SCHRAND, 2004), and that persistence is an important quality of the accounting information because more persistent earnings will yield better inputs to equity valuation models (DECHOW et al., 2010). In the same sense, we can conceptualize the dividend persistence as the dividend’s sustainability over time, which is also important for valuation models based on dividend discount.

In this sense, Chan *et al.* (2018) argue that dividends are more smoothed than earnings, and so are highly persistent. Therefore, firms are likely to maintain their dividend volumes, only increasing the volume of profits distribution if earnings show significant increases, which make profits more volatile than dividends. Consequently, companies make partial adjustments to dividend payments because of recent changes in profits. Thus, the idea is that a greater change in dividends, in relation to the previous change of profits, would be a clear signal that managers would be more confident about the continuous change in profitability (SILVA, 2008). In this context, we can see that profits may be key for investors to decide whether to invest or not to invest in a firm. Therefore, when analyzing the economic situation of a firm, one of the information that is generally more relevant to the users of the accounting information is the reported earnings, which is considered as the first source of information for making investment decisions (BROWN, 1971).

Within this context, earnings can be managed to obtain profits that offer more persistent dividends. According to Dechow, Hutton, Kim, and Sloan (2010), earnings management occurs when managers exercise judgment about the firm's financial information and operating activities in order to change its accounting information to suit their own interests. And one of the interests of managers may be the influence on the firm’s equity valuation, since earnings

can be managed to achieve a higher level of shareholder satisfaction, and thus, prolong their stay in the company.

But, in return for this satisfaction, managers may be destroying value in the company by generating private benefits, especially when they are also shareholders of the firm because they have greater incentives to manage earnings and maintain the dividend persistence. Over time, paying constant dividend levels may prevent the firm from investing in new projects and stop adding value to the business. In this context, the objective of this study is to investigate the relationship between the existence or not of the dividend persistence and the practice of earnings management in the main capital markets of Latin America.

America is the second largest continent in the world, also marked by its economic and cultural differences. This continent is divided into two parts, one called Anglo-Saxon America and formed by developed countries, as Canada and the United States, and another called Latin America and formed by emerging countries, as Argentina, Brazil, Mexico, among others. And in the economic and investor protection aspects, La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997) emphasize that emerging countries do not have the level of market's efficiency and legal protection of developed countries, and because of that emerging markets have a more fragile information environment than developed markets. Still, La Porta, Lopes-de-Silanes, Shleifer and Vishny (2000) observe that the firms use the dividends to ensure its reputation for the moderation of shareholder wealth, where it is assumed that the dividend payments replace good protection to them. In addition, Al-Najjar (2009) states that corporate dividend behavior in emerging countries reveals that there are target dividend payment indices, unlike developed countries, and that prices tend to adjust to these target indices, which increases the persistence of dividends in emerging countries. And we assume that this is possible in Latin America.

For this reason, we study a sample of 363 companies in Latin America from 2001 to 2015, in the following countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, and

Venezuela. So, in the first moment, we measure the dividend payout of the firms (total of dividend payments, such as dividends, share repurchases or interest on net equity). After that, we estimate earnings management through model Dechow *et al.* (2012) model. In the third moment, we verify the influence of earnings management on the dividend payouts. To control for outliers and heterogeneity without losing information, we used quantile regression models in the three main quantiles (0.25, 0.50 and 0.75) capturing more information from the entire sample. And for estimating these regressions, we use a proxy for earnings management the firm's discretionary accruals. In the fourth moment, we verified the existence of the persistence of dividends through the model of Lintner (1956). And, in the fifth, we analyze the relationship between dividend persistence and earnings management.

We could verify that the median of dividend payout was 14.38%. The earnings management did not present clear results for dividend payout, presenting statistically significant relation only in the 0.25 quantile. Our results for the emerging markets in Latin America are in line with those found by Daniel, Denis and Naveen (2008) for the United States market, where the authors found that firms tend to manage their results more when they fall short expected dividend levels. Our first hypothesis, that there is evidence of dividend persistence in the Latin American capital markets is confirmed. This is important for these markets, because dividends more persistent are better inputs to equity valuation models, in line with a Graham and Dodd view, in which earnings are a summary metric of expected cash flows (Dechow et al., 2010). And our second hypothesis, that firms with greater indicators of earnings management tend to have greater dividend persistence, is also confirmed. In this study, the dividend persistence was greater between firms with lower dividend payout and greater earnings management.

2. HYPOTHESIS DEVELOPMENT

Dividend payments in any company are usually tied to the investment policy adopted by the firm. This fact is justified because the option to distribute profits or not, as well as the increase or decrease of these distributions, can imply in a negative market reaction, with respect to the stock value (LINTNER, 1956). And, considering that current increases in profits cannot be followed by current increases in dividends, Chan *et al.* (2018) argue that, in line with the concept of permanent profits introduced by Marsh and Merton (1987), if there is no tendency for permanent increases in profits, increases in dividend payments can be suspended frequently. Since suspensions or reductions of dividend payments would cause dissatisfaction among investors, who do not respond favorably to the dividend cuts, such circumstances may lead to the firm's management to smoothing the dividends over the periods, in relation to the results, making them more persistent (CHAN *et al.*, 2018).

In this context, the earnings persistence is considered in the literature as a desirable and relevant factor for the prediction of future results, as well as for the evaluation of assets more effectively (PAULO, 2007), since when it is possible to predict future results by means of past results, and these forecasts are minimally disrupted by the expected values, it can be considered that the accounting information has better quality (DECHOW; SCHRAND, 2004). Persistent earnings information is an important input for the equity valuation models (DECHOW et al., 2010), such as the dividend discount models. Thus, dividend persistence can be understood as the sustainability of the dividend over time. In this sense, Lintner (1956) observes that dividends are not adjusted for temporary earnings, with a greater tendency to remain constant over time, that is, to be more persistent than earnings, although temporary changes in earnings may volatility in dividends.

In parallel with earnings persistence, we must also consider its volatility. When earnings are volatile, the forecast of firms' future cash flows is compromised, since earnings volatility is

inversely related to their persistence, i.e., the more volatile the earnings, the less persistent it is (DICHEV; TANG, 2009). These authors also claim that earnings volatility may be tied to earnings management as firms smooth their earnings so that the firm's performance is more predictable. Additionally, greater earnings management indicates poorer accounting information quality, because higher volatility reduces the predictability of the firm's future cash flows (DECHOW et al., 2010). In turn, the earnings can also be managed so that the dividends are also persistent. For La Porta *et al.* (2000) the dividend persistence ensures the firm a reputation for the moderation of shareholder wealth, where it is assumed that the dividend payments replace good protection to them. In addition, managers need to maintain access to capital markets, justifying once again the reason why the firm seeks to preserve this reputation related to the dividend payments (LA PORTA *et al.*, 2000), that is, keeping them persistent over the periods.

Dividend persistence may be directly linked to the definition of the firm's policies of distribution of profits, influencing dividend decisions such as "if they should pay", "how much they should pay" and "how they should pay". This volume of payments to shareholders indicates the so-called "dividend payout" (or just payout) of the firm, which is the percentage derived from the relationship between the volume of profits distributed to the shareholders and the total profits obtained by the firm. According to Silva (2008), the dividend payout is one of the ways of measuring the volume of dividend payments most used by researches in the financial literature, and these payments are the most common way to remunerate shareholders. So, a certain value of the profits or a percentage applicable to them is equivalent to the outflow of monetary resources to pay the compensation of the shareholders.

In another broader picture, there is another way of remunerating shareholders: the share repurchases. This type of remuneration consists of the firm repurchasing its own shares, reducing the total number of shares outstanding. According to Dittmar (2000), in some market,

especially then developed, share repurchases are preferable to dividend payments, since in the share repurchases the firm is not conditioned to always be buying its own shares, whereas dividends incur a regular obligation. Because of that, we consider the share repurchases as a factor of the firms' dividend policy.

In this sense, based in this literature review, the first hypothesis of this study is based on the findings of Al-Najjar (2009), whose results indicate that the behavior of corporate dividends tends to have target rates of payments, and that these rates fit the percentage of payments, making the dividends persistent over the periods, especially in emerging countries (such as those in Latin America) that have weaker investor protection (LA PORTA *et al.*, 1997), which leads firms to use dividend payments as a way of replacing such protection (LA PORTA *et al.*, 2000), making them more persistent. Thus, we believe that:

H_1: Firms shows persistence in the dividend payments in the main capital markets of Latin America.

Additionally, there is still one factor that can be determinant for these dividend payments to be changed, which is the discretionary management intervention on the firm's results. This intervention may even condition the dividend persistence, since the earnings can be managed to a greater or lesser extent to maintain the persistent dividends, according to the interests of the firm. For Healy and Whalen (1999), this process of change in accounting results stems from the managers' subjective attitude in exercising judgment on certain financial information for misleading investors regarding the firm's actual economic performance. Giroux (2004) complete this definition by stating that the change in the accounting numbers serves to reach some end, which is determined by the managers of the firms, using discretionary accounting

practices to change the earnings, in accordance with applicable accounting principles and standards, as well as using operating activities.

In this sense, Damodaran (2012) states that firm managers can manage the firm's earnings because they consider that the market tends to reward the firm with better value due to the good results, being more predictable, as well as for the managed earnings to exceed expectations, such as financial analysts. To do so, for firms or investments valuation, financial analysts generally perform reconciliations in the accounting earnings reported by the firm being evaluated. The idea considered by analysts is that these earnings went through a process of judgment, that is, of managers' choices, thus not revealing the real economic and financial performance of the firm and, consequently, the real value added or destroyed to shareholders by the firm (DAMODARAN, 2012). Thus, Cupertino and Martinez (2008) observe that when earnings are used as a way of measuring the performance of a firm's management, there are additional incentives for managers to manage them (inflated).

Paulo (2007) lists some of these incentives, among which are: to protect the firm from negative effects on the prices of its stocks at the time of the announcement of accounting losses; balance the results with analysts' forecasts; and reduce the earnings volatility to maintain earnings growth uniformly. Therefore, managers' discretionary decisions may make the reported earnings volatile, which may impact the decisions inherent in the distribution of profits, since dividend policies may be conditional on reported earnings. Once again, discretionary decisions may also make the reported earnings by the accounting divergent from the real earnings of the firm, affecting not only the firm's dividend policy but, according to Martinez (2008), impacting the firm's economic performance and the prediction of their future cash flows.

Martinez (2008) further notes that when earnings are manipulated by the management of accruals, both current-year profit and future profits are modified and, therefore, we can expect

that these overburdened or under-loaded earnings will be reversed at some point future. Thus, the accruals' discretion in earnings can influence the earnings persistence of the firm and, consequently, influence the dividend persistence. This is ratified by Srikanth and Prasad (2015), who assert that dividend-paying firms tend to maintain a constant record of the distribution of profits and for this, try to avoid large swings in these payments. In a study with Indian firms, these authors found, through discretionary accruals estimates, that the distribution of profits of these firms was affected by the earnings management. Thus, according to these authors, it is likely that accounting earnings will be managed to affect dividend payments.

Daniel, Denis, and Naveen (2008) document that firms' managers tend to manage their earnings upwards when they are below expected dividend levels. And to that end, the earnings indicate that managers treat the level of expected dividends as a threshold for the earnings management. Rodrigues Sobrinho, Rodrigues and Sarlo Neto (2014) analyzed Brazilian firms and found that firms with higher dividend payout managed earnings also at higher levels. In these firms, the dividend persistence presented a positive and significant signal with discretionary accruals. Based on this evidence, we expanded this hypothesis and carried out our study on firms that are part of the emerging markets of Latin America:

H_2: Firms with greater indicators of earnings management tend to have greater persistence in dividend payments in Latin America.

Finally, it is important to point out that the dividend payments can be influenced by several factors, among which stand out, for the purposes of this study: profitability, firm size, growth opportunity and indebtedness of the firm. Profitability has a positive relationship with dividend payments, as firms tend to increase dividend payments when their profitability increases (JABBOURI, 2016). Size also has a positive relation with the dividend payments,

since the larger the firm tends to be, the greater the dividend volume distributed to the shareholders, since the firm will need less retention of profits for reinvestment with the growth objective (DEANGELO; DEANGELO; STULZ, 2006; AL-KUWARI, 2009; JABBOURI, 2016). The growth opportunity has a negative relation with the payout since firms with greater growth opportunities have greater needs to finance their expansion with retention of profits (CHAY; SUH, 2009; CHENG; CULLINAN & ZHANG, 2014). This is also the tendency of firms with higher indebtedness since they tend to pay fewer dividends due to the reduction of their profits by the financial expenses originated by the existing indebtedness (DEANGELO *et al.*, 2006; AL-KUWARI, 2009; JABBOURI, 2016).

3. METHOD

Our sample is composed of firms that have stocks traded in the main stock exchanges of Latin America from 2001 to 2015 that have their financial information available in the Thomson Reuters database. All financial information was collected in United States dollars (USD). Firms that did not have information on at least one variable analyzed in each year were excluded from the sample since this would make it impossible to estimate the models. Financial companies were also excluded, as they have specificities in their capital structure that influence their level of indebtedness, which would create a bias in our analysis and could compromise the results of this study. Thus, after all, exclusions, the final sample is made up of 363 companies from 8 countries: Argentina (41), Brazil (87), Chile (97), Colombia (27), Costa Rica (4), Mexico (32), Peru (66) and Venezuela (9). Bolivia and Ecuador were not kept in the final sample because they did not present firms with enough information for analyses.

It is important to highlight that the main reason for the reduction of the initial sample was the variable about "dividends" since most firms did not disclose dividend information in the years analyzed, either because they did not pay dividends or because they had losses in the most

periods. However, we maintained in the sample the firms that presented negative dividend payout, that is, that even presenting losses (net loss); they distributed dividends for some years because this study has the purpose of investigating the dividend persistence.

3.1. DIVIDEND PAYMENTS AND EARNINGS MANAGEMENT

In the composition of the final sample, we observed the existence of heteroskedasticity among the firm's variables, using the Wald test that indicated the rejection of the null hypothesis of absence of heteroscedasticity ($p < 0.001$). For this reason, we did previous tests of regression model fitting. In the presence of outliers, the models by Ordinary Least Squares (OLS) generate biased estimates, which remained even after we applied the Winsor technique in 1% on the sample. Therefore, we chose the use of quantile regression models in the three main quantiles (0.25, 0.50 and 0.75) for the estimates of Equations 2, 3, 4 and 5.

These models allow the analysis of the entire sample distribution, not just the conditional average. Thus, we avoid losing even more observations and we were able to capture more information from all sample, including the existing outliers. Still, although this type of regression does not require the control of extreme values, due to the distance of some observations, after the estimation of the pure models, we did additional tests (not reported to save space) with the variables winsorized at 1% and 99%, and the secondary estimates demonstrated that the interpretation of our findings is not affected by the outliers' magnitude.

The use of quantile regression reduces information loss in the treatment of some empirical problems as scaling variables, excluding observations, winsorizing variables to treat outliers, besides exploring more the entire distribution of the dependent variable, without concerning about the heterogeneity and its problems (OHLSON; KIM, 2015). Moreover, in emerging countries, with little business diversity, but a lot of heterogeneity, quantile regression could generate more reliable results (DUARTE; GIRÃO; PAULO, 2017).

We calculate the percentage of dividend payout (DP_{it}) of each firm i in year t, where DP_{it} is the result of dividing the sum of dividends (DIV_{it}), share repurchases (SR_{it}) and interest on net equity (INE_{it}) by the net income (NI_{it}) reported by the firm in each year, according to Equation 1.

$$\boldsymbol{DP_{it}} = \left[\frac{DIV_{it} + SR_{it} + INE_{it}}{NI_{it}}\right] x\ 100 \tag{1}$$

To estimate the earnings management, we use the Dechow *et al.* (2012) model, which adjusts the Modified Jones model by including lagged accruals to capture their natural reversal in subsequent periods. These authors have shown that this model has increased the power of the earnings management detection test, reducing the failures caused by poor specification of previous models. For this study, we assume the earnings management as the residuals of Equation 2.

$$\boldsymbol{TAc_{it}} = \propto_0 + \propto_1 \left(\frac{1}{TA_{it-1}}\right) + \propto_2 (\Delta REV_{it} - \Delta REC_{it}) + \propto_3 (PPE_{it}) + \propto_4 (TAc_{it-1}) + \propto_5 IFRS_{jt} + \ + \theta_j + \delta_t + \varepsilon_{it} \tag{2}$$

Where, for every firm i in year t, TAc_{it} is the Total Accrual weighted by its Total Assets at the end of period $t-1$; TA_{it-1} is the Total Asset in period $t-1$; ΔREV_{it} is the change in Revenues from year $t-1$ to year t, weighted by TA_{it-1}; ΔREC_{it} is the change in Receivables from year $t-1$ to year t, weighted by TA_{it-1}; PPE_{it} is the gross Property, Plant, and Equipment, weighted by TA_{it-1}; $IFRS_{jt}$ is a dummy variable to control the adoption of the International Financial Reporting Standards (IFRS), assuming value 1 from the years of mandatory adoption in the country, and 0 otherwise; θ_j and δ_t represent, respectively, country and year fixed-effects; and ε_{it} is defined as the discretionary accruals.

An additional factor was considered in relation to the Dechow *et al.* (2012) model. We include a dummy to control the effect of the mandatory migration of local accounting standards from each country to the IFRS. This mandatory adoption may lead to changes in the measurement, recognition, and disclosure, reflecting in the firms' financial reports (PELUCIO-GRECCO; GERON; GRECCO; LIMA, 2014). These authors verified that IFRS adoption had a restrictive effect on earnings management.

The fixed controls for country (θ_j) and year (δ_t) in this model is indispensable, because in periods of global or local crises models of earnings management and information persistence can present different behaviors, as observed by Silva, Weffort, Flores, and Silva (2014) in the Brazilian market, the largest in Latin America. In addition, we note that macroeconomic volatility is a more present phenomenon in emerging countries, although it is not an endemic phenomenon, reflecting fluctuations and unpredictability in the firms' performance variables (MALIK; TEMPLE, 2009). Therefore, when analyzing 8 emerging countries over 16 years, such controls become essential.

Therefore, from Equation 2, we take the residuals from Equation 1 as a proxy for earnings management. We calculate these residuals squared (ε_{it}^2) to identify the volume of management, in each quantile, regardless of whether it generated a positive or negative accrual (because it tends to reverse in next periods). This procedure capture the volume of earnings management in each period, regardless of whether management was to increase or decrease the earnings of that period (the manager can manage the earnings for more in order to increase his dividend distribution in that period, or he can manage for less in a period with above-average earnings, to form "earnings reserve" for future periods). We are interested in which firms more managed earnings, not the way in which firms practice this management (if to more or less).

To analyze the influence of the earnings management (EM) on the dividend payout (DP), we only try to control specific factors that may interfere with this relationship. Thus, we used

as control variables in the analysis: Return on Equity (ROE), Growth Opportunity (MB), Indebtedness (IND), Firm Size ($SIZE$) and Financial Crisis (FC).

For the measurement of profitability, we use the Return on Equity (ROE), which corresponds to the ratio between Net Income in year t and the Equity in year $t-1$. We expect a positive relation between dividend payout and ROE because it is natural to expect companies with better returns to distribute more dividends. To measure the growth opportunity, we use the market-to-book (MB) index, since an index greater than 1 indicates that the market is willing to pay for the company more than its Book Value since it sees in it an opportunity for growth not yet reported in its accounting. According to Chay and Suh (2009), the higher the MB, the lower the proportion of distributed dividends, as firms with greater growth opportunities tend to distribute smaller dividend volumes because of their investment needs. The MB corresponds to the ratio between the market value of the firm i on the date of the last closing price of the year t, on the book value of its equity in year t.

The Indebtedness (IND) was measured by the ratio of total short- and long-term Debt to Total Assets at the end of year t, multiplied by 100 to be expressed as a percentage. We expect a negative relationship of the IND with the dividend payout because more indebted companies have their cash flows affected by the payment of interest, which reduces the profit available for distribution. The firm size ($SIZE$) was represented by the natural logarithm of the Total Assets value at the end of year t. We expect that the larger the firm, the greater its distribution of profits because it requires lower profit retention for growth (DEANGELO *et al.*, 2006; AL-KUWARI, 2009; JABBOURI, 2016).

Finally, we consider that the existence of a Financial Crisis can reduce the firm's profits and, consequently, reduce its dividend payments (BRESSER-PEREIRA, 2010). During the period covered by this research (2001 to 2015) there was a worldwide financial crisis, the Subprime crisis. To analyze its effect on firms' earnings and dividends, we did a structural

break analysis. By means of the Chow test we could confirm that there is a break only in 2008 (sig. <0.001). This finding consists of Bresser-Pereira (2010), who states that this year was marked by the economic recession caused by the discontinuity of financial institutions that granted mortgage loans to investors who did not have or would not be able to liquidate them from the moment the interest rate increased. This is consistent with the assumption that global crises, such as the Subprime Crisis in 2008, may influence corporate performance in different ways (SILVA *et al.*, 2014), especially in emerging countries where there is more macroeconomic volatility (MALIK; TEMPLE, 2009). Thus, we added a dummy variable to verify if this financial crisis influenced the accruals of the firms. As in Equation 2, the financial crisis (FC) in Equation 3 assumes the same parameters: value 1 for 2008 and 0 for the other years.

To verify the relation of the dividend payments with earnings management, controlling the factors mentioned above, we estimate Equation 3.

$$\boldsymbol{DP_{it}} = \propto_0 + \propto_1 EM_{it} + \propto_2 ROE_{it} + \propto_3 MB_{it} + \propto_4 IND_{it} + \propto_5 SIZE_{it} + \propto_6 FC_{it} + \theta_j + \delta_t + \varepsilon_{it} \quad (3)$$

Where, for every firm i year t, DP_{it} is the Dividend Payout index; EM_{it} is the mean of the squared residuals estimated in Equation 2 for the quantiles 0.25, 0.50 and 0.75; ROE_{it} is the Return on Equity; MB_{it} is the market-to-book index; IND_{it} is the indebtedness; $SIZE_{it}$ is the natural logarithm of total assets; FC_{it} is the dummy indicative of the financial crisis in 2008; θ_j and δ_t represent, respectively, country and year fixed-effects; and ε_{it} is the error term of the model. Again, we highlight the importance of controls for the country (θ_j) and year (δ_t), reflecting fluctuations and unpredictability in the firms' performance variables (MALIK; TEMPLE, 2009).

3.1.2. DIVIDEND PERSISTENCE AND EARNINGS MANAGEMENT

As the fourth step of our method, we performed an analysis of the existence of dividend persistence. Lintner (1956) argues that dividends tend to be more persistent than earnings because earnings are usually the starting point of management to consider whether dividends should change. Thus, management has a greater influence on dividends than on earnings. In this sense, management has a greater influence on dividends than on earnings. To identify the dividend persistence, we use the model of Lintner (1956), commonly used in the relevant literature, as explained in Equation 4. Additionally, a special feature of this work, we include the financial crisis variable. The dependent variable of this model is the dividend payout, previously calculated in Equation 1.

$$\boldsymbol{DP_{it}} = \emptyset_0 + \emptyset_1 NI_{it} + \emptyset_2 DP_{it-1} + \emptyset_3 FC_{it} + \emptyset_4 (NI_{it} \times FC_{it}) + \emptyset_5 (DP_{it-1} \times FC_{it}) + \theta_j + \delta_t + \varepsilon_{it} \qquad (4)$$

Where, for every firm i in year t, DP_{it} is the dividend paid, represented by the Dividend Payout ratio; NI_{it} is the Net Income weighted by Total Assets; DP_{it-1} is the Dividend Payout ratio in year $t-1$; FC_{it} is a dummy for Financial Crisis, assuming value 1 in the year 2008, and 0 in other years; θ_j and δ_t are country and year fixed-effects; ε_{it} is the error term of the model. The expectation for the Lintner (1956) model is that the coefficient $\emptyset_2 > 1$ (dividend persistence) is positive and significant, i.e., that the dividend paid in year $t-1$ (DP_{it-1}) explains the dividends paid in the current year (DP_{it}).

The fifth step of this study verifies the dividend persistence in an environment with earnings management. In this analysis, we captured the earnings management estimated in Equation 2 for the median quantile (0.50). Then, the residuals from that model (discretionary accruals) were squared (ε_{it}^2) to indicate the volume of results management. Next, we divided the sample into two parts, from the median of the earnings management volume (ε_{it}^2), and we

created a dummy variable (DEM) that assumed the value 1 when $\varepsilon_{it}^2 \geq$ median of this variable, and value 0 otherwise. In this sense, we expect that firms that have greater indicators of earnings management present greater dividend persistence.

In this way, we used the Lintner (1956) model, again, but we made a second adaptation, this time including a dummy for higher earnings management (DEM). This variable was interacted with the other variables of the model, as presented in Equation 5 so that we control its effect on the dividend persistence. The purpose of the interaction of this dummy (DEM) with the other variables of the model is to analyze the effect of higher earnings management volume on the dividend persistence (RODRIGUES SOBRINHO; RODRIGUES; SARLO NETO, 2014).

Thus, we expect the coefficient $\emptyset_3$ to be positive since higher earnings management tends to be related to a higher payout (RODRIGUES SOBRINHO, RODRIGUES & SARLO NETO, 2014). Additionally, the coefficient $\emptyset_5$, which represents the dividend persistence between firms with greater earnings management, tend to be positive, significant and greater than the coefficient $\emptyset_2$ (for firms with lower earnings management). That is, as well as Daniel, Denis and Naveen (2008) and Rodrigues Sobrinho, Rodrigues and Sarlo Neto (2014), we assume that $\emptyset_5 > \emptyset_2$.

$$\boldsymbol{DP_{it}} = \emptyset_0 + \emptyset_1 NI_{it} + \emptyset_2 DP_{it-1} + \emptyset_3 DEM_{it} + \emptyset_4 (NI_{it} \times DEM_{it}) + \emptyset_5 (DP_{it-1} \times DEM_{it}) + \theta_j + \delta_t + \varepsilon_{it} \quad (5)$$

Where, for every firm i in year t, DP_{it} is the Dividend Payout ratio in year t; NI_{it} is the Net Income weighted by Total Assets; DP_{it-1} is the Dividend Payout ratio in year $t-1$; DEM_{it} is a dummy for Earnings Management, assuming value 1 for firms with $\varepsilon_{it}^2 \geq$ median of this variable, and value 0 otherwise; θ_j and δ_t represent, respectively, country and year fixed-effects; and ε_{it} is the error term of the model.

4. RESULTS

Table 1 shows the descriptive analysis of the variables investigated in this study. The only variable not included in Table 1 is earnings management because discretionary accruals have been captured in three different quantiles (0.25, 0.50 and 0.75) and their numbers have little meaning in individual analysis.

We can observe that there is great dispersion in the data, giving evidence of heterogeneity in the data, which were confirmed next. This heterogeneity strengthens the arguments for using quantile regressions, without the need for specific treatment for outliers. The Net Income, Equity, and Total Assets variables are represented in thousands of US Dollars. We observed that these variables present a high standard deviation, indicating that firms differ significantly between them. Therefore, we take as a reference the median to characterize the sample. The median of the annual Net Income of firms was about USD 14.8 million. The median of Equity was about USD 182.0 million. And the median of Total Assets was about USD 416.9 million.

Table 1.
Descriptive statistics of analyzed variables. 2001-2015.

Variables	Mean	0.25 Quantile	0.50 Quantile	0.75 Quantile	Minimum	Maximum	Standard Deviation
NI_{it}	100,000.00	602.56	14,791.08	89,125.09	-1,401,896.00	8,511,380.38	371,535.23
E_{it}	1,584,893.19	42,657.95	181,970.09	562,341.33	38.90	2,187,761.62	2,690.32
DP_{it}	1,184.10	0.00	14.38	114.01	-2,690,827.00	5,017,442.00	164,518.00
DP_{it-1}	2,295.06	0.00	14.79	131.98	-1,748,335.00	5,017,442.00	148,623.30
ROE_{it}	6.30	1.40	8.17	15.72	-3,605.35	393.07	99.10
MB_{it}	1.05	0.24	0.88	1.96	0.04	521.91	45.05
IND_{it}	53.73	34.47	51.53	66.60	0.02	401.38	34.87
$SIZE_{it}$	2,089,296.13	97,723.72	416,869.38	1,778,279.41	173.78	69,183,097.09	4,786,300.92

Note: for every firm i in year t, NI_{it} is the Net Income (in thousands of dollars); E_{it} is the Equity (in thousands of dollars); DP_{it} is the Dividend Payout ratio; DP_{it-1} is the Dividend Payout ratio in year $t-1$; ROE_{it} is the Return on Equity; MB_{it} is the Market-to-book index; IND_{it} is the Total Indebtedness rate; and $SIZE_{it}$ is the Firm Size, given by the Total Asset (in thousands of dollars).

Also, it is possible to observe the presence of negative Net Profit (Loss of USD 1,401.9 million). However, even though it had suffered losses, some companies maintained the payment of dividends, which culminated in an extremely negative dividend payout, reaching a minimum value of -2,690,827.00%. We also verified that the dividend payout of year t (DP) in the 0.25

quantile was 0 (zero), which implies that in smaller quantiles are concentrated the firms that had negative payouts (less than zero), that is, about 1/4 of the sample paid dividends even though it showed a loss in any of the years studied.

We could also verify that the median of dividend payout was 14.38%, considering only the firms that distributed dividends over the analyzed period. The median of the Return on Equity (ROE) was 8.17%, considering only the firms with positive equity since we excluded from the sample those with negative equity. The median of the Market-to-book (MB) was 0.88, indicating that in the analyzed period the Latin American firms had a market value lower than their book value. And the median of the Indebtedness (IND) was 51.53%, showing that more than half of the total assets of these firms are financed by debt.

When we separate the sample by country, the standard deviations of the variables are reduced, because differences between firms are diminished. In this way, we present in Table 2 the median values of these variables in each country. We can note that both the highest Net Income (NI of USD 44.7 million) median and the highest Equity (E of USD 794.3 million) median are among Mexican firms, followed by Colombian companies. Analyzing the dividend payout (DP), we can see that the largest median belongs to Costa Rican companies (131.71%), followed by Mexican companies (37.29%). The highest median for Return on Equity (ROE) was also for Costa Rican companies (12.87%), followed by Argentine companies (12.28) and Mexican companies (8.36%). Overall, higher ROE indicates higher DP.

The largest median of Market-to-book (MB) was for Mexican (1.64) and Argentine (1.16) firms. The country with the lowest median was Venezuela (0.19), which indicates that the market is skeptical when pricing firms in that country, a fact that can be influenced by the serious political problems that the country faces. The firms with the highest Indebtedness (IND) median are the Argentine (62.75%), followed by Brazilian (57.76%) and Mexican (54.14%).

As for the Size of its total assets ($SIZE$), Mexican companies have the largest median (USD 1,698.2 million), followed by Brazilian firms (USD 1,047.1 million).

Table 2.
Median of variables by country. 2001-2015.

Countries	NI_{it}	E_{it}	DP_{it}	DP_{it-1}	ROE_{it}	MB_{it}	IND_{it}	$SIZE_{it}$
Argentina	7,762.47	91,201.08	16.75	18.81	12.28	1.16	62.75	371,535.23
Brazil	6,302.68	89,778.82	16.79	16.18	8.08	1.09	57.76	1,047,128.55
Chile	2,589.25	162,181.01	7.89	8.53	7.74	0.92	49.17	269,153.48
Colombia	29,512.09	416,869.38	10.40	13.38	7.01	0.56	38.50	630,957.34
Costa Rica	8,709.64	81,283.05	131.71	147.31	12.87	0.47	52.32	162,181.01
Mexico	44,668.36	794,328.23	37.29	21.97	8.36	1.64	54.14	1,698,243.65
Peru	7,585.78	97,723.72	17.45	20.29	7.38	0.42	47.75	177,827.94
Venezuela	2,454.71	102,329.30	0.71	4.90	3.89	0.19	45.19	194,984.46

Note: for every firm i in year t, NI_{it} is the Net Income (in thousands of dollars); E_{it} is the Equity (in thousands of dollars); DP_{it} is the Dividend Payout ratio; DP_{it-1} is the Dividend Payout ratio in year $t-1$; ROE_{it} is the Return on Equity; MB_{it} is the Market-to-book index; IND_{it} is the Total Indebtedness rate; and $SIZE_{it}$ is the Firm Size, given by the Total Asset (in thousands of dollars).

To verify the level of association between the variables studied, we analyzed their correlation coefficients, presented in Table 3. The Net Income (NI) did not show a significant correlation with any of the dividend payout variables but had a negative and significant correlation with the discretionary accruals at the 0.25 quantile (-0.056) and with the mean EM (-0.058). The current Dividend Payout (DP_{it}) presented a positive and significant correlation with the past Dividend Payout (DP_{it-1}) (0.244), which shows evidence of dividend persistence in the analyzed sample, like the findings of Al-Najjar (2009). On the other hand, the first evidence of the bivariate relationship between DP and EM revealed that the correlation was positive and significant to current DP (0.124 for $EM_{it}^{0.25}$ and 0.055 for EM_{it}^{mean}), but negative and significant to past DP (-0.317 for $EM_{it}^{0.25}$ and -0.154 for EM_{it}^{mean}). However, this evidence was only observed for the 0.25 quantile and for the mean EM.

Table 3.
Correlations between dividends, earnings management, and crisis. 2001-2015.

Variables	NI_{it}	DP_{it}	DP_{it-1}	$EM_{it}^{0.25}$	$EM_{it}^{0.50}$	$EM_{it}^{0.75}$	EM_{it}^{mean}	FC_{it}
NI_{it}	1							
DP_{it}	-0.002	1						
DP_{it-1}	-0.004	0.244***	1					
$EM_{it}^{0.25}$	-0.056*	0.124***	-0.317***	1				
$EM_{it}^{0.50}$	-0.048	-0.007	-0.011	0.408***	1			
$EM_{it}^{0.75}$	-0.026	-0.020	0.009	-0.076**	0.608***	1		
EM_{it}^{mean}	-0.058*	0.055*	-0.154***	0.588***	0.870***	0.738**	1	
FC_{it}	-0.020	-0.018	0.191***	0.191***	0.005	-0.172***	-0.004	1

Note: for every firm i in year t, NI_{it} is the logarithm of the annual Net Income; DP_{it} is the Dividend Payout ratio; DP_{it-1} is the Dividend Payout ratio in year $t-1$; $EM_{it}^{0.25}$ are the discretionary accruals in the 0.25 quantile, represented by the square of the regression residuals; $EM_{it}^{0.50}$ are the discretionary accruals in the 0.50 quantile, represented by the square of the regression residuals; $EM_{it}^{0.75}$ are the discretionary accruals in the 0.75 quantile, represented by the square of the regression residuals; EM_{it}^{mean} is the mean of the discretionary accruals in the quantiles 0.25, 0.50 and 0.75; FC_{it} is a dummy for Financial Crisis, assuming value 1 in the year 2008, and 0 in other years; and * is significant at 10%, ** at 5% and *** at 1%.

Finally, we note that the residuals of the quantile regressions estimated in the three quantiles are positive and significantly correlational. We can observe that the Subprime crisis presented a positive and significant (0.191) correlation with the discretionary accruals of the firms that had a lower volume of EM (0.25 quantile), but a negative association (-0.172) with the highest volume of EM (0.75 quantile). This suggests that during the financial crisis the firms that managed their earnings less intensively increased this management to maintain their earnings persistence, while higher-management firms had less room to manipulate their accruals. This is consistent with the negative relation between $EM_{it}^{0.25}$ and $EM_{it}^{0.75}$ (-0,076).

4.1. REGRESSION ANALYSIS

To estimate the level of earnings management of the firms, we estimate three quantile regressions in the quantiles 0.25, 0.50 and 0.75, according to Equation 2. In Table 4 it is possible to observe that the inverted total assets were negative and significant in the quantiles 0.25 and 0.50. Additionally, it is important that this coefficient with great magnitude and negative is not originated by an outlier, but by the essence of the model. The earnings management detection model of Dechow *et al.* (2012) predicts that the volume of EM is a function of the inverse of

the firm's total assets in the previous period ($\frac{1}{TA_{it-1}}$). Consequently, the coefficient of this variable, by definition, will be small.

The difference between the variation of Net Revenues and Receivables ($\Delta REV_{it} - \Delta REC_{it}$) and the gross Property, Plant and Equipment (PPE_{it}) presented positive and significant coefficients, as expected. In turn, the Total Accruals for the previous year (TAc_{it-1}) was statistically significant only for the 0.25 quantile, indicating its reversal. The inclusion of the IFRS adoption in the model for the estimation of earnings management was significant in the quantiles 0.25 and 0.50. This indicates that this phenomenon is important for estimating earnings management in firms with TAc_{it} equal to or greater than the median. Above all, we can observe that the IFRS adoption ($IFRS_{jt}$) had a negative impact on the Total Accruals of period t, which suggests that the IFRS adoption reduced the volume of earnings management, according to the evidence of Pelucio-Grecco *et al.* (2014) for the Brazilian capital market, the largest in Latin America.

Table 4.
Earnings management estimation by quantile regressions. 2001-2015.

Variables	0.25 Quantile		0.50 Quantile		0.75 Quantile	
	Coefficient	***t* Statistic**	**Coefficient**	***t* Statistic**	**Coefficient**	***t* Statistic**
Constant	-0.078***	-8.38	-0.010	-1.48	0.055***	5.53
$(1/TAc_{it-1})$	-38,405.100**	-1.96	-33,210.880**	-2.33	-13,410.870	-0.63
$(\Delta REV_{it} - \Delta REC_{it})$	0.105***	5.79	0.103***	7.94	0.134***	6.92
PPE_{it}	0.023***	2.91	0.018***	3.29	0.014*	1.64
TAc_{it-1}	-0.219*	-1.65	-0.075	-0.79	-0.155	-1.09
$IFRS_{jt}$	-0.001	-0.04	-0.014**	-2.04	-0.021**	-2.07
Country dummies	Yes		Yes		Yes	
Year dummies	Yes		Yes		Yes	
Pseudo R^2	0.229		0.317		0.357	
Observations	1,390		1,390		1,390	

Equation 2: $TAc_{it} = \propto_0 + \propto_1 \left(1/_{TAc_{it-1}}\right) + \propto_2 (\Delta REV_{it} - \Delta REC_{it}) + \propto_3 (PPE_{it}) + \propto_4 (TAc_{it-1}) + \propto_5 IFRS_{jt} + \propto_6 FC_{it} + \theta_j + \delta_t + \varepsilon_{it}$

Note: for every company i in year t, TAc_{it} is the total accrual weighted by its total assets at the end of period $t-1$; TA_{it-1} is the asset in period $t-1$; ΔREV_{it} is the change in revenues from year $t-1$ to year t, weighted by TA_{it-1}; ΔREC_{it} is the change in receivables from year $t-1$ to year t, weighted by TA_{it-1}; PPE_{it} is the gross property, plant, and equipment, weighted by TA_{it-1}; $IFRS_{jt}$ is a dummy variable to control the adoption of the International Financial Reporting Standards (IFRS), assuming value 1 from the years of mandatory adoption in the country, and 0 otherwise; FC_{it} is a dummy variable for the Subprime financial crisis, assuming value 1 in the year 2008, and 0 otherwise; θ_j and δ_t represent, respectively, country and year fixed-effects; and * is significant at 10% and *** at 1%.

Table 5 presents the findings of the estimates to identify the relationships between the dividend payout and earnings management. The variable EM_{it} did not present clear results, presenting statistically significant relation only in 0.25 quantile (-41.884), indicating a negative effect among companies with a lower payout. So, this suggests that firms with lower payout manage their earnings less in Latin America. Therefore, it is possible to expect firms with larger payouts to attract greater interest from investors with a greater desire for dividends, and this will lead the company to higher earnings management. This assumption for the emerging markets in Latin America is reinforced by the evidence of Daniel, Denis and Naveen (2008) for the United States market, where the authors found that firms tend to manage their results more when they fall short expected dividend levels. Despite the differences between these markets, this assumption may be true because the earnings volatility in Latin American companies is greater, and this may cause volatility in their dividends, according to Lintner (1956).

On the other hand, the variable Return on Equity (ROE_{it}) was positive and significant in the 0.25 quantile (45.455). Thus, it is inferred that in firms with a lower payout volume, the increase in ROE implies an increase in the dividend payout, ie, 1.00% increase in ROE implies a 45.46% increase in the volume of distributed dividends. This evidence confirms the findings by Ahmed and Javid (2009), who also found a positive relationship between these variables. In the quantiles 0.50 and 0.75, the influence of the ROE on the DP was not identified. This indicates that firms that already have high DP do not tend to increase them when ROE grows, which seems reasonable to us.

Regarding the Market-to-book (MB_{it}), we found a positive and significant relationship in the 0.50 quantile (0.339). This evidence is not in line with the literature (CHAY; SUH, 2009; LA PORTA *et al.*, 2000), which point to a negative relationship between the MB and the DP. However, in the studies cited there is no differentiation of firms by the volume of their payouts. On the other hand, the positive relationship found in this study was also found by Al-Najjar

(2009) in Jordanian companies, an emerging country, suggesting that firms with high growth opportunities face different financing opportunities and pay more dividends. Again, this difference can be explained by the sample, because we investigated only emerging countries, and Chay and Suh (2009) and La Porta *et al.* (2000), world-wide companies.

Table 5.
Quantile regressions for dividend payout and earnings management. 2001-2015.

Variables	0.25 Quantile		0.50 Quantile		0.75 Quantile	
	Coefficient	***t* Statistic**	**Coefficient**	***t* Statistic**	**Coefficient**	***t* Statistic**
Constant	-1.854	-1.59	1.058**	1.94	11.731**	2.54
EM_{it}	-41.884**	-2.48	-6.646	-0.84	7.402	0.11
ROE_{it}	45.455***	5.92	0.521	0.14	2.449	0.08
MB_{it}	0.240	1.24	0.339***	3.73	0.560	0.73
IND_{it}	-1.217***	-4.91	-0.553***	-4.75	-1.260*	-1.68
$SIZE_{it}$	29.968***	2.92	-4.793	-0.99	-116.232***	-2.85
FC_{it}	0.145	0.22	-0.112	-0.37	0.208	0.08
Country dummies	Yes		Yes		Yes	
Year dummies	Yes		Yes		Yes	
Pseudo R^2	0.061		0.044		0.041	
Observations	1,390		1,390		1,390	

Equation 3: $DP_{it} = \propto_0 + \propto_1 EM_{it} + \propto_2 ROE_{it} + \propto_3 MB_{it} + \propto_4 IND_{it} + \propto_5 SIZE_{it} + \propto_6 FC_{it} + \theta_j + \delta_t + \varepsilon_{it}$
Note: for every firm i year t, DP_{it} is the Dividend Payout index; EM_{it} is the square of the estimated residuals in Equation 2 for the median quantile; ROE_{it} is the Return on Equity; MB_{it} is the market-to-book index; IND_{it} is the indebtedness; $SIZE_{it}$ is the natural logarithm of total assets; FC_{it} is the dummy indicative of the financial crisis in 2008; θ_j and δ_t represent, respectively, country and year fixed-effects; and ** is significant at 5% and *** at 1%.

Our findings suggest that in Latin America, at least between 2001 and 2015 for firms that distribute the lower volume of dividends (with payout up to the median of 14.38%), growth opportunities of firms are positively related to dividend payout growth. This evidence can be explained by the low MB identified in this period (median of 0.88). That is, the firms had, in the median, a market value lower than their book value. Thus, an improvement in its operating performance may lead the company to distribute more dividends and, consequently, this improvement is also reflected by the market, which recognizes a growth opportunity in the firms (which positively reflects on its MB).

Still, these findings may be related to two possible explanations: (i) that in emerging markets in Latin America investors tend to value firms that prioritize the distribution of

dividends, reflecting payout increases in their market value; or, yet, (ii) that firms with lower book values seek to maintain their attractiveness in the market by maintaining the payment of dividends, even if in dividend volumes lower than the median of the sample analyzed.

The indebtedness of firms (IND_{it}), given by the total debt divided by its total assets, had a negative and significant relationship in all the quantiles of the distribution. In agreement with the studies of DeAngelo *et al.* (2006), Al-Kuwari (2009) and Jabbouri (2016), the level of firm's indebtedness is negatively influenced by the dividend payment in all quantiles. As shown in Table 5, the increase of 1.00% in debt tends to decrease the dividend payout between -1.26% and -0.55%, depending on the quantile analyzed, with the biggest effect on the firms of the 0.75 quantile. So, it is possible to affirm that the increase in the level of indebtedness of these firms diminishes their dividend payments.

Regarding the Firm Size ($SIZE_{it}$), we noticed that there were significant relationships in the two extreme quantiles, and the effect change as the dividend payout volume increases. Among the firms with the lowest payout volume (0.25), the relation was positive and significant (29.968). On the other hand, in the quantile of the firms that distribute the largest volume of dividends (0.75 quantile), the relation was negative and significant, with a substantially lower coefficient (-116.232). According to the literature, the larger firm size, the greater volume of dividends distributed to shareholders, as DeAngelo *et al.* (2006), Al-Kuwari (2009) and Jabbouri (2016). In this study, we noticed that only in the 0.25 quantile this trend can be observed. On the other hand, we observed that in the 0.75 quantile the increase in the size of the firms decreased their dividend payout. This evidence may indicate that larger firms when they return or continue to grow, tend to reduce their dividend payout.

Finally, we note that the Subprime financial crisis did not show any significance in any of the quantiles, indicating that it had no impact on the distribution of the firm's dividends. This may be an indication that dividends have been persistent even in the period of the crisis. This

is consistent with the Chow test for structural breaks, whose results (not reported to save space) indicated a structural break for the profit and dividend variables only in the year 2018 (sig. <0.001). Despite the reflection of the 2008 crisis on dividends, the convergence to the average in subsequent years shows that the crisis' effect was only punctual. This is consisting of Chan *et al.* (2018) because in Latin American the firms maintain their DP regardless of the reduction of their earnings during the crisis.

To test the first hypothesis of this research, that there is evidence of dividend persistence in the Latin American capital market, we estimate some adaptation of the Lintner (1956) model, which results are presented in Table 6. One of the variables proposed by Lintner's model is the Net Income (NI_{it}), which is expected to have a positive influence on the dividends in period t. However, we noticed that this variable was significant only in the 0.25 quantile (1.376), indicating that among firms with lower DP the increase in profit positively influences the distribution of company profits. In other quantiles, we note that NI was not a determinant of the dividend payout, ratifying the assumption that Latin American firms maintain their DP regardless of the volume of their NI.

Table 6.
Quantile regressions for the dividend persistence. 2001-2015.

Variables	0.25 Quantile		0.50 Quantile		0.75 Quantile	
	Coefficient	***t* Statistic**	**Coefficient**	***t* Statistic**	**Coefficient**	***t* Statistic**
Constant	0.048	0.15	0.111	0.07	2.745	1.22
NI_{it}	1.376***	6.21	1.135	1.02	1.124	0.73
DP_{it-1}	0.039***	1,538.69	0.039***	307.27	0.039***	221.96
FC_{it}	-2.954***	-8.98	-0.224	-0.14	-2.003	-0.88
$NI_{it} \times FC_{it}$	-9.242***	-10.27	-4.807	-1.07	-6.812	-1.09
$DP_{it-1} \times FC_{it}$	2.720***	12,000.00	2.721***	2434.4	0.537***	345.85
Country dummies	Yes		Yes		Yes	
Year dummies	Yes		Yes		Yes	
Pseudo R^2	0,116		0,056		0,027	
Observations	1,522		1,522		1,522	

Equation 4: $DP_{it} = \emptyset_0 + \emptyset_1 NI_{it} + \emptyset_2 DP_{it-1} + \emptyset_3 FC_{it} + \emptyset_4 (NI_{it} \times FC_{it}) + \emptyset_5 (DP_{it-1} \times FC_{it}) + \theta_j + \delta_t + \varepsilon_{it}$
Note: for every firm i in year t, DP_{it} is the dividend paid, represented by the Dividend Payout ratio; NI_{it} is the Net Profit weighted by Total Assets; DP_{it-1} is the Dividend Payout ratio in year $t-1$; FC_{it} is a dummy for Financial Crisis, assuming value 1 in the year 2008, and 0 in other years; θ_j and δ_t represent, respectively, country and year fixed-effects; and *** is significant at 1%.

On the other hand, Chan *et al.* (2018) argue that dividends are more smoothed in relation to earnings and, because of that, it is probable that the previous dividend influences the current dividend. And we found this in our evidence, in all quantiles, considering the positive and significant relationship between DP_{it-1} and DP_{it}. In this context, we observe that, in fact, the dividend payment in the previous period have a positive influence on the dividend payment of the current period (0.039 in all quantiles). For this reason, we can infer that these dividends are persistent ($\emptyset_2 > 1$), that is, they are explained by the previous dividends, both in firms with smaller, medium or larger payout. Based on this, we verified that hypothesis 1 (H_1) is confirmed for firms in Latin America.

Still, in Table 6, we noticed that the financial crisis (FC_{it}) was negatively significant in the 0.25 quantile (-2.954). We can affirm that the crisis affected negatively the payout only of the firms with smaller volume DP. For firms with higher earnings distribution volume, we can infer that the Subprime financial crisis did not affect the DP. However, the interaction of these variables shows that in all quantiles the dividend persistence was greater in the period of crisis. This evidence consists of Chan *et al.* (2018) and ratifies the assumption that Latin American firms maintain their DP regardless of the reduction of their earnings.

Our last analysis aims to test the second hypothesis of this study that firms with greater indicators of earnings management tend to have greater dividend persistence. In this sense, we create interactions of earnings management with the variables contained in the adapted model from Lintner (1956), according to Equation 5. For this, we constructed a dummy variable, assuming the value 1 when the variable EM_{it}^{mean} was equal to or greater than the median of the residuals squared (used in equation 3), and 0 otherwise. Thus, from this point of the analysis, when the term "earnings management" is mentioned, it refers to this dummy (DEM). We expect the coefficient $\emptyset_3$ positive, and that the coefficient $\emptyset_5$, resulting from the interaction of the

dividend payout with the earnings management ($DP_{it-1} \times DEM_{it}$), is positive, significant and greater than the coefficient $\emptyset_2$ (DP_{it-1}). This is $\emptyset_5 > \emptyset_2$.

According to Table 7, Net Income (NI) was positively significant in the quantiles 0.25 and 0.50. As we argued in the analysis of Table 6, it is possible that earnings are explanatory of the dividend payout only for firms with dividend volumes less than or equal to the median. For firms in the highest quantile, it is possible that dividends from the previous period ($t-1$) may exert a greater influence on current dividends (t) than current Net Income (NI). Also, because even though some losses were obtained, some firms continued to pay dividends. The same happened among the firms with the highest volume of earnings management, since it is possible to verify that the coefficient of the interaction $NI \times DEM$ was not significant in any quantile, indicating that even among the firms with the highest level of earnings management the NI still does not has influenced the dividend payments, consists with Chan *et al.* (2018).

Table 7.
Quantile regressions for dividend persistence and earnings management. 2001-2015.

Variables	0.25 Quantile		0.50 Quantile		0.75 Quantile	
	Coefficient	***t* Statistic**	**Coefficient**	***t* Statistic**	**Coefficient**	***t* Statistic**
Constant	0.088	0.42	0.195	1.01	2.684	1.50
NI_{it}	1.309***	5.02	0.966***	4.07	1.354	0.63
DP_{it-1}	-0.005***	-19.39	-0.005***	-20.65	0.049***	24.45
DEM_{it}	-0.048	-0.74	-0.037	-0.66	0.076	0.14
$(NI_{it} \times DEM_{it})$	0.020	0.08	0.279	1.02	-0.198	-0.09
$(DP_{it-1} \times DEM_{it})$	0.047***	181.84	0.044***	199.09	-0.014***	-5.13
Country dummies	Yes		Yes		Yes	
Year dummies	Yes		Yes		Yes	
Pseudo R²	0.133		0.158		0.187	
Observations	1,390		1,390		1,390	

Equation 5: $DP_{it} = \emptyset_0 + \emptyset_1 NI_{it} + \emptyset_2 DP_{it-1} + \emptyset_3 DEM_{it} + \emptyset_4 (NI_{it} \times DEM_{it}) + \emptyset_5 (DP_{it-1} \times DEM_{it}) + \theta_j + \delta_t + \varepsilon_{it}$
Note: for every firm i in year t, DP_{it} is the dividend paid, represented by the Dividend Payout ratio; NI_{it} is the Net Profit weighted by Total Assets; DP_{it-1} is the Dividend Payout ratio in year $t-1$; FC_{it} is a dummy for Financial Crisis, assuming value 1 in the year 2008, and 0 in other years; DEM_{it} is a dummy for earnings management volume, assuming value 1 for firms with $\varepsilon_{it}^2 \geq$ median of this variable, and value 0 otherwise; θ_j and δ_t represent, respectively, country and year fixed-effects; and *** is significant at 1%.

The dividend payment of the previous period (DP_{it-1}) continued in a significant relation with the dividends of the current period (DP_{it}), in all quantiles. In general, these relations ratify

the findings in the analysis of Equation 4, as well as the evidence of Lintner (1956) and Al-Najjar (2009). As we can see in Table 7, the earnings management alone was not significant in all quantiles, despite its positive and significant correlation in Table 3.

This evidence differs that found by Tong and Miao (2011), who found that firms that distribute more dividends have a better quality of their profits because they have a lower level of earnings management. On the other hand, this evidence is consistent with that found by Rodrigues *et al.* (2014) for Brazil, where firms with higher payout levels tend to manage their earnings positively more frequently, so, the reversal of this management may have a negative effect on the persistence of the dividends in this analysis. Since the earnings management direction (if more or less) has not been verified in this study, it may be that the long-term zero-trend of this management explains the different directions of this relation.

When we control this persistence by the volume of earnings management, we can see that the relations diverge. When we interact DP_{it-1} with the variable that indicates the highest volume of earnings management ($DEM = 1$), we note that among firms in the quantiles 0.25 and 0.50 (less or equal payout volume than the median of the sample) the dividend persistence is higher ($\emptyset_5 > \emptyset_2$). On the other hand, for firms with higher DP volume, the earnings management effect is negative (-0.014), indicating a reduction in the persistence of dividends. Thus, we conclude that the coefficient $\emptyset_5$ is greater than $\emptyset_2$ ($\emptyset_5 > \emptyset_2$) only among firms with the lowest dividend payout ($quantile \leq 0.50$), and when the volume of earnings management is also greater than the median (so, $\emptyset_5 > \emptyset_2$ only if $DP \leq median$ and $DEM = 1$). Therefore, hypothesis 2 of this study is confirmed only for firms with a lower volume of dividend payout ($\leq median$). These findings agree with Chan *et al.* (2018).

5. CONCLUSION

The main evidence of this study demonstrates that firms that distribute more dividends have greater earnings management, seeking to maintain the levels of their dividends persistent. Thus, our findings allow for the conclusion that dividends are more smoothed than earnings in Latin American companies, at least among firms with a payout volume equal to or less than the median of that part of the continent. As evidence, we can cite, once again, the decision of firms to choose to distribute dividends even in years with reported losses, which allows them to smooth their dividend payout and increase the dividend persistence. One possible explanation for this phenomenon is the interest of firms to remain attractive in the capital market, inclusive in periods of crisis.

We highlight the limitations of this study, such as not having considered the regulatory issues of each country, nor having dealt with the specific financial crises of each country during the analyzed period. However, we note that we did not have access to this information in our databases, in a secure way, and for that reason, we decided to keep these variables out of the study. Nevertheless, we include in our models' specific controls for country and year, seeking to delimit such microeconomic effects. Above all, we note that these limitations do not invalidate the study. Thus, we highlight that it contributes to foster discussions about the dividend persistence in Latin America, which despite being a fertile field has been exploited less frequently than other markets. Our evidence points to an important means of shareholder remuneration in a region marked by local crises. Therefore, they are relevant as support to investors in their investment decision-making.

Finally, the findings of this study generated other questions regarding the lack of some particularities, and therefore we suggest future developments for this research: (i) to investigate the legislation pertaining to each country and how these standards may affect the dividend persistence by comparing these events between countries; (ii) to verify the specific financial

crises of each country and to analyse their influence on the dividend persistence, in the presence of earnings management; (iii) investigating how the way of earnings management (more or less) affects the dividend persistence of firms; and (iv) to verify the motivations that lead firms to seek greater dividend persistence, even in periods in which they have reported losses.

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