THE DETERMINANTS OF DIVIDEND POLICY IN EURONEXT 100

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Abstract

The purpose of this paper is to examine the determinants of firms' dividend policy, measured by dividend yield, using a sample of firms that belong to the Euronext 100 index for a period between 2007 and 2016. We used OLS regression with the dividend yield as the dependent variable and a number of explanatory variables at the firm level. Results show that the dividend yield in this paper is not associated with firms' profitability, although both higher growth expectations by investors and larger size of firms negatively influence firms' dividend yield. We found some evidence that leverage is indirectly related to more dividends. An important additional finding of this paper is that the level of leverage shapes dividend yields differently in the presence of stable payouts and stable dividends per share. Furthermore, the dividend yield reflects a positive valuation of investors if the growth in dividends is linked to the growth in earnings for firms with higher growth expectations, as a policy of a stable payout appears to be viewed by investors as not jeopardizing future growth. As dividend policy is a key part of Finance research, our study contributes to the theory twofold. First, by focusing on a specific niche not developed by literature, and second by examining the indirect effects of the traditional determinants of dividend policy.

Keywords: Dividend Policy, Leverage, Dividend Yield, Euronext.

1. INTRODUCTION

The theory of dividend policy is grounded in the research of Lintner (1956) and Modigliani and Miller (1961). The latter developed a theory of the irrelevance of dividend policy on firms' value in perfect capital markets. Due to imperfect markets, this theory has been subject to significant research and conflicting conclusions. An alternative perspective on dividend policy emerged, claiming the relevance of dividend payouts on firms' value. According to the asymmetric information theory, firms pay out dividends in order to reflect growth perspectives and therefore attract investors.

The agency view on dividend policy claims that the payment of dividends might reduce conflicts of interest between stakeholders, and thus reduce the agency costs in a firm. Alternatively, several studies have considered the third imperfection in capital markets: taxation. Taxation on dividends and capital gains may influence firms' dividend policy differently.

To understand the determinants of dividend policy for the main firms listed on stock exchanges managed by the Euronext group, we select the constituents of Euronext 100, during the period 2007-2016. The sample is balanced and is composed of 440 firm-year observations of firms belonging to three stock exchanges managed by the Euronext group. The empirical analysis assumes the dividend yield as the outcome variable, and a set of controls are added,

including a fixed effect specification for firm and year.

First, the results suggest that dividend yield is higher for less-profitable firms. Existing empirical evidence points to a variety of effects, mainly due to differences in the measurement of variables, and, in particular, to the different sample sizes and countries covered by these studies. Second, investors' expectations about firm's growth, measured by the market-to-book ratio, is negatively associated with the dividend yield, although it is not robust in all specifications. Third, the size of a firm is referred to in the literature as an important determinant of firms' dividend policy, although the direction of the relationship is still far from consensual. This paper adds to the existing literature by supporting a negative relationship between size and return on investment through the payment of dividends.

The effect of leverage on dividend yield is also analysed through several perspectives. Overall, leverage cannot be used as a robust variable to explain changes in dividend yield. Nevertheless, the clientele effect appears to drive this relationship. Results suggest a positive effect of leverage on dividend yield for firms with stable dividends per share over time. Thus, these results suggest that investors penalize the increase in leverage for firms with a stable cash dividend, which might signal an increase in agency costs.

We also found that when the growth in dividends is linked to the growth in earnings through a stable dividend payout, investors appear to recognize that a policy of maintaining a stable dividend payout ratio does not jeopardize growth for those firms that have higher growth expectations.

This paper is organised as follow: in Chapter 2, the theoretical and empirical literature on dividend payout is briefly reviewed and the six research hypotheses are addressed. Chapter 3 introduces the data and methodology, and in Chapter 4 the main results and findings are presented. Chapter 5 concludes the paper.

2. THEORY AND EMPIRICAL EVIDENCE ON DIVIDEND POLICY

Lintner (1956) is amongst the seminal studies on the modern understanding of the dividend policy. During his research, the author observed that target payout ratio is a variable which affects payout decisions. Later on, Miller and Modigliani (1961) developed a proposition in which it is argued that in perfect capital markets characterised by the absence of taxes and transaction costs, firms' choice of dividend policy is irrelevant and has no effect on firms' valuation. This is based on the fact that, in reality, capital markets are not perfect, and they have several imperfections which influence firms' dividend policies.

2.1. Dividend policy and taxation

Brennan (1970) extends the research of Modigliani and Miller (1961) by incorporating the effect of the taxation of individuals on dividend yield. Brennan (1970) concludes that risk-adjusted returns positively influence firms' dividend yield. In addition, an important imperfection occurs on account of the differences between taxation of dividends and share

repurchases, which can be explained by the dividend puzzle (Black, 1976).

The theory of taxation of dividends can be divided into the old/traditional view (Poterba and Summers, 1984; Poterba, 2004), and the new view of dividend taxation (Auerbach, 1979; Bradford, 1981). In the traditional view, reducing taxes on dividends may lead to a decline in the cost of capital and, consequently, could lead to a higher level of investment (Pulido and Barros, 2017). Poterba and Summers (1984) found that dividends respond to changes in the relative tax burden on dividends and capital gains. The new view is based on the argument that marginal investments are entirely financed by retained earnings, and, as a result, taxation on dividends should not affect investment decisions, as they are not subject to personal income taxation.

In an earlier empirical study, Elton and Gruber (1970) argued that dividend yield increases as the tax bracket decreases in the US and that corporations prefer dividends, whereas those who do not pay taxes are indifferent between capital gains or dividend income. Furthermore, stockholders in higher payout tax brackets prefer to be taxed under capital gains, rather than on dividend income. Following Elton and Gruber (1970), Pérez-Gonzáles (2000) carried out research on whether dividends are influenced by tax clienteles and found that firms with large individual shareholders pay fewer dividends when compared to other firms, which suggest that ownership structure should be considered when analysing effects on dividend policy. Results for domestic institutional investors in improving payouts was found by Jacob and Lukose (2018).

Chetty and Saez (2005) also focus on the traditional view in a paper that analyses the impact of dividend taxation on the payout policy of firms, using the JGTRRA tax reform[1]. They argue that a tax cut triggers an increase in the payment of regular and special dividends, as some firms use this to initiate the payment of dividends. A similar approach was adopted by Hanlon and Hopes (2014), who studied whether corporate payout policy is influenced by changes in investors' level of taxes around a tax event in the US in 2011. Hanlon and Hopes (2014) found evidence of a rise in special dividends and a shifting away from the payment of regular dividends in 2010 and 2012, as a response to expected tax increases. Additionally, Hanlon and Hopes (2014) suggest that managers acted with the aim of maximizing shareholder value. In a study focussed on South Africa, Coetzee, & de Wet (2014) found mixed results on the effect of changes in the dividend policy and on the taxation of dividends on investors reaction. Nevertheless, Chkir & Samir (2008) argue that taxation is, in fact, a determinant of corporate dividend policy.

2.2. Dividend policy and the clientele effect

In their study, Lewellen et al. (1978) attempt to answer the question of whether there is a tax-induced clientele effect in the equities marketplace. In their study of 1978, they found very little evidence of this type of effect. However, Lewellen et al. (1978) argued that dividend yield decreases with the age of investors, and that female investors prefer higher dividend yields, and also that dividend yield is negatively associated with the level of employment.

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[1] US Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA).

Later on, Graham and Kumar (2006) also found evidence consistent with the clientele effect. Brav et al. (2005) suggest that managers "smooth" dividends because they want to avoid the risk of a reduction in the payout – clientele effect.

The clientele effect of dividends was also tested by Dhaliwal et al. (1999), who examined changes in ownership of firms that initiated the payment of dividends. They found that corporate investors and tax-exempt/tax-deferred investors purchase more shares from initiators in the case of the payment of dividends. Furthermore, Dhaliwal et al. (1999), similar to the findings of Chetty and Saez (2005), claim that in an initiating-firm, the clientele effect of dividends acts as a strong influence on investors' investment decisions (Kasozi and Ngwenya, 2015).

Jacob and Jacob (2013) compiled a tax database to explain corporate payout policy between 1990 and 2008, and tested the impact of taxes on payout policy by using dividend tax penalties attributable to Poterba and Summers (1984). The authors found that Greece, Italy, and Portugal have a more stable tax treatment, as changes in dividend tax penalties are quite insignificant. In addition, Jacob and Jacob (2013) found evidence that taxation of dividends and capital gains are first-order determinants of corporate payout internationally. Furthermore, when taxes on dividends are low, dividend initiations and dividend increases tend to be high (which is consistent with Chetty and Saez (2005), and Dhaliwal et al. (1999)) and that repurchases tend to be low.

2.3. Dividend policy and the asymmetric information

Succeeding Lintner (1956), Modigliani and Miller (1961) and Brennan (1970), several theoretical studies were developed, focusing on the signalling or asymmetric information theories (Miller and Rock, 1985; Allen and Michaely, 2003) and also on the agency perspective on dividend policy (Easterbrook, 1984; Jensen, 1986; Chetty and Saez, 2010).

Considering that dividend policy may be driven by information asymmetry between managers and shareholders, Miller and Rock (1985) developed a model in which the information asymmetry is related to the level of current earnings and an investment model. They also found that higher dividends are associated with higher (current) earnings. Consequently, dividends serve as a signal of the future earnings of a corporation. Furthermore, with regards to the impact of asymmetric information on dividend policy, Allen et al. (2000) suggest that institutions are more likely to invest in dividend-paying stock because institutional investors have an advantage in detecting the quality of a firm. In addition, this behaviour could be derived from the tax advantage relative to retail investors, which induces the dividend clientele effect.

The existing literature suggests that investors believe that when a firm reports good results and pays a substantial dividend, this is a sign of an increase in earnings (Dewenter and Warther, 1998). Therefore, it is reasonable for investors to value the information content of dividends and not only firms' reported earnings. On the other hand, a decrease in dividends is not a voluntary act made by managers, and it can thus be a sign that managers are unable to maintain the dividend policy. As a result, the stock price may reflect expectations of future dividends (Ross et al., 2010). Dewenter and Warther (1998) found that the stock price of Japanese firms reacted less strongly to dividend omissions and initiation announcements than US stocks did. Similarly, Andres et al. (2013) focused on Germany, and found that share price increases when an announcement of a dividend increase occurs, although this does not necessarily imply a positive outlook for investors.

2.4. Dividend policy and the agency perspective

Another market imperfection that influences dividend policies is derived from agency conflicts between corporate insiders and outside shareholders. According to Brav et al. (2005), "payout can be used to self-impose discipline". Several authors (Jensen, 1986; Farinha, 2003; Easterbrook, 1984; or Chetty and Saez, 2010; Boțoc and Pirtea, 2014; Chang et al., 2016) argue that shareholders play an important role in cash management, minimizing the opportunity for managers to spend cash or invest in projects that do not create shareholder value. Easterbrook (1984) states that much of the cash in a firm result in over-investment and the agency-costs related with dividends could be the cost of monitoring managers. Jensen (1986) claims that managers can use the substantial free cash flows as dividends to avoid conflicts of interest with shareholders. Contrary to the opinion of Easterbrook (1984) and Jensen (1986), Chetty and Saez (2010) argue that dividend taxation creates a deadweight cost, as it induces managers to carry out unproductive investments using retained earnings. Consequently, shareholders may prefer to use dividends, rather than retained earnings to discipline managers.

The capacity to monitor and the rights of outside shareholders differs from country to country and is dependent on the degree of conflict of interest between managers and shareholders. La Porta et al. (2000) suggested that as a firm's growth increases, the dividend payout is lower, in order to avoid shareholders extracting dividend payments from insiders. On the other hand, insiders are pressurized to pay out dividends in the presence of a faster growth of sales and lower shareholder protection. Therefore, dividends can be a substitute for effective legal protection, leading to a better treatment of investors through dividend policies.

Following Easterbrook (1984) and Jensen (1986), Farinha (2003) performed a cross-sectional regression between dividend payouts and beneficial insider ownership below/above an entrenchment level of ownership in the U.K., during 1987 to 1996. In accordance with the agency theory, the author found evidence of a negative relationship between dividend payouts and insider ownership, as well as firm size. Similar to Farinha (2003), Grinstein and Michaely (2005) analysed the relationship between dividend payout and institutional holdings. Grinstein and Michaely (2005) found no evidence that institutions increase payout in larger firms, or in firms with the higher market to book ratios, neither do their findings support those of Allen et al. (2000), who propose that institutions are attracted by firms that pay more dividends. Moreover, Smith et al. (2008) and Ahmad (2015) suggest that firms pay lower dividends when firms' corporate governance scores are higher. Recently, Jacob and Michaely (2017) provide evidence using proprietary data that taxation

has a first-order impact on firms payout decisions, although mitigated by agency issues.

2.5. Research hypotheses

The existing empirical evidence is grounded on market imperfections, which were not considered by the seminal work of Miller and Modigliani (1961). Recent research showed that these studies are not conclusive and exhaustive when it comes to analysing the characteristics of firms that influence dividend policy. The first determinant of dividend policy in this study is profitability, which is measured by the ROA ratio, as the literature suggests a positive association between ROA and dividend yield (Desai and Jin, 2011); with the dividend payout ratio (Farinha, 2003; and Kumar and Sujit, 2016), and; with the magnitude of special dividends (Hanlon and Hoopes, 2014). Therefore, our first research hypothesis is as follows:

H_1: *Firm's profitability is positively associated with dividend yield.*

One topic where the literature is less than unanimous regards the effect of firms' growth on dividend policy. The market-to-book (M/B) ratio compares the relation between expected equity value, versus historical value, and is used for the proxy in this study - to capture investors' expectations about firms' growth. In this regard, the literature yields mixed evidence of the association between M/B and dividend yield. For instance, Pérez-Gonzales (2000) finds a positive impact of M/B on dividend payout ratio, whereas Farinha (2003) suggests a negative impact, with Desai and Jin (2011) considering M/B to be statistically insignificant in explaining changes in dividend yield. Considering the mixed evidence in the literature, we state the second research hypothesis as follows:

H_2: *Firms' growth is positively associated with dividend yield.*

The literature is also inconclusive regarding the association between firms' dividend policy and firm size. Several studies used market capitalisation (e.g., Graham and Kumar, 2006) or firms' total assets (e.g., Chetty and Saez, 2005) to capture firm size. The literature suggests that market capitalisation is either positively (Graham and Kumar, 2006), or negatively (Dahlquist et al., 2014), or insignificantly (Desain and Jin, 2011) associated with dividend yield, and that it is positively associated with the level of dividend per share (Almeida, et al., 2015). In this study, we follow the perspective of Dahlquist et al. (2014), as their study focuses on Europe – Swedish firms, in contrast with the studies of Graham and Kumar (2006) and Desain and Jin (2011), which are based on the US. The rationale for Dahlquist et al. (2014) is that dividend policy is influenced by tax considerations. The third research hypothesis is as follows:

H_3: *Firms' size decreases dividend yield.*

In a study focused on the effect of taxation on dividend policy, Desai and Jin (2011) suggest a positive association between leverage (debt on assets) and dividend yield. However, dividend yield may also be negatively associated with dividend yield (Berezinets et al., 2017) or repurchase yield (Jacob and Jacob, 2013) and also with the likelihood of firms paying dividends or repurchasing shares (Henry, 2011). The rationale is that dividends and debt may

in fact be substitutes, except in rare circumstances when firms raise a lot of debt to compensate shareholders with the distribution of dividends[2]. Thus, the fourth research hypothesis is defined as follows:

H_4: *Firms' leverage is negatively associated with dividend yield.*

Firms that pay out a regular dividend per share (DPS) may be pressurised into raising debt in periods of de-acceleration in performance, as the clientele effect may end up penalizing the market value of firms if the dividend per share is not sustained. That is to say, for firms with regular DPS, the effect of leverage on dividend yield may be even more negative and the pressure to maintain a stable DPS may also jeopardize growth in terms of decreases in the M/B. Therefore, the next research hypotheses are as follows:

H_5: *Dividend yield is negatively associated with firms' leverage if the dividend per share is regular.*

H_6: *Dividend yield is negatively associated with investors' expectations about firms' growth if the dividend per share is regular.*

3. DATA AND METHODOLOGY

3.1. Data and sample selection

The initial dataset is composed of the 100 firms (non-financial, meaning that our sample is not biased by the presence of banks or other financial institutions) which compose the Euronext 100 index. End-of-year data was collected from Thomson Reuters Eikon in the form of consolidated annual reports, as firms only pay out dividends as a result of their financial holdings. Firms that were not listed consecutively between December 2007 and December 2016 and those with less than one year of dividend payments were excluded. The final sample comprises end-of-year data from 44 firms listed in three stock exchanges managed by the Euronext group, representing a total of 440 firm-year observations.

3.2. Dependent variable

To test the research hypotheses and to answer the research question of this paper, similar to other studies (Elton and Gruber, 1970; Lewellen et al., 1978; Chetty and Saez, 2005; Desai and Jin, 2011; Jacob and Jacob, 2013; and Dahlquist et al., 2014), the main variable of interest is the dividend yield (DY). DY is defined as being the percentage of cash dividends paid relative to the market share price at year-end. We analyse the residuals plot and outliers, along with the test for the normality of the residuals. The residuals follow a distribution close to normal, assuring a robust estimation for the model.

3.3. Regression model

In order to understand the determinant of dividend policy amongst the constituents of the index Euronext 100, as in other studies on this topic (Pérez-Gonzáles, 2000; Seida, 2001; Gallagher et al., 2011; Jacob and Jacob, 2013; and Almeida et al., 2015), we used an OLS model, as follows:

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[2] Cash dividends can come in three forms (Berk et al., 2013): regular, if the firm pays on a constant schedule; special, when there are favourable circumstances which allow a firm to make an extraordinary payment, and; liquidating dividends, which, for tax proposes, are usually treated as return of capital.

$$DY_{it} = \alpha_i + \beta_1 ROA_{it} + \beta_2 M/B_{it} + \beta_3 lnMarketCap_{it} + \beta_4 Leverage_{it} + \beta_5 NPM_{it} + \beta_6 lnSales_{it} + \beta_7 DPSregular_{it}$$
$$+ \beta_8 DPR_{it} + \sum_{i=1}^{44} \Upsilon_i + \sum_{t=1}^{10} \delta_t + \varepsilon_{it} \quad (1)$$

in which *DY* is our main variable of interest. *ROA* allows the investor to evaluate the ability of assets to generate operational results and is computed as the ratio between net income and the total book value of assets (Desai and Jin, 2011; Farinha, 2003; and Hanlon and Hoopes, 2014). *M/B*, or Market-to-Book, is a ratio of market capitalisation over the book value of equity, and is an indicator of potential growth, although it could be industry-specific. As the literature has yielded mixed results regarding the association between *DY* and *M/B*, we do not form an initial prediction for the sign of the β_2 coefficient. *lnMarketCap* is the measure of size and is computed as the natural logarithm of firms' market capitalisation, and it is expected to be a negative coefficient, indicating that larger firms are less likely to exhibit higher dividend yields. We follow the perspective of Dahlquist et al. (2014), as their study focuses on Europe – Swedish firms, in contrast with the studies of Graham and Kumar (2006) and Desain and Jin (2011), which are based on the US. *Leverage* is computed as total debt over total assets. Similar to Jacob and Jacob (2013) and Henry (2011), a negative association between the level of leverage and the dividend yield (β_4) is expected. *NPM* – net profit margin, is a proxy for profitability and *lnSales* is the

natural logarithm of total sales. The expected sign for β_6 is negative, as in Henry (2011).

DPSregular is a dummy variable taking the value 1 if a firm pays a regular dividend per share, and 0 otherwise. To compute this variable, we considered a regular dividend per share (value 1) if the dividend per share in *t* is the same as in *t-1*. The aim of including this variable is to capture those effects on dividend yield derived from the clientele effect. Groups of investors with different preferences may shape firms' dividend policy to account for the 'clientele effect' (Ross et al., 2010). *DPR* is the dividend payout ratio at year *t*.

To control for potentially omitted firm-level factors, fixed effects per firm (Υ_i) and year (δ_t) are included in the model. The fixed effects (FE) method aims to control the effect of omitted variables that differ per year, and per firm. The Wald Test suggests that the inclusion of FE is a better estimator than the 'pure' OLS model. The Hausman Test also concludes that the FE method produces better estimates than the random effects method (RE). In all estimations, standard errors are robust and corrected for heteroscedasticity.

To answer H_4 and H_5, interaction terms were added to the following equations:

$$DY_{it} = \alpha_i + \beta_1 ROA_{it} + \beta_2 M/B_{it} + \beta_3 lnMarketCap_{it} + \beta_4 Leverage_{it} + \beta_5 NPM_{it} + \beta_6 lnSales_{it} + \beta_7 DPSregular_{it}$$
$$+ \beta_8 DPR_{it} + \gamma_1 DPRregular_{it} \times Leverage_{it} + \gamma_1 DPSregular_{it} \times Leverage_{it} + \sum_{i=1}^{44} \Upsilon_i \quad (2)$$
$$+ \sum_{t=1}^{10} \delta_t + \varepsilon_{it}$$

$$DY_{it} = \alpha_i + \beta_1 ROA_{it} + \beta_2 M/B_{it} + \beta_3 lnMarketCap_{it} + \beta_4 Leverage_{it} + \beta_5 NPM_{it} + \beta_6 lnSales_{it} + \beta_7 DPSregular_{it}$$
$$+ \beta_8 DPR_{it} + \gamma_1 DPRregular_{it} \times M/B_{it} + \gamma_1 DPSregular_{it} \times M/B_{it} + \sum_{i=1}^{44} \Upsilon_i + \sum_{t=1}^{10} \delta_t + \varepsilon_{it} \quad (3)$$

in which *DPRregular* is a dummy variable taking the value 1 if a firm has a regular payout ratio, and 0 otherwise. To compute this variable, we considered a regular dividend payout ratio (value 1) if the payout in *t* is the same as in *t-1*.

3.4. Descriptive analysis

Prior to investigating the determinants of the dividend policy of firms constituting the Euronext 100 index, we present the summary statistics of the variables in Table 1. The mean (median) dividend yield is 2.61% (2.23%), ranging between 0% and 14.29%, and distribution of DY is therefore right-skewed (Figure 1). During the period 2007-2016, only in less than 2% of the sample dividends were not paid.

Nonetheless, for 29 observations the dividend payout was zero or negative, which means that some firms still paid dividends in years of losses. For example, the Dutch firm PHILIPS recorded a significant loss in 2011, and even after registering the loss, the firm decided to increase the payment of a regular dividend per share of 0.70 to 0.75. In 2011,

the payout was -58.6%. PHILIPS faced a similar situation in 2008, when the payout ratio was around -368.4% because the firm's payout policy was to maintain the payment of a stable dividend per share.

ROA's mean is positive, however, the maximum return on total assets for some firms is significantly high (48.65%), considering that it is not leveraged by capital structure decisions. Firm's profitability, in the form of either *ROA* or *NPM*, decreases with leverage, as the increase in leverage pressurizes firms' interest coverage ratio and compromises these ratios of profitability.

The ratio for leverage has a mean (median) of 62.4% (61.4%), with modest volatility which indicates that firms, on average, are mostly financed by debt and could use debt as a substitute for dividends. This is a major difference from other studies based on the US, where firms' level of leverage is significantly lower. Various predictors are significantly correlated in the analysis, and thus in the main analysis, we opted to avoid including all variables simultaneously to control for potential multicollinearity.
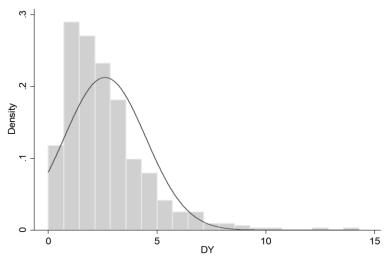
Table 1. Descriptive statistics

Variable	No.	Mean	Standard Deviation	1st Quartile	Median	3rd Quartile
DY	440	2.607	1.876	1.260	2.225	3.330
ROA	440	4.584	4.619	2.225	4.105	6.190
M/B	440	2.099	1.088	1.260	1.885	2.805
lnMarketCap	440	9.680	0.879	9.013	9.569	10.243
Leverage	440	62.38	12.98	53.64	61.40	73.08
NPM	440	0.077	0.099	0.029	0.061	0.106
lnSales	440	9.690	1.124	9.004	9.737	10.396
DPR	440	0.534	1.145	0.169	0.346	0.562
DPRregular	440	0.009	0.095	0.000	0.000	0.000
DPS	440	1.062	0.769	0.500	0.830	1.450
DPSregular	440	0.261	0.440	0.000	0.000	1.000

Note: This Table reports summary statistics for the main variables used in this study. The dependent variable is defined in Chapter 3.2 and is further explored in Figure 1.

The independent variables as following: ROA is the percentage of net income relative to the total book value of assets. M/B is the percentage of the firms' market capitalisation relative to the book value of equity. lnMarketCap is the logarithm of the total shares outstanding times the market price. Leverage is the percentage of the total debt of the firm relative to total assets. NPM is net income scaled by revenues. lnSales is the logarithm of the total sales. DPR is the dividend payout ratio, and DPRregular is a dummy variable, taking the value one if the DPR in t is the same as in t-1, and zero otherwise. DPS is the dividend per share and DPSregular is a dummy variable taking the value one if the DPS in t is the same as in t-1, and zero otherwise.

Figure 1. Dividend yield

Note: This Figure presents the histogram for the dependent variable Dividend Yield of this study (DY is the percentage of dividends paid relative to the market share price).

4. RESULTS

This paper examines the determinants of dividend policy for the restricted group of firms belonging to the Euronext 100 index, with the estimation of Equation 1. Results for the main analysis are detailed in Table 2. To test the first research hypothesis (H_1) – that profitability is positively associated with dividend policy, we included ROA in Column 1. Contrary to expectations, the coefficient for ROA is negative, although not statistically significant. This suggests that dividend yield may be higher for less-profitable firms. One rationale for this conclusion is that several previous studies focused on dividend payout ratio, rather than on dividend yield. For instance, Farinha (2003) found a positive impact of ROA on dividends, using dividend payout ratio as a proxy for dividend policy. Another explanation is that we are focusing on a restrict group of firms that have a significant market capitalisation in Europe, and the determinants of dividend policy may well be different than which has already been documented in the literature focused on firms with different characteristics and with their headquarters in different geographical regions. Therefore, results for our H_1 differ from those documented in previous research. We found an effect between dividend yield and profitability somewhat contrary to most empirical papers (Desai and Jin, 2011; Farinha, 2003; and Kumar and Sujit, 2016), although not biased by several characteristics that shape dividend policy such as firm's size and market regulators.

In the second research hypothesis (H_2), we focus on another important determinant of dividend policy, following the existing empirical evidence. The analysis for H_2 is presented in Column 2, in which the coefficient for *M/B* is expected to be negative. The ratio of market value of equity over the book value of equity is an indicator of expected growth by investors, and this coefficient is statistically significant, although negative. Results suggest that if shares are traded in the market at a higher price than the book value of equity, this contributes negatively to dividend yield. One source of growth is through the reinvestment of retained earnings and high growth for most firms is not sustainable with high payout

ratios. Nevertheless, *M/B* is not robust in Column 5, with the inclusion of other control variables. In the literature, this association was documented as either positive (Pérez-Gonzales, 2000), negative (Farinha, 2003), or inconclusive (Desai and Jin, 2011). However, in this association, we are not able to add clarification to the existing literature when focusing on a restrict group of large European firms. Thus, our results evidence the need for more research on the relation between firm's growth and dividend policy.

Table 2. Regression results: the determinants of dividend policy

	OLS Estimates				
	1	*2*	*3*	*4*	*5*
ROA	-0.010				-0.021
	(0.031)				(0.014)
M/B		-0.703***			0.297
		(0.187)			(0.180)
lnMarketCap			-2.219***		-2.593***
			(0.331)		(0.473)
Leverage				0.060***	-0.001
				(0.021)	(0.026)
NPM	0.351	0.439	1.653***	0.864	2.452***
	(1.438)	(0.595)	(0.332)	(0.875)	(0.577)
lnSales	-0.082	0.042	1.920***	-0.069	2.207***
	(0.574)	(0.564)	(0.465)	(0.522)	(0.534)
DPSregular	0.085	-0.067	-0.030	0.112	0.004
	(0.173)	(0.145)	(0.146)	(0.184)	(0.147)
DRP	0.212	0.188	0.153	0.180	0.150
	(0.132)	(0.116)	(0.093)	(0.124)	(0.095)
Constant	3.285	3.558	5.281	-0.666	5.588
	(5.561)	(5.598)	(4.482)	(5.431)	(5.184)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
N. Observations	440	440	440	440	440
Adjusted R²	0.166	0.106	0.288	0.057	0.291

Note: This Table reports the results of different combinations of Equation 1 to test H_1 to H_4:

$$DY_{it} = \alpha_i + \beta_1 ROA_{it} + \beta_2 M/B_{it} + \beta_3 lnMarketCap_{it} + \beta_4 Leverage_{it} + \beta_5 NPM_{it} + \beta_6 lnSales_{it} + \beta_7 DPSregular_{it} + \beta_8 DPR_{it} + \sum_{i=1}^{44} Y_i + \sum_{t=1}^{10} \delta_t + \varepsilon_{it}$$

*Standard errors are in parenthesis and are robust to heteroscedasticity and serial correlation. The symbols *, **, and *** represent significant levels of 10%, 5%, and 1%, respectively.*

The analysis of H_3 complements the previous results. With regards to firm size (H_3), the results are presented in Column 3 of Table 2. The coefficient for lnMarketCap is statistically negative, as expected, and suggests lower dividend yields for larger firms.

The capital structure is an important determinant of dividend policies. In Column 4 of Table 2, we focus on the effect of leverage on dividend yields, without considering those other control variables that may affect dividend yield differently (performance, growth, and size), although, in Column 5, leverage is not statistically significant. Therefore, the analysis of the leverage ratio does not follow the conclusions of the existing empirical studies, which thus supports the theory that debt and dividends can work as substitutes, which does not support H_4. These results might have a twofold rationale. Firstly, they suggest that highly leveraged firms use the payment of dividends to attract investors and thus this affects the capital structure. The theory behind debt and dividends is that firms pay dividends as a way to lower debt level (Jacob and Jacob, 2013; and Henry, 2011). Secondly, the agency perspective on dividend policy claims that by creating debt, firms mitigate agency costs (Jensen, 1986).

A further analysis of H_5 attempts to understand if the role of leverage as a determinant of dividend yields is shaped by the clientele effect. For this purpose, an interaction term between leverage and *DPRregular* in Column 1 of Table 3 was added in the main model, and also an interaction term between leverage and *DPSregular* in Column 2. These two interactions were also tested in the same model and Column 5 summarises this analysis. DPRregular captures firms paying regular portions of profits as dividends, while *DPSregular* identifies firms with stable dividend per share. These two metrics capture different effects that are worth clarifying. *DPSregular* is more related to the clientele effect, especially for less volatile stocks, while *DPRregular* most likely identifies dividends that are sustainable and will continue in the future, as growth in dividends is linked to growth in earnings.

In Column 1 of Table 3, the coefficient for the interaction term between leverage and *DPRregular* is statistically negative and remains negative in Column 5. The results suggest that leverage is not a determinant of dividend yield, in contrast to the agency perspective on dividend policy, although in the case of firms paying a regular dividend payout ratio, the relation is shaped differently. In other words, dividend yields are reduced when leverage increases for firms with the stable payout. With regards to the interaction of leverage with *DPSregular* (Column 2), the results suggest that leverage may positively affect the dividend yield of firms with stable dividend per share, which is contrary to the agency perspective on dividend policy. Investors appear to penalize an increase in leverage for firms paying a stable dividend per share, which would be a signal of increases in agency costs.

In Table 3, an interaction term between *M/B* and *DPRregular* in Column 3 was also included, and also between *M/B* and *DPSregular* in Column 4. These findings are in line with Liu and Chen (2015). Similar to the previous analysis, the two interactions were combined in Column 6 to capture the combined effect of dividend policy strategies. For firms already exhibiting higher growth expectations (high *M/B*), dividend yield decreases in the presence of a stable

payout ratio (Column 3). The intuition is that growth in dividends linked to growth in earnings (stable payout) does not jeopardize growth for firms with higher growth expectations. Indeed, the dynamics of this relationship additionally suggests that investors might positively value a stable payout ratio, where there are dividend yield decreases due to a high and positive sensitivity of price to changes in earnings.

Results on our H_5 and H_6 contribute to previous research by focussing on the stability of dividend policy variables. To the best of our knowledge, no previous reliable study exists which assesses the effectiveness of the stability of dividend policy variables on shaping the relationship between firm's leverage and investor's expectations on the dividend yield.

Table 3. Regression results: regular DPS and DPR

	OLS Estimates					
	1	*2*	*3*	*4*	*5*	*6*
ROA	-0.020	-0.021	-0.021	-0.021	-0.019	-0.021
	(0.015)	(0.014)	(0.015)	(0.015)	(0.015)	(0.015)
M/B	0.271	0.302	0.271	0.275	0.288	0.258
	(0.181)	(0.182)	(0.181)	(0.176)	(0.182)	(0.178)
lnMarketCap	-2.561***	-2.596***	-2.555***	-2.558***	-2.572***	-2.534***
	(0.465)	(0.475)	(0.467)	(0.464)	(0.468)	(0.461)
Leverage	0.001	-0.001	0.001	0.001	0.000	0.002
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
DPRregular × Leverage	-0.030***				-0.032***	
	(0.009)				(0.009)	
DPSregular × Leverage		0.001			0.002	
		(0.002)			(0.002)	
DPRregular × M/B			-0.799**			-0.770**
			(0.329)			(0.323)
DPSregular × M/B				-0.077		-0.050
				(0.063)		(0.061)
NPM	2.466***	2.450***	2.458***	2.452***	2.456***	2.457***
	(0.601)	(0.574)	(0.592)	(0.595)	(0.583)	(0.601)
lnSales	2.144***	2.211***	2.146***	2.142***	2.160***	2.107***
	(0.520)	(0.532)	(0.520)	(0.530)	(0.523)	(0.525)
DRP	0.139	0.150	0.139	0.149	0.139	0.139
	(0.089)	(0.094)	(0.089)	(0.095)	(0.088)	(0.089)
Constant	5.850	5.571	5.767	5.872	5.782	5.940
	(5.131)	(5.165)	(5.142)	(5.210)	(5.130)	(5.200)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N. Observations	440	440	440	440	440	440
Adjusted R²	0.308	0.291	0.303	0.293	0.307	0.302

Note: This Table reports the results of different combinations of Equation 1 to test H_5 and H_6:

$$DY_{it} = \alpha_i + \gamma_1 DPRregular_{it} \times Leverage_{it} + \gamma_1 DPSregular_{it} \times Leverage_{it} + Controls + \varepsilon_{it}$$

Standard errors are in parenthesis and are robust to heteroscedasticity and serial correlation. The symbols *, **, and *** represent significant levels of 10%, 5%, and 1%, respectively.

5. CONCLUSIONS

This paper aims to identify the determinants of the dividend policy of firms that constitute the Euronext 100 index between 2007 and 2016. The existing literature is still inconclusive as to which, and to what extent various factors are determinants of dividend policy. Furthermore, most studies are focused on the US, and thus empirical evidence on restricted groups of firms in Europe is still scarce.

First, the results suggest that dividend yield is higher for less-profitable firms, which adds more controversy to the current debate. Existing empirical evidence points to a variety of effects, mainly due to differences in the measurement of variables and in particular due to different sample sizes and countries covered by these studies. Investors' expectations about firms' growth, measured by the market-to-book ratio, are negatively associated with the dividend yield, although this is not robust in all specifications. Third, the size of a firm is referred to in the literature as being an important determinant of firms' dividend policy, although the direction of this relationship is still far from consensual. This paper adds to the existing literature by supporting a negative relationship between size and return on investment through dividends. This could be partially explained by the fact that large firms tend to be diversified,

which puts pressure on the need to reinvest their profits.

The literature on capital structure is often connected with several streams of literature on dividend policy, as these two topics are connected to a degree. In this paper, the effect of leverage on dividend yield through several perspectives was analysed. Overall, leverage is not a robust variable to explain changes in dividend yield. However, the clientele effect appears to drive this relationship. The results suggest a negative effect of leverage on the dividend yield of firms with a stable dividend payout ratio over time, which is contrary to the literature's defence of the agency perspective of dividend policy.

Another interesting finding of this paper relates to when growth in dividends is linked to growth in earnings (stable dividend payout ratio), whereby investors recognize that a policy of a stable dividend payout ratio does not jeopardize growth for those firms with higher growth expectations.

Our study limitation regards mainly the period and the sample size. A larger period could capture more exogenous effects, such as crisis and market changes. Also, a larger sample, covering more firms, could provide more robustness at the firm and country level specification. The use of quarterly data could also improve results. Finally, the main limitation is at the shareholders characteristics', as no

data on the type of shareholders of these firms are available. Using such microdata could improve substantially our understanding of the dividend payout theory.

This paper contributes to the current literature by focusing on a specific niche of the main firms listed on the stock exchanges managed by the Euronext group, and also by focusing on the indirect effects of traditional determinants of dividend policy. Nonetheless, much more research still needs to be carried out on this topic.

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