

## **The information content of dividend announcement under a mandatory dividend rule**

### **Abstract**

This paper examines the influence of mandatory rule on the effect of dividend announcement on market reaction. The sample consists in companies from Brazil, Chile and Greece. The results show that analysts have optimistic forecasts for dividends and 81.2% of companies are concern to announce dividend equal or higher than the minimum mandatory. Cumulative abnormal return (CARs) was identified only for dividends higher than the mandatory threshold. The largest companies are related to the smallest returns and positively related to ROA. And, the CARs on response to the dividend announcement are greater in companies with overinvestment.

**Keywords:** Dividend payout, Mandatory dividend rule, Announcement returns.

### **1 Introduction**

La Porta et al. (2000) listed Brazil, Chile, Colombia, Greece and Venezuela as countries where the dividend are legally mandatory. In these countries, all firms must allocate a certain amount of their earnings as dividends. Given this legal difference, we examine the influence of mandatory minimum rule on the effect of dividend announcement on market reaction.

The motivations behind giving back cash to shareholders have been a contentious issue. The cash flow signaling and the free cash flow hypotheses are the most prominently theories used to explain the information convey by dividend announcement. However, these two hypotheses are developed on a market where firms can independently determine how much profit will be paid through dividends, adjusting then to signal their prospect, which might be an information unknown previously. Hence, the mandatory rule may suggest a diminished role for dividend announced, once part of the unexpected information becomes expected given the legal constraint.

In Brazil, the corporate Law (Lei das S.A.- 6.404/76) encourages all public firms to include in their Bylaws a percentage of the annual profits to be paid out as dividends. The mandatory dividend may not be less than 25% of the adjusted net income. In Chile, the security law (18.046/81) required a mandatory 30% dividend payout ratio for all companies with positive net profits. In the case of Greece, the law 3604/2007 determines the minimum mandatory dividend equal to 35% of the net income minus regulatory reserves (Asimakopoulos et al., 2015).

Nevertheless, all this requirement can be waived by shareholders approvals. In Brazil, if the management inform in the General Meeting that mandatory dividend is incompatible with the financial situation of the company and the shareholders approve it, the management team has to argue to the Brazilian Securities and Exchange Commission

(CVM) that dividend payment might lead the firm into financial distress. In Chile, the minimum amount only can be paid less if it is approved on General Meeting by all shareholders (Lefort, 2008). In Greece, it is a matter of 65% of the votes for less than a minimum, but 80% for non-dividend distribution (Dasilas & Leventis, 2013).

To test the influence on market, we collect data from 1,078 dividend announcements from Brazil, Chile and Greece during the period 2005 to 2016, after the adoption of the International Financial Reporting Standards (IFRS). We first estimate, for each firm-year, the analyst average dividend forecast, dividend surprise, mandatory threshold and the mandatory difference. We also measure the expected and unexpected earnings. Then, we classify our sample according to the interaction of unexpected earnings and unexpected dividend (mandatory and forecast dividend surprise). We begin by estimating stock price reactions around the dividend announcement day using an event study method. Our results suggest that the cumulative abnormal returns (CARs) around dividend announcement window are influence on whether firms announce above the minimum mandatory.

Our study makes important contributions to the existing literature on dividend signaling. Firstly, we add empirical results related to the informational content of dividend under mandatory rules, which contribute to the knowledge of dividends under different jurisdictions. An important outcome of our findings is the distinction between dividend above the mandatory and the minimum mandatory. This differentiation agree to prior studies that indicates that changes in dividend announcements should consider the legal framework in which dividend are determined. Finally, our research also contributes as a reflection to the academy as well as regulators whether the regulatory intervention is a mechanism to curb agency problems.

The rest of the paper is organized as follows. Section 2 presents the theoretical context of dividend policy decisions, some key empirical contributions to the literature and the development of the hypotheses. Section 3 presents the sample procedures adopted. Section 4 provide descriptive statistics of unexpected dividend and the relation with mandatory threshold. Section 5 documents the abnormal returns associated with dividend change announcement and the minimum mandatory rule, and also the regression analysis of the relation between dividend payments and the signaling and free cash flow hypotheses. Finally, we conclude the paper in Section 6.

## **2 Literature review and hypotheses developed**

It has been a puzzle why companies choose to pay dividend and why investors are so interested in them (Black, 1976). In perfect and complete financial market, Miller & Modigliani (1961) affirm that the firm value is not affected by dividend policy. However, empirical results evidence a significant and positive relationship between announcements of dividend changes and stock price movements (Pettit, 1972; Aharony & Swary, 1980; Haw & Kim, 1991).

Lintner (1956) describe the dividend policy as a priori decision for managers, and they believe that investors prefer corporations that follow stable dividend policies. Hence, changing in dividend amount is based on a substantive

change in the corporate management that can reflect its capital investments and perspective of growth. Therefore, payout decisions are made conservatively. Brav et al. (2005) state that managers are reluctant to cut dividend, once they perceive a substantial asymmetry reaction between dividend increase and decrease, so, they tend to change the dividend policy only when they perceive a permanent change in earnings.

One explanation for market reaction to changes in the dividend policy is provided by the cash flow signaling theory (CFS) of Bhattacharya (1979) and Miller & Rock (1985). The authors argued that managers change the level of dividend payments as a costly signal for future earnings change. The signaling costs are function of the differential tax treatment of dividend and capital gains and the financial costs of raising funds to perform their obligations. Therefore, investors evaluate changes in cash dividend provide information about management's assessment of future prospects of the firm, once the costs encourage managers to tell the truth about firm's expected cash flows (Aharony & Swary, 1980).

A positive impact, however, is also consistent to the free cash flow hypothesis. Due to the separation between ownership and control, managers may not always act in the best interest of firm's investors. The agency theory attributes to dividend a control function to mitigate managerial discretion. Jensen (1986) argue that firms with substantial free cash flows will have a tendency to overinvest by approving unprofitable projects, and dividend has a role to reduce free cash flow. Easterbrook (1984) adds that dividend commitments may force management to raise external capital for new projects, thereby inflicting market discipline on the firm. Hence, the market positive association to dividend changes reflects the firm's intention on mitigate investor concerns about overinvestment (Lang & Litzenberger, 1989).

Yet, the differences between the institutional settings lend caution to generalizations across different countries. Amihud & Murgia (1997) and Al-Yahyaee et al. (2011) explore the differences in the cost of using dividend to signal information in German and Oman, respectively. Although with no tax on dividend, their results show a positive market reaction. Indeed, the authors conclude that dividends provide information of companies' current earnings, in addition to what is disclosed in the financial statements. Recent in China, there is a regulatory intervention that implement a semi-mandatory dividend rule to issue new equities (Lee et al., 2015). Tao et al. (2016) show that the cumulative abnormal return around dividend announcement are conditional on whether firms undertake seasoned equity offering (SEO) or not. In particular, they find that CARs for non-SEO firms are significantly positive with unexpected dividend increase, but insignificant when dividend announcement is related to SEO firms. Another mandatory market studied is the Greek. Dasilas & Leventis (2011) by splitting the sample in firms paying out dividend above the minimum required and those paying below, only the higher group experience a positive share price response. This discussion leads us to the following hypothesis:

**H1:** The mandatory dividend rule reduces the market reaction to unexpected dividend announcement.

Another contrast to U.S. market are the concomitant announcement of dividend and earnings. In Australia, How et al. (1992) and Michayluk et al. (2017) provide evidence that stock market attributes higher returns to dividend and earnings signals that corroborates each other compared to the mixed signal. Unlike in Japan, Conroy et al. (2000) finds that earnings dominate the explanation on stock price reaction, and only unexpected future dividend contribute to influence market response. Additionally, Chen et al. (2002) explain that cash dividend has limited signaling role when the amount paid vary a lot, which diminish its role as a signal. Michayluk et al. (2017) also report, after controlling for earnings-related information, a reduction of the market reaction the more often the unexpected dividend is repeated. Thus, we expect the second hypothesis:

**H2:** The abnormal announcement returns are asymmetric depending on whether the earnings and dividend surprise are positively signed, negative or mixed.

The magnitude of the surprise is not the only determinant of the share price reaction. Considering the cash flow signaling and the free cash flow hypotheses, the magnitude of the price reaction to dividend announcement depend also to a certain characteristics of the firm, that may generate multiple theoretical interpretations about dividend serving as signaling and/or monitoring device.

Signaling information to investors via dividend announcements is more relevant for smaller firms, that is because larger firms usually have more information readily available in the market. According to DeAngelo et al. (2004) if managers use dividends to communicate with stockholders, it should occur primarily in small, relatively unknown firm with limited access to financial press. Amihud & Li (2006) explain the negative coefficient because large firms usually receive more attention by analysts and investors, which reduces the incremental information provided by the dividend changes. Kato et al. (2002) shows that larger firms are more willing to make announcements, but the market reaction is usually smaller. Andres & Hofbauer (2017) show that market reacts to dividend change in four-quarter cycles, but is negative associated to the firm size. The negative evidence from the regression analysis is consistent with the interpretation based on the information availability of a firm. Hence, the signaling hypothesis implies that smaller firms with less available public information would generally produce a greater market response to the announcements.

Agency theory associate dividend to disciplinary mechanism. Kato et al. (2002) address that larger firms are consider more mature, with more free cash flow, and more likely to be overinvestors, so, a positive effect is expected on the market reaction to dividend announcements of large firms. complementing the agency theory, Lang & Litzenberger (1989) considering the investment behavior. By using the Tobin's Q as a proxy to firms investment opportunities, Lang & Litzenberger (1989) shows that firms with Q less than 1 experience positive excess returns following dividend change announcements because is associate to market expectations of overinvestment. Additionally, La Porta et al. (2000) find that high growth firms usually do not pay dividends in order not to reduce their free cash flow for future growth. Therefore, it is expected that mandatory dividend announcement may influence the market reaction according

to the growth opportunities, once these firms are forced to pay cash dividend. Tao et al. (2016) results corroborate this statement, by showing that mandatory dividend has more significant effect when is associated to high growth opportunities.

Thus, we state the following hypotheses:

**H3:** The informational role of dividend announcements is more important in smaller firms. Hence, it is expected a negative reaction between firm size and market reaction.

**H4:** Firms with higher free cash flow experience a larger price appreciation (drop) after a positive (negative) dividend surprise.

In line with other studies, we control the market respond to dividend announcement for a number of other variables: Following Andres et al. (2013), we include firm's leverage ratio as a control variable to mitigate the overinvestment problem. According to Jensen (1986), debt can be regarded as a substitute for high payout levels, once commit firms to disgorge cash and constrains managers from investing free cash flow in negative net present value projects. Furthermore, high debt also increase the level of monitoring by capital markets, which may reduce agency costs (Easterbrook, 1984). Dividend yield is also included as control because Denis et al. (1994) show that the relation describe in Lang & Litzenger (1989) is byproduct of negative relation between dividend yield and Tobin's Q.

### **3 Sample selection**

To construct the sample, we start with all companies from Brazil, Chile, Greece that have dividend forecast available in Institutional Brokers' Estimates System (I/B/E/S). The period choose for analysis is after mandatory adoption of International Financial Reporting Standards (IFRS) (Hail et al., 2014) . This shock is not necessary aligned in time, so for Greece we started at 2005 and for Chile and Brazil after 2010. Companies also had to follow these criteria to be included in the sample: (a) has to have data available on COMPUSTAT Global and I/B/E/S International; (b) consolidated balance sheets and dividends information for at least 2 years of continuous and non missing data; (c) relevant trading data, available in the COMPUSTAT Global Security Daily Database.

Since the mandatory dividend amount is determined on an annual basis, we focus on annual dividend announcements. We use the international edition of the I/B/E/S detail file for our data on consensus dividend and earnings forecasts, actual dividends and the firm's industry classification. The consensus estimates refers average of 200 days before the actual announced, which represents at least 70% of our observations. To reduce the effect of outliers, the earnings and dividend are winsorized by 1% and 99% of the empirical distribution. Brown et al. (2008) results have show that I/B/E/S dividend forecast are an accurate estimate of the actual dividend as evidence by the low forecast error, even considering an international sample.

In addition to I/B/E/S dataset, we required stock price, daily trading volume, actual earnings per share (EPS) and firm-fundamental data from COMPUSTAT Global. The countries Index daily price are retrieved from Bloomberg®.

Table 1: Sample composition by country and year

Panel A. Number of observations, dividend payment and net income consolidated by country						
Country	Unique Firms	Firm-Years	Dividend payments		Net income consolidated	
			N	%	N	%
Brazil	118	659	406	61.6%	544	82.5%
Chile	13	57	39	68.4%	55	96.5%
Greece	58	362	187	51.7%	285	78.7%
Total	189	1078	632	58.6%	884	82.0%

Panel B. Number of observations, dividend payment and net income consolidated by year						
Year	Firm-Years	Dividend payments		Net income consolidated		
		N	%	N	%	
2005	31	25	80.6%	31	100.0%	
2006	40	33	82.5%	36	90.0%	
2007	39	32	82.1%	37	94.9%	
2008	43	27	62.8%	37	86.0%	
2009	44	20	45.5%	34	77.3%	
2010	133	58	43.6%	116	87.2%	
2011	136	95	69.9%	116	85.3%	
2012	136	99	72.8%	104	76.5%	
2013	131	79	60.3%	109	83.2%	
2014	129	21	16.3%	101	78.3%	
2015	108	82	75.9%	85	78.7%	
2016	108	61	56.5%	78	72.2%	
Total	1078	632	58.6%	884	82.0%	

This selection procedure leaves us with 1,078 firm-year observations of dividend announcements from 3 countries (Brazil, Chile and Greece). Table 1 provides a breakdown of the total sample and shows the number of unique firms and firm-years by country and year. It also contains information on the number of dividend payers, which represents the cases where dividend announcements are not zero, and whether the company have issued earnings in the same year. Panel A shows that dividend payments are fairly common in mandatory countries. However, even presenting a higher number of non-zero announcements, some companies disclosure positive net income but did not announce dividend. Panel B shows the general trend in dividend payments over time. Over the years, firms announced dividend out ranging from a high of 82.5% in 2006 to a low of 16.3% in 2014. Nevertheless, despite the disclosure net income consolidated be positive over the sample period, the percentage of non-zero dividend announcement goes down. The negative time coincides with the beginning of the global financial crisis. Even so, at the end of the sample more than half of the firms continue to announce dividend payments.

#### 4 Dividend changes, mandatory dividend and unexpected earnings

The dividend variations are compute to measure new information. Following Conroy et al. (2000), a dividend surprise ( $DivSurprise_{i,t}$ ) is define as the difference between firm's dividend annual announced value ( $D_{i,t}$ ) and average analysts' forecast ( $FD_{i,t}$ ) of  $D_{i,t}$  provided by the I/B/E/S, divided by stock price ten days before the announcement ( $P_{i,-10}$ ),

$DivSurprise_{i,t} = (D_{i,t} \times FD_{i,t})/P_{i,-10}$ . A dividend surprise can be either good or bad news. It is considered a good news if  $DivSurprise_{i,t} > 1.0\%$  and bad news if  $DivSurprise_{i,t} < -1.0\%$ . The actual value in the range of 1% of forecast is designated as no news, suggesting a rounding change (Amihud & Li, 2006). Our classification is based on assumption that the mean analysts' forecast are better predictor than the previous dividends. Conroy et al. (2000) and Andres et al. (2013) argue that if firms pay dividends once a year the average of analysts' forecast is a more accurate predictor of actual dividend because includes recent financial information available to market participants, so, is a better proxy for market expectation.

However, to test for the interaction or corroboration effect of mandatory dividend on share price we re-define the intervals for unexpected dividend change. The amount paid as mandatory dividend ( $MandDiv_{i,t}$ ) is calculate as percentage of the annual profits based on each country mandatory rule. So, the investors may condition their interpretation of new information based not only on the change between of analysts' forecast and the actual dividend announced, but also considering the minimum threshold.

Table 2 presents information of the relation between actual, forecast and mandatory dividend in current year. The first row shows that managers are concerned to keep relatively stable dividend payout, in 64 percent of our sample observations there is no change in dividend per share from one year to the next. The first row also shows that dividend increases is similar with the number of decreases. By analyzing the second and third rows analyst forecast are usually optimistic. Farther, it is possible to observe a concern regarding the mandatory threshold, 81.2% of the companies seek to announce at least the minimum or more required. Finally, it is not clear that the analyst consider the mandatory amount into the forecast.

Table 2: Actual, forecast and mandatory changes in current year dividends

Measure of change	Negative	Zero	Positive
Current dividend minus last year's dividend	18.5%	64.0%	17.5%
Analyst forecast of current dividend minus last year's dividend	7.6%	62.2%	30.2%
Current dividend minus Analyst forecast	31.7%	63.1%	5.2%
Current dividend minus mandatory current dividend	18.8%	64.3%	16.9%
Analyst forecast of current dividend minus mandatory current dividend	7.4%	58.1%	34.5%

Completely, dividend and earnings announcements are often made simultaneously. To disentangle the impact of the two signals and to examine the interaction among them we follow a similar method used in Conroy et al. (2000), Chen et al. (2002) and Michayluk et al. (2017). We employ as earning per share expectation the magnitude of the earnings surprise for the financial year just ended as  $EPSSurprise_{i,t} = (E_{i,t} \times FE_{i,t})/P_{i,-10}$  where  $E_{i,t}$  is actual reported earnings and  $FE_{i,t}$  is the average earnings per share forecast for year t published prior to the actual earnings announcement and  $P_{i,-10}$  is the stock price 10 days before the announcement date. Actual earnings per share are obtained from COMPUSTAT Global and forecast earnings are from the I/B/E/S database. To disentangle the impact of the dividend and earnings variables we also incorporates their relation as dummy variables.

Table 3 presents summary statistics for independent variable for the final sample. The rejection of the null hypothesis by the non parametric Kruskal-Wallis test shows that at least one of the categories is different. Panel A reports the descriptive statistics of firms separate according good news, bad news and no news. In Panel B firms are organized according to the relation between actual dividend announcement and the mandatory value. Although, the dividend announcement be quite similar to the analyst forecast and minimum mandatory, the sample suggest that firms are much willing to achieve the mandatory threshold than the forecast.

Table 3: Descriptive statistics of firms across all countries and over the entire sample period

Panel A. Descriptive statistics for firms with good news, bad news and no news across all countries and over the entire sample period.										
Variable	Bad News (N= 357)			No News (N= 695)			Good News (N=58)			KW test
	Mean	Median	Standard Dev.	Mean	Median	Standard Dev.	Mean	Median	Standard Dev.	
Dividend yield	0.51%	0.00%	1.11%	1.34%	1.08%	1.39%	4.86%	4.02%	3.41%	252.527 ***
Dividend zero	74.90%		43.40%	27.90%		44.90%	0.00%		0.00%	180.405***
Dividend surprise	-2.81%	-2.16%	2.05%	-0.12%	-0.06%	0.42%	2.05%	1.46%	1.51%	772.134***
Dividend change	-1.73%	-0.77%	4.24%	0.33%	0.01%	1.25%	2.88%	2.47%	2.49%	285.295***
Earnings surprise	-4.20%	-1.01%	12.60%	0.02%	-0.09%	8.97%	-0.06%	0.31%	5.04%	48.172***
Earnings change	-3.60%	-0.38%	15.90%	-4.98%	0.02%	137.60%	-0.27%	1.05%	8.88%	15.207***
Mandatory difference	-0.96%	-0.70%	1.70%	0.18%	0.00%	1.46%	2.89%	2.21%	2.97%	250.384***
Firm-specific										
Ln(Market value)	8.260	8.062	2.205	8.947	8.761	2.412	7.864	7.969	1.731	28.092***
Tobin's Q	1.276	1.032	0.781	1.549	1.182	1.109	1.214	1.025	0.762	46.766 ***
Book-to market	0.537	0.446	0.424	0.389	0.346	0.291	0.595	0.455	0.435	41.807 ***
Leverage	1.262	0.785	3.215	1.456	0.824	2.735	1.132	0.771	1.164	2.642
ROA	7.32%	6.68%	6.76%	8.62%	7.10%	10.60%	9.11%	8.12%	6.74%	4.909 *
Panel B. Descriptive statistics for firms with payments according to the minimum required by law.										
Variable	Lower than mandatory (N= 203)			Minimum required (N= 693)			Higher than mandatory (N= 182)			KW test
	Mean	Median	Standard Dev.	Mean	Median	Standard Dev.	Mean	Median	Standard Dev.	
Dividend yield	0.39%	0.00%	0.85%	0.88%	0.58%	1.07%	3.68%	3.20%	2.39%	387.865***
Dividend zero	74.90%		43.50%	42.40%		49.50%	0.00%		0.00%	161.901***
Dividend surprise	-2.15%	-1.65%	2.29%	-0.76%	-0.27%	1.45%	0.21%	0.25%	2.05%	220.749 ***
Dividend change	-1.39%	0.00%	4.72%	-0.26%	0.00%	1.94%	1.42%	1.05%	2.52%	142.333***
Earnings surprise	2.92%	0.87%	8.30%	-2.16%	-0.31%	11.00%	-2.87%	-0.69%	8.28%	75.670 ***
Earnings change	5.46%	1.33%	37.70%	-7.52%	-0.05%	134.90%	-2.94%	-0.03%	12.90%	44.283 ***
Firm-specific										
Ln(Market value)	8.055	7.862	2.169	8.826	8.6	2.366	8.778	8.924	2.351	22.334***
Tobin's Q	1.465	1.134	0.927	1.394	1.113	0.88	1.619	1.128	1.448	0.754
Book-to market	0.496	0.42	0.335	0.433	0.378	0.333	0.443	0.361	0.442	9.912 ***
Leverage	0.992	0.681	1.357	1.464	0.852	3.315	1.48	0.764	1.929	13.370 ***
ROA	9.89%	8.97%	6.36%	6.76%	6.20%	8.12%	12.00%	8.72%	0.141	63.702***

In Panel A, the bad news events are triggered with bad earnings surprise and changes. Almost 75 percent of the the dividend per share announced is zero, although on average they are close to the range of the minimum mandatory dividend. Firms that represent good news show high dividend yield, which is also greater than mandatory. The earnings per share disclosure is on average equal to analyst forecast and similar to year before. Companies with no news related to dividend are also announcing the minimum require by legislation. Only 28% of the dividend payment is zero. Their earnings per share have not present any earnings surprise, but on average are lower than year before. The correlation between unexpected earnings surprise and unexpected dividends forecast is 0.27, significant at the 0.01 level. The firm specific characteristics show that the more profitable firms, higher ROA, are more likely to pay dividend, and is supported by the less opportunity to growth considering the book-to-market ratio higher than the sample average and the lowest Tobin's Q. Firms that increase dividends are slightly smaller than firms in the other two groups.

Descriptive statistics for firm with dividend announcement lower, equal and greater than mandatory threshold is provided in Panel B of Table 3. Firms that announced dividend equal or higher than mandatory, also present on average negative earnings surprise and change. The correlation between mandatory surprises and earnings surprise is -0.2356 (which is significant at the 0.01 level). There are 184 cases where dividend announcement are above the mandatory and the unexpected earnings is negative but there are only 27 cases of dividend announcement over mandatory and positive earnings surprise. The high dividend yield may be a substitute compensation for investor. Over than 75 percent and 43 percent of the dividend announcement equal or lower than mandatory represents cases of zero dividend payment. With respect to firm specific characteristic, our sample shows that firms with dividend lower than mandatory present growth opportunity considering the book-to-market ratio and the Tobin's Q but low leverage ratio, which suggest that they are retain cash to finance their investments. Differently, the firms with dividend equal to minimum required or greater are more leverage, with almost the same growth opportunity. With respect to profitability, firms that only pay the minimum mandatory show the lowest ratio.

Considering this evidences, next section analyses if shareholders incorporate the mandatory target value into their expectations by analyzing the stock price reaction to dividend announcement.

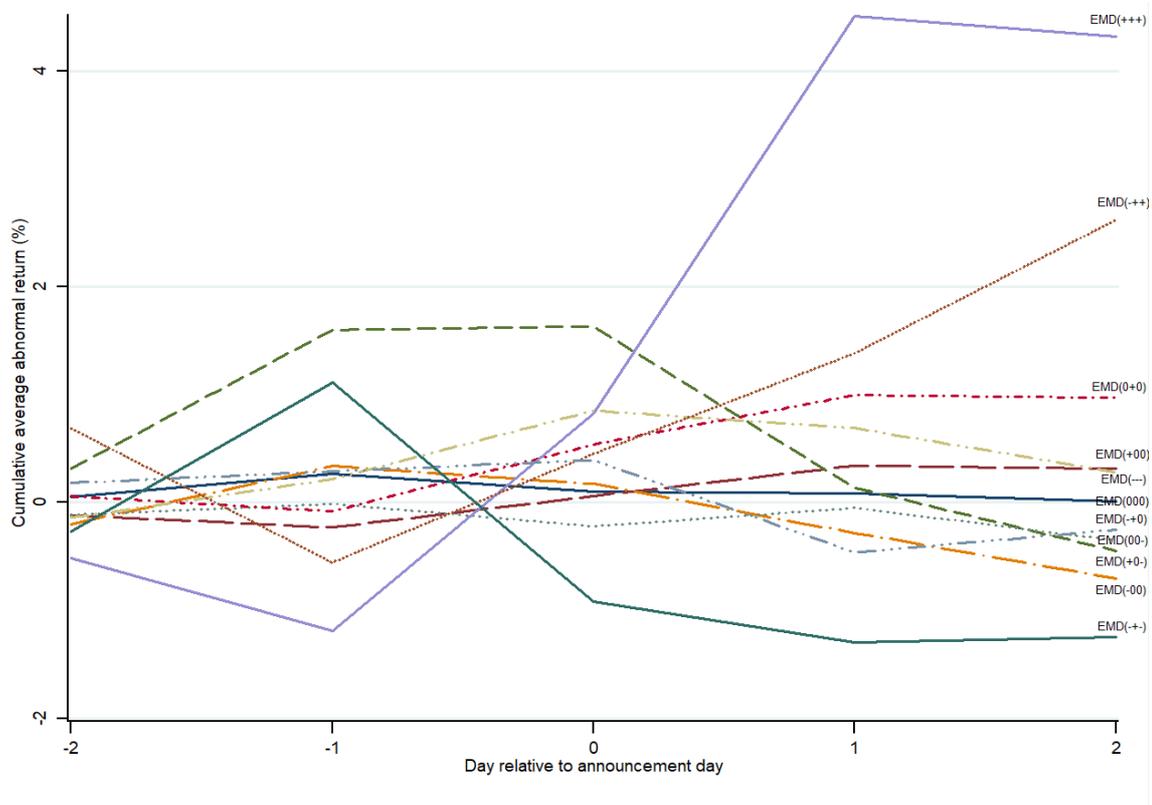
## **5 Stock price reaction to dividend announcements**

To measure the stock price reaction to the announcement of dividend is used the event-study methodology of Brown & Warner (1985). The expected return for each event is estimated using the market-adjusted return model. The event date, day 0, is defined as the date of the dividend announcement. The market model parameters are calculated on 150 daily returns prior to the event (-160, -11). The abnormal return  $AR_{i,t}$  is estimated using the following equation:

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{m,t})$$

where  $R_{i,t}$  is the return of firm  $i$  on day  $t$ , and  $R_{m,t}$  is the return of the market portfolio on day  $t$ . Following Conroy et al. (2000), Tao et al. (2016) and Michayluk et al. (2017), we use two-day abnormal return of dividend announcement as the cumulative abnormal returns ( $CAR(0,1)$ ), where day  $t = 0$  is the announcement day. Table 4 reports the event study results. All announcements are classified according to the interaction of unexpected earnings and unexpected dividend (mandatory and forecast dividend surprise), represented by  $EMD$  dummy variable. In this sense, for example if a firm announce the earnings per share greater than what is been predict by the analyst, so the earnings surprise is positive; if dividend announcement is higher than the minimum mandatory, the mandatory difference is positive, and, if is greater than average dividend forecast, the dividend surprise is also positive, then  $EMD(+++)$  is coded one, otherwise it is coded zero. In all cases, the first sign relates to the earnings surprise, the second relates to the difference to the

Figure 1: Cumulative average abnormal return portfolio partitioned on the basis of the interaction of earnings and dividend



minimum mandatory, and the third relates to the dividend surprise. Results for groups with ten observations or fewer are not reported.

Figure 1 shows the daily cumulative average abnormal return (CAAR) for different portfolios based on the dummy variable of interaction  $EMD$  over a 5 day event window, where  $t = 0$  is the announcement day. We observed that most of the CAAR after dividend announcement maintained close to zero. Firms in  $EMD(+++)$  portfolio experience a positive drift, which reflects the unambiguous “good news” nature of this scenario. The positive surprise of earnings and dividend represents a reward if comparing with the CARs from events  $EMD(-++)$  and  $EMD(0+0)$ . Furthermore, the negative reaction of the event  $EMD(-+-)$  may reflect a decreasing trend of the “good news nature” of the dividend

greater than minimum mandatory as it moves from  $EMD(+++)$  to  $EMD(-+-)$ . Lastly, firms in  $EMD(+0-)$  portfolio tends to drift upwards during the period prior to day -1 (perhaps in anticipation of good news), but the dividend decrease seems to take the market by surprise, as shown by the drop on the next two days following the announcement.

Table 4: Cumulative Abnormal Returns and Market Expectations

	Model 1		Model 2		Model 3		Model 4	
	Coefficien t	Std. Err.	Coefficien t	Std. Err.	Coefficien t	Std. Err.	Coefficien t	Std. Err.
D.Mandatory	-0.003	(0.003)	-0.003	(0.003)				
DivSurprise	0.228**	(0.109)	0.190	(0.136)	-0.014	(0.181)	-0.001	(0.180)
MandDifference	-0.002	(0.123)	0.043	(0.146)	0.062	(0.186)	0.094	(0.184)
EPSSurprise			0.017	(0.026)	-0.001	(0.029)	0.007	(0.031)
EMD(000)					0.024*	(0.013)	0.025*	(0.014)
EMD(+00)					0.037**	(0.014)	0.036**	(0.014)
EMD(-00)					0.024*	(0.013)	0.023	(0.014)
EMD(0++)					0.026	(0.017)	0.026	(0.017)
EMD(+++)					0.078***	(0.020)	0.075***	(0.020)
EMD(-++)					0.047**	(0.019)	0.044**	(0.019)
EMD(0--)					0.024	(0.015)	0.025	(0.015)
EMD(+--)					0.035**	(0.017)	0.034**	(0.017)
EMD(--)					0.025	(0.017)	0.026	(0.017)
EMD(00-)					0.014	(0.014)	0.015	(0.014)
EMD(+0-)					0.015	(0.015)	0.013	(0.015)
EMD(-0-)					0.017	(0.012)	0.017	(0.012)
EMD(+0+)					0.046**	(0.020)	0.045**	(0.021)
EMD(0-0)					0.005	(0.023)	0.003	(0.023)
EMD(+ -0)					0.029	(0.018)	0.026	(0.019)
EMD(--0)					-0.002	(0.020)	-0.003	(0.020)
EMD(0+0)					0.037***	(0.014)	0.035**	(0.014)
EMD(++0)					0.028	(0.019)	0.024	(0.019)
EMD(-+0)					0.014	(0.014)	0.011	(0.014)
EMD(0+-)					0.003	(0.025)	-0.001	(0.025)
EMD(00+)					0.052***	(0.017)	0.049***	(0.017)
EMD(+ -+)					0.051***	(0.019)	0.047**	(0.019)
Size							-0.017**	(0.007)
Tobin's Q							0.001	(0.003)
BTM							-0.010	(0.009)
Leverage							0.001	(0.001)
ROA							0.040*	(0.022)
Constant	0.006	(0.005)	0.005	(0.005)	-0.026*	(0.014)	0.116*	(0.068)
Observations	1,078		1,078		1,078		1,077	
R-squared	0.035		0.036		0.076		0.090	
Firm Fixed-effect	189		189		189		189	
Country FE	YES		YES		YES		YES	
Year FE	YES		YES		YES		YES	

This result suggest that the legal framework of mandatory dividend reflect on how the market perceives the dividend announcement, as suggest in hypothesis H1. Furthermore, the earnings surprise also play an important role in

share price reactions to dividend announcements, supporting the hypothesis H2. Hence, we run a multivariate regression to examine whether unexpected dividend announcement has explanatory power for the market reaction when part of the dividend value is mandatory. As dividend and earnings are often announced simultaneous, we also include the surprise in earnings per share and dummies variables which depend on the sign of the earnings surprise, mandatory difference and dividend surprise. For all the models we include Country and year dummies, but results not reported. Table 4 reports the regression coefficient estimates and (in parentheses) t-statistics based on robust standard errors by firm fixed-effect.

Model 1 is the baseline specification that permits to test the hypothesis that the legal framework influence how market perceive the dividend announcement. *DivSurprise* coefficient show a significant and positive reaction of stock price to dividend surprise, similar to the finds in literature. The negative sign of mandatory variables, *D.Mandatory* and *MandDifference* is an indicative that market react less to the dividend announcement related to the minimum mandatory, which suggest less information content of unexpected dividend announcement. In Model 2, we include the earnings surprise, *EPSSurprise* in order to disentangle the effects that dividend and earnings announcements have on share prices. Separately, neither the surprise in dividend nor earnings has explanatory power for the abnormal returns. The results of irrelevance of earnings surprises is consistent with the conclusion by DeFond et al. (2007), which indicate that annual earnings announcements are less informative in countries with more frequent interim financial reporting.

In Model 3, we examine the corroboration effect of earnings and dividend announcement following prior studies (How et al., 1992; Chen et al., 2002; Cheng & Leung, 2006; Michayluk et al., 2017). Our interaction dummy variable, *EMD*, differ from prior studies by introduce the mandatory difference. There are twenty three dummy variables which depends on the sign of earnings surprise, mandatory difference and dividend surprise respective. From these, *EMD(- + -)* is not included to prevent the perfect multicollinearity. We expected that market interprets earnings and dividend jointly. The constant (intercept) term takes the effect of what we consider the worst scenario as show in Figure 1. Since the coefficient of the other dummy variables represent the incremental return over the suppressed *EMD(- + -)* dummy, they are generally positive and significant.

Considering the scenario where only earnings surprise represent new information, *EMD(+00)* and *EMD(-00)*, only positive results have significant impact on share price reaction. The highly significant coefficient estimates of corroborative announcement by dividend and earnings (*EMF(+ + +)*) reflects the unambiguous good-news nature of this scenario, signing a positive price impact. The coefficient of the *EMD(-+ +)* indicates that increase in dividend is strong enough to offset the "bad news" associated to the earnings per share been lower than analyst forecast. The market participant's preference for high dividend announcement is also confirm by the significantly positive coefficient of the *EMD(+0+)* and *EMD(0+0)*. Nevertheless, a smaller market reaction of the coefficients *EMD(0--)*, *EMD(+--)*, *EMD(---)* and *EMD(+ -0)* is indicative of lower information content of dividend announcement lower than minimum

mandatory. This pattern may be associated to the fact that dividend announcement can be less than mandatory dividend as long as it is approved in the General Meeting. Therefore, this scenario may have been anticipated.

In Model 4 of Table 4, we extend the set of independence variables in order to examine alternative explanations for our results and address concerns that unobserved firms' factors might drive our results. CARs are negatively related to firm's size, which support the signaling hypothesis that larger firms are more informative so the dividend announcement convey less information. CARs are also positively related to firm's current return on asset (ROA). Despite the set of control variables, the results of the interaction of unexpected dividend surprise and earnings, measured by EMD dummy variables, are not effected.

Next, we extend the analysis considering the corroborative evidence from investment opportunity and market perception of dividend announcements. Hypothesis H4 predicts that firms with profitable investment opportunities my induce an negative share price reaction if dividend is announced above the mandatory limited, reducing their cash flows for the future growth. Following Tao et al. (2016), we identify growth opportunities using book-to-market ratio. Firms with a book-to-market ratio higher (below) of the sample median ratio indicate low (high) growth opportunities. We present results of the estimating equation using OLS regression in Table 5.

Table 5: Cumulative Abnormal Returns for dividend changes according to investment opportunities

	Higher than mandatory		Minimum required		Lower than mandatory	
	High Growth	Low Growth	High Growth	Low Growth	High Growth	Low Growth
DivSurprise	0.679 (0.578)	-0.168 (0.185)	0.356* (0.183)	-0.061 (0.192)	0.350 (0.270)	0.032 (0.282)
MandDifference	0.513 (0.383)	1.268*** (0.349)	-0.054 (0.470)	0.312 (0.685)	-1.048* (0.550)	-0.504 (0.395)
EPSSurprise	0.167 (0.140)	0.041 (0.061)	-0.014 (0.039)	0.081** (0.037)	-0.242** (0.117)	0.041 (0.140)
Size	-0.001 (0.002)	0.009** (0.004)	0.000 (0.001)	-0.002 (0.002)	-0.002 (0.003)	-0.002 (0.004)
Leverage	-0.001 (0.002)	-0.017 (0.014)	0.002** (0.001)	0.000 (0.004)	-0.001 (0.002)	0.000 (0.009)
ROA	0.012 (0.032)	0.148* (0.084)	-0.006 (0.023)	-0.004 (0.034)	0.067 (0.054)	0.127* (0.065)
Constant	0.014 (0.034)	-0.118** (0.046)	-0.004 (0.013)	0.020 (0.017)	0.002 (0.032)	-0.017 (0.035)
Observations	96	86	350	342	93	110
R-squared	0.391	0.346	0.175	0.064	0.276	0.212
Country FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

The results indicate differences in dividend policy related to investment opportunities. When dividend announcement is greater than minimum mandatory, the information revealed is more consistent with the prediction of

the free cash flow signaling hypothesis. Hence, dividend surprise for high growth firms would not be expected to have a particular effect on stock prices. According to Lang & Litzenberger (1989), this is because dividend changes do not affect the market's assessment of managers' investment policies. Moreover, we find a positive relation of dividend mandatory difference in market reaction for firms with less investment opportunities. Such relation is also consistent with Jensen (1986) and Lang & Litzenberger (1989). The free cash flow hypothesis implies that dividend announcements by firms that are overinvestors convey information regarding the firms' levels of future investment. In this scenario, high dividend yield, which is represented by a positive difference of the minimum mandatory, suggests less investment, which is good news because firms were expected to invest wastefully. This result aligns with the positive coefficient of firm's size, it is also related to the maturity hypothesis of Grullon et al. (2002). They suggest that as firms become more mature, their investment opportunity set becomes smaller, which gives rise to excess cash, which should be ultimately paid out.

Further, the results also indicate different price reactions between investment opportunities for firms that only announced the minimum mandatory dividend. When comparing these firms, the dividend announcement constitutes a costly signal, Bhattacharya (1979) associates to the financing cost of raising external funds. Hence, investors should perceive them as having information about firm's cash flows. The regression also shows that leverage has a positive and significant impact on market reaction. The influence of debt in finance investment is associated to the tradeoff theory of capital structure, where more growing firms should use external funds to finance investments, because of the tax shields.

Finally, our findings also show that cumulative abnormal return to dividend lower than mandatory is negative related to the magnitude of the difference. For high growth firms, market reacts negatively to decrease earnings which can be an indication of firm's current financial problems, which is an acceptable justification for firm not to disgorge the minimum mandatory. Jensen et al. (2010) argue that investors see dividend reduction as the "last resort" for restoring financial flexibility. This result reflects the view that dividend drops are most harmful for firms with relatively more growth options. In contrast, the decrease in dividend does not appear to be as bad as it looks when firms have relative poor prospects. In these cases, the return on assets seems to play a more prominent role in investor reaction to the dividend announcement. Jensen et al. (2010) observed a rebound of ROA between year 0 for the drop firms, however, it cannot be attributed to the general rebound in the industry. Actually, the rebound is due to a combination of a relative decline in total assets and a relative increase in EBITDA, which can be directly attributed to savings associated with reducing the level of expenditures committed to exercising growth options.

## **6 Conclusion**

Brazil, Chile and Greece are subject to a mandatory dividend rule, which stipulates that firms with positive results should disgorge a percentage to their shareholders as a mechanism to mitigate minority shareholder

expropriation. In this paper, we consider this policy as an interesting setting to investigate the information content of unexpected dividend changes. Our result show that the information associated to unexpected dividend surprise is influenced by the minimum mandatory rule, the signal has been partly distorted. In particularly, considering only the dividend surprise, the market reaction is consistent to signaling theory. However, when considering the earnings change and the interaction, the announcement return is affect mostly by dividend higher than mandatory. When considering firms characteristics, we document that larger decrease the effect of dividend announcement on market reaction, which is consistent to signaling hypothesis. Further, we related the announcement return and investment opportunities. Our findings show that the mandatory dividend rule present significant effect for investors according to firms investment opportunities.

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