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Dividend Policy: a Comparison on Listed Companies Belonging to PSI20 and BEL 20¹

Abstract

The factors that drive dividend policy of a company have been the subject of extensive research over time, sometimes there are conflicts regarding the behavior of such earnings. The dividend is the return that investor receives from a company by the profits of this, by their percentage ownership. The study attempts to find the determinants of dividend policies. A sample of companies of PSI-20 and BEL-20 has been considered for the period from 2008 to 2013. Through the use of multivariate linear regressions, three dependent variables, Dividend Rate, Dividend Payout and Dividend Yield have been studied. The regression results show that profitability is most significant factor for the decision to distribute dividends. Subsequently the most important determinants obtained were capital structure, growth opportunities, size and interest expenses.

1. Introduction

Dividends are commonly defined as the distribution of profits, past or present, in real assets, between the company's shareholders in proportion to their ownerships (Frankfurter & Wood Jr., 2003). The corporate dividend policy has captured the interest of financial economists over the last century and has been subject of theoretical and empirical modeling intensive over the past 50 years. Have been studied and analyzed some models, all without conclusive empirical support to be able to explain the phenomenon of dividends, as well as identified some factors that explain the adoption of these policies.

This research ascertains the factors that determine the dividend distribution policies in companies of PSI-20 and BEL-20 index. The main objectives of this research are about identifying such factors through a joint analysis with companies of the two indices for both markets. Selected determinants belong

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to various groups of theories already explored in the literature, in particular the theory of agency (tangible fixed assets, growth opportunities), signaling theory (institutional participation, profitability) and pecking order theory (liquidity) (Al- Najjar, 2011).

The paper is organized as follow. In next section it is presented the theoretical framework on dividend policies and its theories. Then is described the methodological procedures of the empirical analysis, starting by the definition of the objectives, hypothesis and variables. It is also defined the sample and period of analysis. In the section three shows and discusses the results of the multivariate linear regression methods adopted to study three dependent variables (Dividend Rate, Dividend Payout and Dividend Yield) for all sample and for each country. Finally the conclusions are exposed, limitations and future research suggestions to answering the initial question formulated in this study: what are the determinants that influence the distribution dividend policy?

2. Theories and determinants of dividend policies

2.1. Theories and models on dividend policy

The literature on dividend policies provides three types of theoretical models to explain corporate dividend behavior. The first group, full information models, argues that investors demand higher expected returns on shares of dividend-paying stock as a result of the imposition of a tax liability on dividends (Miller & Scholes, 1978; DeAngelo & Masulis, 1980). Tax-adjusted models surmise that investors require and secure higher expected returns on shares of dividend-paying stocks (Frankfurter & Wood Jr., 2002). The second group, asymmetric information models, is based on the market inefficiency hypothesis related to asymmetric information (Jensen, 1986). The market imperfection of asymmetric information is the basis for three distinct efforts to explain corporate dividend policy. The mitigation of the information asymmetries between managers and owners via unexpected changes in dividend policy is the cornerstone of dividend-signaling models. Dividend signaling models offer valuable insights about the role of dividends (Aivazian, Booth & Cleary, 2003). Agency cost theory uses dividend policy to better align the interests of shareholders and corporate managers. Jensen and Meckling (1976) illustrate that with little external control managers and insiders will indulge in excessive perquisite consumption either through outright consumption of corporate resources or through inefficient management and inappropriate investment policies. The free cash flow hypothesis is an *ad hoc* combination of the signaling and agency costs paradigms; the payment of dividends can decrease the level of funds available for perquisite consumption by corporate managers (Frankfurter & Wood Jr., 2002). The third group of theories (behavioral models) suggests that investor behavior is substantially influenced by societal norms and attitudes (Shiller, 1984) and dividend payouts can be viewed as the socioeconomic effect of corporate evolution (Frankfurter & Lane, 1992).

Prior to the publication of Miller and Modigliani's (1961) seminal paper on dividend policy, a common belief was that higher dividends increase a firm's value (Al-Malkawi, Rafferty & Pillai, 2010). The irrelevance of dividends hypothesis states that in the world without taxes, transaction costs or market imperfections, dividend policy is actually irrelevant, that is, it does not impact the firm value (Miller & Modigliani, 1961). Following this seminal paper on the irrelevance of dividends in perfect capital markets, a number of theories have been put forward (Patra, Poshakwale & Ow-Yong, 2012). Bird-in-the-hand theory states that, in our uncertain world with asymmetric information, dividends are understood differently when compared with profits (Gordon, 1959). The pecking order hypothesis suggests that companies finance investments first with the internal financing, and if external financing is necessary, companies prefer to issue debt before issuing equity to reduce the costs of information asymmetry and other transactions costs (Myers & Majluf, 1984). Hence, a growth firm with good investment opportunities will have lower dividend payouts than mature firms where expectations of dividends are high (Al-Malkawi *et al.*, 2010).

Finally, the lifecycle theory describes how firms adjust their payout policies through time as they face changing tradeoffs between declining information costs and rising agency costs (Brockman & Unlu, 2011). Dividends tend to be paid by the mature firms, plausibly reflecting a financial life cycle in which

the young firms face relatively abundant growth opportunities with limited resources so that retention dominates dividend, whereas the mature firms are better candidates to pay dividends because they have higher profitability and fewer attractive growth opportunities (Shin, Know & Kim, 2010).

2.2. Determinants of dividend policies

Several factors can be considered as the determinants of dividend payout policy. A firm's leverage plays a key role in explaining corporate dividend policy. Leverage is negatively related to dividends, this means that firms with low debt ratios are willing to pay more dividends (Shubiri, 2011). Firms with relatively less debt and more tangible assets have greater financial slack and more able to pay and maintain their dividends (Aivazian et al., 2003). Supported by the agency costs theory of dividend policy, firms with high leverage ratios have high transaction costs, and are in a weak position to pay higher dividends to avoid the cost of external financing (Shubiri, 2011). Profitability is considered as a key determinant of dividend policy in Lintner's empirical work (1956) (Aivazian et al., 2003; Naceur, Goaid & Belanes, 2006). Supported by the signaling theory of dividend policy, profitable firms are willing to pay higher amounts of dividends and hence a positive relationship is expected between firm's profitability and its dividend payments (Aivazian et al., 2003). Institutional ownership may act as an alternative monitoring device, and this will reduce the need for capital markets as external monitoring systems (Shubiri, 2011). There is a relationship between the firm's assets structure and firm's dividend policy. Firms with more tangible assets have greater tax benefits without relying on debt, and therefore might be more inclined to use dividend policy to influence information asymmetry and agency costs (Koch & Shenoy, 1999). Naceur et al. (2006) and Imran (2011) suggest that liquidity of the firm leaves a negative impact on the firms' dividend payout decision, contradicting Ho (2003), Anil and Kapoor (2008), Al-Najjar (2011), Shubiri (2011) and Patra et al. (2012), that hypothesize a positive association between dividend payout and liquidity. In reverse, firms with higher cash availability, pay higher dividends than other firms with insufficient cash. This positive relationship is supported by the signaling theory of dividend policy (Shubiri, 2011). The literature reveals various explanations for the relationship between growth opportunities and dividend policy. Basically, the higher the growth opportunities, the highest need for funds to finance expansion, and more likely firms will retain earnings than pay them as dividends (Chang & Rhee, 2003). Firm's size is an important factor too. Larger firms in size have more chances to distribute cash dividend (Imran, 2011). Large firms are more likely to be mature and thus have easier access to capital markets, and should be able to pay more dividends (Shubiri, 2011). Lintner (1956) also shows that firm's maturity influences the payment of dividends. He notes that mature firms with stable earnings pay, usually, a high proportion of profits. In the opposite direction, firms still in the growth phase, pay lower dividends and managers have reluctance to distribute higher dividends because there are situations that may have to be reversed in the future (Lintner, 1956). The percentage of shares owned by different types of shareholders may not be the sole determinant of the dividend-agency relationship; the free cash flow may also be significant. Jensen (1986) defined free cash flow as the cash flow in excess of the funds required for all projects with a positive net present value. He demonstrated that as the free cash flow increases, it raises the agency conflict between the interests of managerial and outside shareholders, leading to a decrease in the firms' performance. Therefore, and based on the agency theory, it is expected that the payment of dividends reduces free cash flows (Easterbrook, 1984). Several studies relate signaling theory to the taxation issue, because it has been shown that dividends can be utilized as a credible signal for the value of a firm, due to the tax disadvantage of dividend payments (Jeong, 2013). Shinozaki and Uchida (2013) documented that firms located in the classical tax system had lower target dividend levels and in turn smoothed dividends more than those in partial or full imputation system. According to the signaling theory, if future earnings are expected to grow then the company will pay more dividends in the current year and vice-versa (Parua & Gupta, 2009). Pattern of past dividends has a very significant role in determining the payment of dividends (Lintner, 1956). Companies generally strive to maintain an uninterrupted record of dividend payment and are generally reluctant to decrease dividend rate. They rather prefer

a stable pattern of dividend policy. So an increasing trend in past dividends, leads a company to increase its dividend in the current year too. But, in case of decreasing trend in past dividends, dividend in the current year may not decrease (Parua & Gupta, 2009). Current year's tax is worth consideration in the sense that from the surplus income over the expenditure, first of all, the contractual payments in the form of interest is to be made. After the payment of tax the dividend can be paid. Higher tax payment means lower amount available for dividend payment. But at the same time higher tax payment means higher earnings. Higher earnings normally mean higher capacity to pay dividend given the liquidity position of the company (Parua & Gupta, 2009). Share price behaviour is important in the dividend payment decision in the sense that if the share price behaviour is showing declining trend then in order to stabilize the price in the market the company has to signal for a better future (Parua & Gupta, 2009). Companies generally pay dividend out the profits or earnings of the current period and as such it is considered to be an important variable on which dividend decision depends. Earnings are taken after tax as up to and inclusive the payment of tax the payments are contractual in nature. These payments are to be made irrespective of the condition of profitability of the concern. Only after meeting those contractual obligations, a company is entitled to appropriate earnings to its shareholders. Thus, only after profitability net of all contractual obligations is important in the matter of taking dividend decision (Parua & Gupta, 2009).

2.3. Interdependence between capital structure and dividend

Some empirical studies have focused on the impacts of capital structure and cost of debt on dividend payout ratio (Jiang & Jiranyakul, 2013). Easterbrook (1984) documents that dividends exists because they induce firms to float new securities suggesting that firm's dividend decisions linked to firm's financing decisions. Intuitively, it is clear that the firm's payout ratio determines its retention ratio and, thus, its capital structure. Because of the interdependence between dividend policy and capital structure, empirical studies of capital structure, including those that focus on the impact of firm multinationality, are most likely mis-specified, unless they include an assessment of dividend policy (Aggarwal & Kyaw, 2010).

Baskin (1989) and Adedeji (1998), consistent with the pecking order theory, suggest that firms may respond to earnings shortages by borrowing to pay dividends because of reluctance to cut dividends. They advocate that financial leverage may have a positive relationship with dividend payout ratio, and a positive or negative relationship with investments depending on whether firms borrow to finance investments or postpone/reduce the investments. Thus, according to pecking order hypothesis, corporate capital structure is positively related to its dividend policy. On the other hand, Jensen (1986) and Agarwal and Jayaraman (1994) hypothesizes that dividends and debt are substitute mechanisms for controlling agency costs of free cash flows. They find that dividend payout ratios of a sample of all equity firms are significantly higher than those of a control group of levered firms. Jensen, Solberg and Zorn (1992) posit that firms with high dividend payouts might find debt financing less attractive than equity financing leading to a negative relation between debt and dividends.

2.4. Dividend policy in European and American companies, past research.

Lintner (1956) did a pioneering study that examines many aspects of profit distribution in companies between dividends, retained earnings and taxes. He states that companies are primarily concerned with the stability of dividends, and managers believe that maintaining a stable dividend policy, the market put a premium on businesses. He also noted that profits are the determining factor in the decision to pay dividends, and if there is a sudden increase in profit, companies set up their dividends slowly.

Since the seminal paper published by Miller and Modigliani (1961), a vast literature has examined the payout policies of U.S. companies. However, there still exist a small number of studies conducted on dividend policies in non-US companies (Choy, Gul & Yao, 2011). The dividend policy is observed in many countries and different legal systems. Firms in countries with better investor protection have

higher dividend payments than those companies in countries with less protection to them. Moreover, in states with a higher legal protection, companies have higher growth prospects have lower payment ratios (La Porta, Lopez de Silanes, Shleifer & Vishny, 2000).

DeAngelo, DeAngelo and Skinner (2004) observed that, during their study period (1978-2000), the nominal dividends paid by companies in the US increased exponentially and real dividends doubled in that time. This aggregate increase in profits came with the decline in the number of taxpayers receiving dividends. Despite Miller and Modigliani model (1961) argue that dividend policy is irrelevant to companies, empirical evidence, such as Brav, Graham, Harvey, and Michaely (2005) and Dhanani (2005), show that both investors as managers are concerned about the dividend policy. Studies on North American policies, such as Baker, Veit and Powell (2001), show that managers have more in consideration the change in the distribution of dividends that the growth rates of these results, and tend to soften the dividend growth pattern. Eije and Megginson (2008) found that dividends and repurchase of shares in companies in Europe are similar, in many respects, to the US firms. They, for example, report that distributing earnings of European companies suffered a severe decline in recent years, while the total and actual value of dividends paid increased. Also state that dividends are concentrated clearly both the European and American firms and while the overall probability of EU firms that distribute profits continuously decreases with time, the probability of share repurchase walks in the opposite direction, increasing constantly.

Over the past 20 years, Portuguese companies listed in the stock exchange distributed about 25% of its profits to shareholders in the form of dividends (Farinha & Soro, 2012). Archbold and Vieira (2010) have studied dividends policy in companies of Portugal and the United Kingdom. They conclude that the payment policies are more conservative and changes in earnings have little impact on dividend decisions, while the past dividend policies and future gains stability and sustainability are important factors in determining the dividend policy. Vieira and Raposo (2007) stated that Portuguese firms do not have stable distribution dividend policies, due to a heavy reliance on bank debt and because their businesses are normally closed capital, which helps reduce the information asymmetry.

In Belgium, according Annaert, Buelens and Ceuster (2012), besides the distribution of dividends, companies also choose to share buybacks. However, the payment of dividends remains important, constituting the largest part of the return on equity. In addition, they found a seasonal pattern in the distribution of profits, where the most susceptible period to this occurrence is between January and June.

3. Empirical Study Design

3.1. Objectives and definition of the sample

The purpose of this research is to analyze factors that have a major role when taking decision to pay or not dividends by companies. In other words, by a number of variables in research, we intend to realize what or which of these determinants have the most influence on the distribution of dividends to shareholders and, likewise, acting on the income value setting payable. For this we considered the companies listed on Euronext Lisbon and Euronext Brussels, belonging to the PSI 20 and BEL20 indices, respectively, at the date of November 6, 2012. The companies were selected belonging to these two markets, since the respective indexes are composed of the same number of companies. However, given the characteristics of certain companies, some were eliminated, creating a sample of 22 entities. The sample, consisting of 12 Portuguese companies and 10 Belgian (see Table 1), was established based on the following assumptions: (i) has to be a non-financial company, since financial firms have a very specific accounting (Santos, 2011) and their data could increment and influence the results obtained in this research. Thus, companies in the financial industry, referenced on the Euronext website with the code “8000, Financials”, were eliminated from the sample; (ii) has to be listed on Euronext Lisbon and Euronext Brussels on November 6, 2012, respectively; (iii) has to have its reports and consolidated annual accounts available on its website; (iv) it has to have paid dividends in each year of the sample. The final list of companies in the sample is shown in Table 1 below.

Table 1: Final list of companies in the sample

BEL20		PSI20	
Company	Sector	Company	Sector
		Altri	General Industrials
ABInBev	Beverages	Brisa	Transportes
Bekaert	General Industrials	Cimpor	Construction & Materials
Belgacom	Telecommunications	EDP	Electricity
Colruyt	Food & Drug Retailers	Galp Energia	Oil & Gas Producers
Delhaize Group	Food & Drug Retailers	Jerónimo Martins	Food & Drug Retailers
DIETEREN	General Retailers	Mota-Engil	Construction & Materials
Solvay	Chemicals	Portugal Telecom	Telecommunications
Telenet Group	Media	REN	Electricity
UCB	Pharmaceuticals & Biotechnology	Semapa	Forestry & Paper
Umicore	Chemicals	Sonae	Food & Drug Retailers
		ZON	Multimedia Media

The sample period of analysis is 2008 to 2013, so the aim is to have at least five years of data under analysis.

3.2. Variables Definition, Research Hypothesis and research model

Based on the factors and determinants identified and suggested in theories on dividend policy listed in the literature review, it was decided, then, to define three dependent variables:

- (i) Dividend Rate (DR): it is computed by dividing the total of equity dividend of one accounting year by the face value of all the equity shares outstanding at the close of that year. A relatively high dividend rate indicates the perceived compulsion on the part of a company to make a relatively high dividend payment for attracting much needed capital to finance its operations (Parua & Gupta, 2009);
- (ii) Dividend Payout (DP): It is calculated by dividing the total equity dividend of one accounting year by the total earnings of that particular year. This ratio does not always indicate the proportion of current earnings paid out only as dividend since dividend is allowed to be paid out of past accumulated profits. A very high dividend payout probably indicates that and a dividend payout of over 100 definitely suggests payment of dividend out of past profits (Parua & Gupta, 2009);
- (iii) Dividend Yield (DY): it is computed by dividing total equity dividend by the market price of shares of the respective companies. The market prices of the shares are taken at the close of the year in respect of which the dividends are paid. Through this ratio the real payoff to an investor is expressed. But this all-important ratio is not as accurate as the previous two. Such inaccuracy is generated because of time factor associated with the numerator and denominator of this ratio (Parua & Gupta, 2009).

The independent variables are the factors that determine the dividends distribution. In Table 2 it presents the independent variables used in this research (and authors that suggest them).

Table 2: Independent Variables under analysis

Independent Variable	Abbrev.	Fonte
Tangible Assets	AFT	Aivazan et al. (2003)
Leverage	ALV	Rozeff, (1982); Jensen (1986)
Cash Flow	CF	Parua & Gupta (2009);Imran (2011)
Cash Holding	CH	Al-Najjar & Belghitar (2011); Ozkan & Ozkan (2004)
Capital Expenditures	DC	Parua & Gupta (2009)
Capital Structure	EC	Martin e Scott (1974); Frank e Goyal (2004)
Liquidity	LIQ	Imran (2011); Al-Najjar (2011)
Maturity	MAT	Fairchild et al., 2014
Growth Opportunities	OC	Myers e Majluf (1984)
Profitability	RENT	Imran (2011); Al-Najjar (2011)
Sector of Activity	SACT	Santos (2011); Fatemi & Boldik (2012)
Size	TAM	Aivazian et al., (2003); Ho, (2003)
Interest Expenses	DJ	Parua e Gupta (2009)
Institutional Ownership	PI	Short, Zhang & Keasey, (2002); Shubiri (2011)
Assets Structure	EA	Aivazian et al. (2003); Shubiri (2011)
Taxes	IMP	Parua & Gupta (2009)
Share Price Behaviour	CA	Parua & Gupta (2009)
Past Dividends	DIP	Parua & Gupta (2009)
Future Earnings	DF	Parua & Gupta (2009)
Current year's earnings	LUN	Parua & Gupta (2009)
Past year's earnings	LUN1	Parua & Gupta (2009)

The table 3 shows the hypotheses to be tested related to each variable under analysis.

Table 3: Hypotheses

Hypotheses
H1: There is a negative relationship between tangible assets and DR, DP and DY.
H2: There is a negative relationship between leverage and DR, DP and DY.
H3: There is a negative relationship between cash flow and DR, DP and DY.
H4: There is a negative relationship between cash holding and DR, DP and DY.
H5: There is a negative relationship between capital expenditures and DR, DP and DY.
H6: There is a positive relationship between capital structure and DR, DP and DY.
H7: There is a positive/negative relationship between liquidity and DR, DP and DY.
H8: There is a positive relationship between maturity and DR, DP and DY.
H9: There is a negative relationship between growth opportunities and DR, DP and DY.
H10: There is a positive relationship between profitability and DR, DP and DY.
H11: There is a positive relationship between sector of activity and DR, DP and DY.
H12: There is a positive relationship between size and DR, DP and DY.
H13: There is a positive/negative relationship between interest expenses and DR, DP and DY.
H14: There is a positive/negative relationship between institutional ownership and DR, DP and DY.
H15: There is a negative relationship between assets structure and DR, DP and DY.
H16: There is a negative relationship between taxes and DR, DP and DY.
H17: There is a negative relationship between share price behaviour and DR, DP and DY.
H18: There is a positive relationship between past dividends and DR, DP and DY.
H19: There is a positive relationship between future earnings and DR, DP and DY.
H20: There is a positive relationship between current year's earnings and DR, DP and DY.
H21: There is a positive relationship between past year's earnings and DR, DP and DY.

To collect data on dependent and independent variables it was used all firms' websites in the selected sample and for period of analysis (from 2008 to 2013). Thus, Annual and Financial Reports were collected by Portuguese and Belgian companies on their websites.

To test the hypotheses presented in table 3 above, it was applied a multiple linear regression model using the least square method. This linear regression model is based on five assumptions which were subsequently validated:

- (i) ε_i errors are zero mean random variables;
- (ii) ε_i errors are random variables with constant variance (σ^2);
- (iii) The random variables ε_i are independent, thus $cov(\varepsilon_i, \varepsilon_k) = 0$ with $i \neq k$; $i, k = 1, 2, \dots, n$;
- (iv) The explanatory variables X_1, X_2, \dots, X_k are uncorrelated;
- (v) ε_i errors follow a normal distribution: $\varepsilon_i \sim N(0, \sigma^2)$.

The generalized model to be used is as presented in equation 1:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \varepsilon_i \dots (1)$$

Where, Y_i : the dependent variable (it will be tested Dividend ratio (DR); Dividend payout (DP) and Dividend yield (DY)) for $i = 1, 2, \dots, n$; X_1, X_2, \dots, X_k : are the independent variables as stated in table 2; β_0 is the intercept coefficient and $\beta_1, \beta_2, \dots, \beta_k$ are the partial slope for each independent variable; ε_i is the random error.

4. Analysis and discussion of results

4.1. Descriptive analysis of the sample data

The sample is formed with 22 firms listed in two different markets (Euronext Lisbon and Euronext Brussels stock exchanges) belonging to each market index (PSI20 and BEL20, respectively). The analyzed data back to the period starting 2008 to 2013. Despite the financial crisis that has been occurred since 2008, some companies felt no need to change their policies for dividend distribution. The Figure 1 shows the behavior of dividend payment during the analyzed period (2008-2013) for Portuguese firms in the sample.

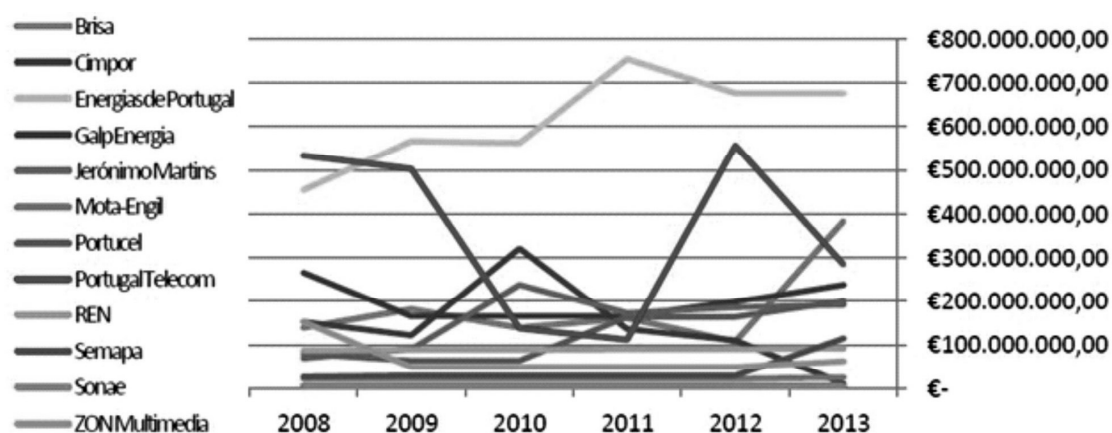


Figure 1: Distribution of dividends within Portuguese companies in the period of 2008 to 2013.

According to Figure 1 (distribution of dividends within Portuguese companies), it is observed that EDP is the company that distributed more earnings to its investors, followed by PT. An interesting fact that can also be seen is the existing break for most companies in 2009, whose dividends correspond to 2008. However, in that same year, companies like EDP, Brisa and REN, increased slightly their dividends, probably to in “crisis period” investors do not feel any change in the company’s accounts and attract further investment. Conversely, in 2013, by now, begin to notice an increase in earnings payment, noticed an improvement in the economic performance of companies, which has undergone some changes in recent years due to the economic instability that settled in Portugal. Overall, the vast majority of Portuguese companies distribute dividends below 300 million euros.

About Belgian market, taking into account figure 2, it is observed that AB InBev is the firm that paid higher dividends to its shareholders. Considering the economic instability not only in Europe but around the world in recent years, AB InBev accompanies the changes in markets experienced in this period: there is a decline in 2009, with 2008 dividends to be paid to a value lower than the corresponding to 2007. In 2011 began the recovery and in 2013 the company paid about five billion Euro to its investors. For other companies under analysis, it is observed that Belgacom is the second company that attributed more profits to shareholders, and D'Ieteren is the company that distributes less dividends. In general, the Belgian companies, like Portuguese ones, do not pay dividends in excess of 300 million Euro.

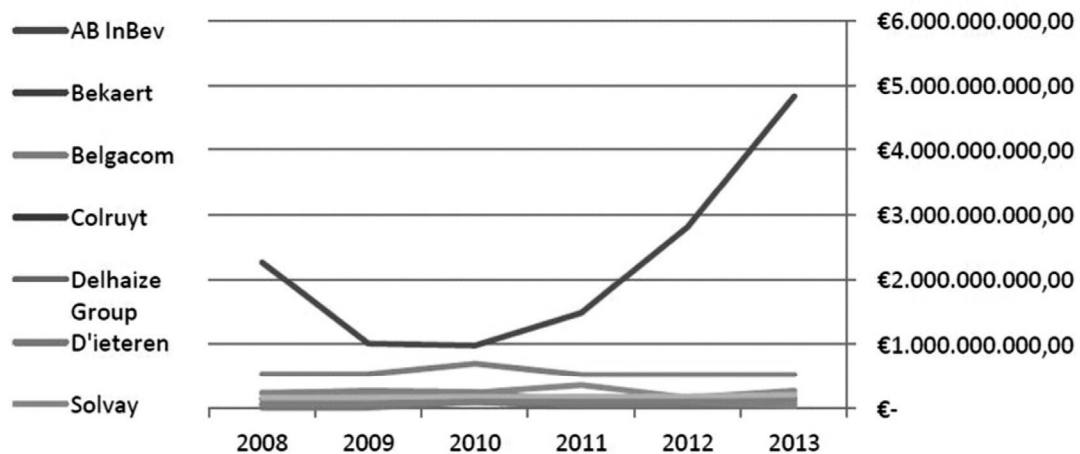


Figure 2: Distribution of dividends within Belgian companies

To complement the previous analysis, the figure 3 shows the evolution of dividend payments in the two markets, from 2008 to 2013.

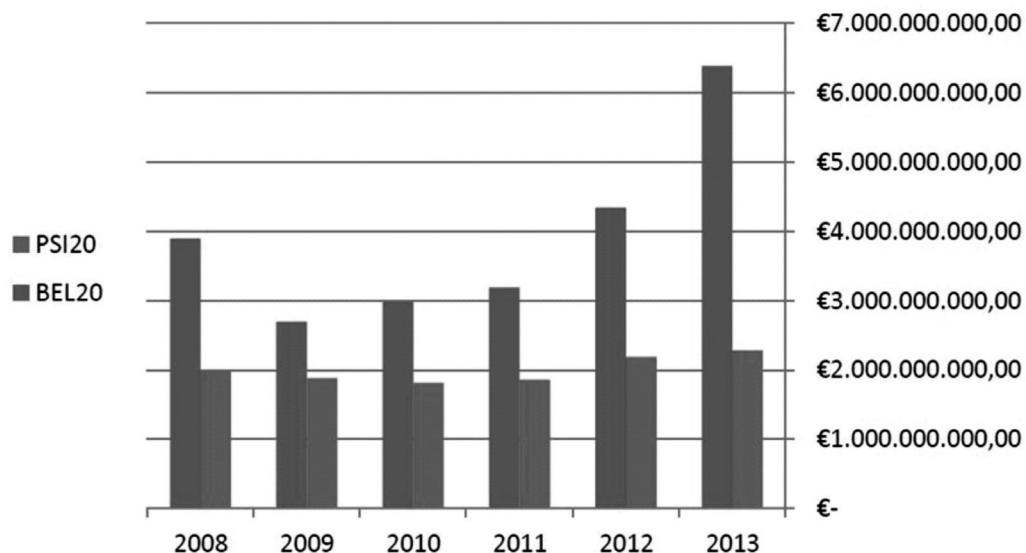


Figure 3: Evolution of dividend payments (2008-2013)

In Portugal, 2010 and 2011 were the years where earnings were lower, followed by 2009 and 2008. In Belgium, 2009 was the year with lower profits paid out to investors, followed by 2010 and 2011. However, it seems that in 2013 there was a recovery in dividend policy in both countries as the amount of dividends paid in this year were the highest one in the analyzed period.

4.2. Determinants of dividend policy in Belgian and Portuguese market.

Taking into account the multivariate linear regression presented in the previous section (equation 1), it was first applied to all companies in the sample (jointly the Belgian and Portuguese ones). The assumptions of the model were validated using the graph of normal distribution of the residuals (normal probability plot) of dependent variables and the Durbin-Watson test to validate the independence of residuals. To estimate the model, in order to find “the best model” it was applied three sequential methods provided by SPSS statistical package: Forward, Backward and Stepwise method. The “best” model is given by that model with highest adjusted R^2 (R_a^2). It was found that for all dependent variables, the best method to be applied was backward method.

For Dividend Rate (DR), as dependent variable the best model is the following:

$$\begin{aligned} DP_i = & 39,69 - 1,296 \cdot ALV + 0,252 \cdot PI - 6,049 \cdot LIQ - 0,702 \cdot OC - 2,257 \cdot TAM - 2,737 \cdot MAT \\ & - 13,225 \cdot IMP + 2,081 \cdot DC + 2,465 \cdot DJ + 0,055 \cdot GF - 1,247 \cdot CF - 4,268 \cdot LU \\ & + 1,106 \cdot LUN-1 + 1,818 \cdot CH - 8,443 \cdot EC \quad \text{with } R_a^2 = 87,7\% \end{aligned}$$

(where, *ALV* is leverage; *PI* is institutional participation; *LIQ* is liquidity; *OC* is growth opportunities; *TAM* is size; *MAT* is maturity; *IMP* is taxes; *DC* is capital expenditures; *DJ* is interest expenses; *GF* is future earnings; *CF* is cash flows; *LU* is earnings in actual year; *LUN-1* is earnings in previous year; *CH* is cash holding and *EC* is capital structure).

All coefficients of the model are statistically significant at 10% level ($\alpha=10\%$) with exception of earnings in the previous year (*LUN-1*). According to the obtained results the following hypotheses were not rejected (were validated): leverage (H2), cash flow (H3), growth opportunities (H9) and taxes (H16), which have a negative relationship with DR; and liquidity (H7), institutional participation (H14), future earnings (H19) and past earnings (H21), which have a positive relationship with DR. So due to its high statistically significant coefficients (considering $\alpha=5\%$), leverage, taxes, future earnings and cash flow seems to be preponderant factors to the decision of the amount of dividend to pay.

For Dividend Payout (DP) as dependent variable, the obtained model is as follow:

$$\begin{aligned} DP_i = & 18,48 - 1,572LIQ - 1,04MAT - 1,141IMP + 1,667DC - 1,064LU + 0,762CH - 2,793EC \\ & - 2,314RENT + 1,533EA + 0,513CF - 2,385AFT \quad \text{with } R_a^2 = 70,20\% \end{aligned}$$

(where, *LIQ* is liquidity; *MAT* is maturity; *IMP* is taxes; *DC* is capital expenditures; *CF* is cash flows; *LU* is earnings in actual year; *CH* is cash holding; *EC* is capital structure; *RENT* is profitability; *EA* is asset structure and *AFT* is tangible fixed assets).

For this model, it was validated the following relations between dependent and independent variables: maturity (H8), capital structure (H6), profitability (H10) and tangible fixed assets (H1) which have a negative relationship with DP and are statistically significant at a significant level of 10%.

Finally for the dependent variable Dividend Yield (DY), the obtained model is as follow:

$$\begin{aligned} DY_i = & -4,435 - 0,1LIQ + 0,352MAT - 0,142CH + 1,831EC + 0,212CF - 0,276DJ - 0,333DIP \\ & - 0,003GF + 0,307LUN-1 \quad \text{with } R_a^2 = 70,80\% \end{aligned}$$

(where, *LIQ* is liquidity; *MAT* is maturity; *CH* is cash holding; *EC* is capital structure; *CF* is cash flows; *DJ* is interest expenses; *DIP* is past dividends; *GF* is future earnings and *LUN-1* is earnings in previous year).

These results indicate that all the coefficients are statistically significant at significance level of 10%, except for the variable Liquidity. Thus, maturity (H8); capital structure (H6); earnings from previous year (H21) have positive relation with DY. The variable cash holdings (H4), interest expenses (H13) and liquidity (H7) has a negative relation with DY.

Next we proceed to an individual study of each market, using the same joint analysis procedures. Dividend Rate variable, for Portuguese companies, obtained the validation of the following hypotheses:

there is a positive relationship between DR and profitability (H10), past dividends (H18) and earnings of the previous year (H21); and there is a negative relationship between DR and asset structure (H15), taxes (H16) and share price behavior (H17).

In respect to variable Dividend Payout, we can see that the factors that affect this ratio in Portuguese companies are the tangible assets (H1), leverage (H2), liquidity (H10), profitability (H10), size (H12), interest expense (H10), taxes (H16) and future earnings (H19). All the relationships between these variables and the dividend payout have been validated, wherein liquidity, which hypothesis infers to a positive or negative relationship, obtained a negative relation with Dividend Payout. To finish the analysis of Portuguese companies, considering Dividend Yield only two independent variables validated its hypothesis: growth opportunities (H9) and interest expenses (H13).

We made the same analysis procedures for Belgian companies. Regarding the dependent variable Dividend Rate, it has a positive relationship with profitability (H10) and size (H12), and a negative relationship with holding cash (H4), liquidity (H7) and institutional ownership (H14). As for the Dividend Payout, the generated model explains only 42.8% of the variation of the variable (p-value = 0.000). Ten variables were excluded, and for the remaining nine (leverage, profitability, liquidity, size, taxes, capital expenditures and interest expense, present profits and capital structure) only two have a significant coefficient for $\alpha = 10\%$ and validated its hypotheses: liquidity has a positive relationship with Dividend Payout, and taxes have a negative relationship with the dependent variable.

at last, the model that shows the variation in the Dividend Yield explained only 26.3% (p-value = 0.026). It was validated hypotheses for leverage, taxes, capital expenditures and capital structure.

Conclusion and suggestions for future research

This research aimed to determine the factors that influence the distribution policies of companies today in the Portuguese and Belgian market. In an attempt to answer the initial question, it has also been known different views that help in the evaluation of companies' dividend policies. The allocation of dividends meant to satisfy, first, the preferences of investors, even if there are tax factors that produce the negative effects in the respective policies.

The first conclusion that can be obtained from this research shows that a joint analysis does not show the actual situation in both markets. As each has its own characteristics, such as the economic situation and the companies concerned, the results were not at all similar to those achieved in individual analysis. However, individual analysis to each market gives a proper picture of the situation experienced in companies of each country. In addition to profitability, in Portugal the distribution of earnings is affected by the tax burden of taxes and the interest expense. Meanwhile in Belgian companies, leverage, liquidity, firm size and the institutional participation are all determinants of earnings distribution policies.

For the dependent variables in this analysis, only the Dividend Rate is best explained by the independent variables. That is, the factors that were studied here explain the dividend rate. It is the only variable that includes almost all determinants in your model, and where they appear more significant. On the other hand, the variable dividend yield is the dependent variable less explained by the independent variables.

In view of the signaling theory, the conclusion obtained indicates that profitability is the factor that most influences the distribution of dividends. It is confirmed, among others, by the Al-Najjar (2011) and Imran (2011) theories about the existence of a positive relationship between profitability and dividend policies. The remaining determinants vary according to the market where they are inserted and the particular characteristics of each company. Thus, we conclude that the dividend distribution policy remains a puzzle, where you can not define a single model that fits all companies and to all markets.

To finalize, the limitation that most influenced this research is the way that companies present their data. Reports and accounts used for data collection do not follow the same line, and particularly on dividends, there is no common template or standard report on dividend distribution disclosure.

As lines of future research, we suggest to expand the sample in time horizon and number of companies, including companies from Portuguese and Belgian market that are listed in these markets but do not belong to the indexes and include variable controls for markets characteristics and macroeconomics of each economy. It would be also interesting to study the companies listed in other Euronext stock market like Euronext Paris (France) and Euronext Amsterdam (Netherlands), using companies belonging to CAC 40 and AEX indexes, respectively. Another line of research could be to analyze the determinants of dividend policies in companies of financial sector, which were excluded from the sample because they influence the results, as that its policies are different from companies of other sectors. It could also determine the extent to which the repurchase of shares acts as a substitute for dividends, since, as has already been verified, dividends are disappearing.

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