The determinants of paying dividends

Evidence from Dutch and Belgian listed companies

Tilburg University

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Tilburg School of Economics and Management

Written by: James Egan

ANR: 640984

Supervisor: F. Braggion PhD
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Student name: James Egan

ANR: 640984

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Graduation department: Finance

Supervisor: F. Braggion PhD

Faculty: Tilburg School of Economics and Management
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1. Introduction and research question

Background information and relevance of the topic

Dividends have been a mystery for finance scholars for many years. It is namely not completely clear why certain firms do and other firms don’t pay dividends. Modigliani & Miller (1961) stated in their famous paper that in a perfect world (with efficient markets) investors are indifferent concerning receiving earning pay-outs or realizing capital gains. Thereby the firm value is not affected by the dividend policy of the firm. In a real world the assumptions that were stated by Modigliani & Miller (1961) do however not hold. There are market imperfections that cause that the dividend policy of a firm is not irrelevant anymore to its shareholders and the firm itself. Some of these market imperfections are taxes, agency problems, information asymmetry, regulation and a specific heterogeneous demand of investors for (non-) dividend paying firms. Based upon these imperfections certain theories have been developed that try to explain why certain firms pay dividends and others don’t. The main goal of this study is to research whether these theories hold for Dutch and Belgian listed firms. Thereby this study addresses whether a firm’s dividend policy is influenced by its peers. There is chosen for Dutch and Belgian listed companies because these two countries show great similarities. What makes this combination interesting is the fact that their institutional backgrounds differ slightly. The taxation of dividends is not exactly the same in both countries. Thereby there exists different regulation concerning corporate governance in both countries. Secondly previously there has not been done a lot of research on the dividend policies of stock listed firms in these countries. Based upon the earlier mentioned imperfections several theories have been developed that try to explain why certain firms pay dividends and others don’t pay dividends. The clientele theory says that dividends are paid to fulfill specific heterogeneous demands of investors and that therefore some firms do and others don’t pay dividends. The signaling theory states that firms pay dividend in order to communicate to investors about the wellbeing of the company. Small and less mature firms would therefore be the perfect candidates to pay dividends since the future prospects of these firms are hard to gauge. Fama and French (2001) show that profitability, investment opportunities and size of listed firms in the United States (U.S.) are affecting the decision to pay dividends. They however also show that the propensity to pay dividends has decreased over the years. Later DeAngelo, DeAngelo and Skinner (2004) showed that dividends in the U.S. are very concentrated among big firms. Subsequently DeAngelo, DeAngelo and Stulz (2006) showed that the lifecycle of a firm is affecting the decision to pay dividends. All this research is bad news for the traditional clientele and signaling theory. Several other papers have been written on this topic with the focus on U.S. listed firms or firms that are listed in the European Union (E.U.). There is however no or very limited research that focuses on the development of dividends in the Netherlands and Belgium. First of all it is from an academic perspective interesting to research
whether these theories and findings also hold for Dutch and Belgian firms. Secondly it is valuable to research whether differences in the institutional backgrounds of these countries are causing a difference in for example the determinants of paying dividends.

Summarizing this study will focus on the determinants of paying dividends of Dutch and Belgian listed companies. Furthermore this study will research what the development of dividends has been and if there has been a change in the propensity to pay dividends for the years 1989 – 2011. Finally this study will research whether the decision to pay out dividends is influenced by the decision of peer firms to pay dividends. A long time ago Cournot (1838) and Bertrand (1883) suggested that the corporate policy of competitors is having an influence on the corporate policy (in this case the output and price) of a firm itself. But is this also the case with dividends? Are firms more or less eager to pay dividends when their peers are doing so?

Research questions and research methodology

In this research the focus will be on firms that are listed in the Netherlands and Belgium. There is chosen to focus on the Netherlands and Belgium because these two countries are quite similar on several area’s like culture, use the same currency and in the past no research has been done with a focus on these two countries concerning dividends. There are however differences in the institutional backgrounds of these countries what makes it interesting to select both countries.

The main research question in this study is as follows: what are the determinants of paying dividends? This main research question can be separated into three sub questions. The first sub question will focus on firm characteristics as determinants for paying dividends and is as follows: what firms characteristics are influencing the decision to pay dividends of companies that are listed in Belgium and the Netherlands? This question will try to answer what kind of firms are more likely to pay dividends. Initially this will be done by sorting firm characteristics e.g. by group (so firm characteristics per payer, non-payer, former payer etc.). Secondly logit regression will be used to control simultaneously for the several variables that may be influencing the decision to pay dividends. In this regression the dependent variable will be one if a firm is a dividend payer and zero otherwise. The dependent variables will be potential determinants of the paying dividend decision. There is chosen for a logistic regression because the dependent variable is binary. Once the typical characteristics of dividend paying firms are known it is possible to check whether firms with certain characteristics have become less inclined to pay dividends over the years. This means that while controlling for changing firm characteristics the fraction of firms that are expected to pay dividends are forecasted. This forecast will be compared with the actual fraction of firms that pay dividends in order to check for a change in the propensity to pay dividends. Subsequently there will be checked for possible causes of this change. Has there for example been a surge in share repurchases that act
as a substitute for declining dividend payments or is it like that investors demand firms to pay dividends? This can be formulated into the following sub question: *has there been a change in the propensity to pay dividends and what was the cause of this change?*

The third sub question will focus on what the effects is of the dividend policy of a firm’s peers on the dividend policy of the firm itself. This sub question can therefore be stated as follows: *do firms pay dividends because their peers are doing so?* This will be researched with the approach of Leary and Roberts (2012). The main empirical problem in answering this question is the problem of endogeneity and identification. Peer firms are namely operating in approximately the same environment. Therefore the decisions of these firms to pay dividends are influenced by the same (omitted) factors. In order to identify whether a firm’s decision to pay dividends is influenced by its peer decision there will be made use of the approach of Leary and Roberts (2012). They make us of a two stage regression. Secondly to make sure that possible correlations that are found are due to the dividend policy of peer firms an exclusive and relevant variable is found. This variable is the average idiosyncratic return of the stock of peer firms. This variable is relevant to the dividend policy of a firm and is exclusive for each firm.

Before this can be done first sorting of data will be performed to observe the trends that have taken place over the years. Have dividends for example become more or less concentrated? It is interesting to find patterns in dividend payments. These patterns are namely the cause for further research into dividends.

*Constraints and limitations*

The focus in this study will be on the determinant on the decision of paying dividends. It will therefore not be research in detail whether certain determinants lead to higher dividends. Although there are made some comparisons between dividends in the Netherlands and Belgium the focus of this research will not be to address the differences that exist between these two countries concerning dividends.

*Summary of results*

There is observed a decreasing fraction of firms that are paying dividends. Simultaneously there is however observed an increasing real amount of dividends. Results are found that suggest that dividends have become increasingly concentrated. It looks like that the increase in dividends of the big firms has swamped the decrease of dividends by small firms that decided to quit paying dividends.

There is found evidence that the decision to pay dividends is affected by profitability, growth opportunities, size, reporting frequency and the lifecycle stage a firm is in. The small differences in
the institutional backgrounds of Belgium and the Netherlands seem to have an impact on the magnitude of the determinants. The variable size is for example having in some cases a smaller impact in the Netherlands on the decision to pay dividends. This can be caused by the structured regime that is in place in the Netherlands that mitigates power from shareholders to the workers council at big firms.

There is observed a change in the propensity to pay dividends. A clear cause for a change in the propensity to pay dividends is however not found. There is namely not found any evidence for the catering theory. This theory suggests that firms initiate (terminate) dividends when investors’ demand for dividend paying shares is high (low). A decreasing propensity to pay dividends should therefore be correlated with a low dividend premium. There is however not found any evidence for this phenomenon. Also share repurchases are most probably not a reason for a change in the propensity to pay dividends. Share repurchases can namely act as a substitute for paying dividends and therefore cause a decrease in the propensity to pay dividends. There is however observed that share repurchases do not take place very frequently and are in most cases done by firms that are simultaneously paying dividends.

Finally there is not found any evidence that a firm’s decision to pay is affected by the decision of its peer firms to pay dividends. It may therefore by the case that managers of a firms base their decision to pay dividend merely on for example the wellbeing and opportunities of a company.

Structure of this research

This research will continue as follows. First a review of the current state of literature will be made in chapter 2. Subsequently in chapter 3 the institutional background of dividends in Belgium and the Netherlands will be given. In chapter 4 expectations of results will be stated based upon the earlier composed literature review and institutional backgrounds of the Netherlands and Belgium. In chapter 5 will be described how the dataset is collected. In this chapter there will also be made an analysis of the data in order to make trends visible and in order to give a first insight into the properties of dividend and non-dividend payers. Chapter 6 will research what firm characteristics are increasing the likelihood of paying dividends. Once these characteristics are known there will be researched if there has taken place a change in the propensity to pay dividends in chapter 7. Finally in chapter 8 there will be researched if firms are more likely to pay dividends if their peers are doing so.
2. Literature review

Dividends and share repurchases

Miller and Modigliani’s (1961) irrelevance theory states that, in a perfect world, investors are indifferent between a firm that distributes its profits and a firm that decides to retain its earnings. The question then however still remains why certain firms do pay-out their earnings while others do not. The signaling theory says that firms use their decision to distribute earnings to communicate to investors about the financial wellbeing of the company. This need to communicate is caused by the information asymmetry that exists between managers and owners. Firms that are in an early lifecycle stage (e.g. young and small) would therefore be the perfect candidates to pay-out earnings because of signaling reasons. This because it is hard for outside investors to gauge the future prospects of a firm of this type. The clientele theory says that firms do or don’t pay out earnings because they want to satisfy the heterogeneous demand of investors for dividends. In this way a set of assets is available for investor that allows these investors to create well diversified portfolios with desired dividend and risk levels. Baker and Wurgler (2004a, b) claim that dividends are paid to satisfy the time-varying demand of investors for dividend paying stocks. In their catering theory they state that non-dividend paying firms will initiate dividends when the dividend premium is high in order to “cater” the demand of investors for dividend paying assets. In their study the dividend premium is calculated by taking the logarithm of the difference of the weighted average market to book ratio of dividend payers and the weighted average market to book ratio of non-dividend payers. Contrarian to the signaling and clientele theory DeAngelo, DeAngelo and Stulz (2006) created the lifecycle theory. This theory is based on the agency theory of Jensen (1986) and the development of investment opportunities of a firm during their lifecycle. DeAngelo, DeAngelo and Stulz (2006) state that more mature and stable firms are more likely to pay dividends because their internal funds exceed their investment opportunities. For young, less mature, firms the opposite counts. This is caused by the trade-off between the advantages of retaining profits (like lower flotation costs) and the disadvantages of retaining profits (like agency costs). As firms become older the cumulative profits of firms become bigger (in most cases) and so do the agency costs. Due to these accumulated profits managers namely have more opportunities to expropriate shareholders what causes a pressure on managers to distribute profits. According to Myers and Majluf’s (1984) pecking order theory managers will prefer internal funds over debt for the financing of new investments. Because of information asymmetry shareholders can’t interfere in the decision managers make. Therefore DeAngelo, DeAngelo and Stulz (2006) conclude that as long as there is a probability that managers are forced to issue external capital in order to finance new investments these managers will not distribute dividends because this will reduce their internal funds which they prefer to use for new
investments. The situation that managers are forced to issue external debt is more likely for young or instable firms (firms with low earned equity) and therefore these firms are less likely to pay dividends.

Most empirical literature concerning dividends and share repurchases used a sample consisting out of exclusively U.S. companies. Therefore first empirical studies that focused on U.S. firms will be discussed. Fama and French (2001) show that the fraction of firms that are listed in the U.S. and that are paying dividends has sharply declined. They observe that 77.5% of the firms pays dividends in 1978 while only 20.8% of the firms pay dividends in 1999. They find that the decision to pay dividends is partly explained by a firm’s profitability, growth opportunities and size. Firms that currently have low growth opportunities and high profits are more likely to pay dividends while companies with high growth opportunities and low profits are more likely to retain profits. Thereby bigger firms are more likely to pay dividends. A change in the properties of listed firms over the years is one of the reasons for the sharp decline in the fraction of payers. The second reason is a declining propensity to pay dividends of all type of companies. The findings of Fama and French (2001) are not in line with the signaling or clientele theory since these theories are not able to explain time-varying changes in the propensity to pay dividends.

Although the fraction of dividend payers in the U.S. decreased, the real amount of dividends paid increased according to DeAngelo, DeAngelo and Skinner (2004). This study shows that dividends and earnings in the U.S. have become increasingly concentrated in the year 2000 in comparison with the year 1978. In 2000 the top 25 dividend payers are responsible for 54.9% of all dividends (1978: 38%). They claim that the reduction in the fraction of dividend payers is caused by small firms that paid small dividends and decided to stop paying dividends. The huge increase in dividends by the top payers “swamp” the relative small decrease of dividends of the small payers that quit paying dividends. The concentration of dividends casts doubt on the clientele, signaling and catering theory. All of these three theories do namely not suggest that dividend payments are concentrated. The increased concentration of dividends can however not explain why the propensity to pay dividends has declined over the years.

Baker and Wurgler (2004b) do however find empirical evidence for their own catering theory. They first calculate the change in propensity to pay dividends for the years 1963-2000 in the way Fama and French (2001) did. Subsequently they compare the changes in propensity to pay in a certain year with the dividend premium in a certain year and conclude that there is a positive relation between these two variables. In short this means that in periods when dividend premiums are high an increase in propensity to pay dividends can be observed while in periods when dividend premiums are low a decline in propensity to pay can be observed.
DeAngelo, DeAngelo and Stulz (2006) create a proxy for the lifecycle stage a firm is in that they call earned equity. Earned equity is calculated by dividing the book value of retained earnings of a firm by its book value of equity. Young firms typically have low retained earnings and relative high levels of contributed equity while older firms typically have higher levels of retained earnings in comparison with their equity. They find that this variable has a positive impact on the likelihood to pay dividends. This suggests that older firms (who have a higher ratio of retained earnings to book value of equity) are more likely to pay dividends. This finding of DeAngelo, DeAngelo and Stulz (2006) is suggesting that the catering theory of Baker and Wurgler (2004a, b) is incorrect. According to this theory dividends are namely paid in response to an overvaluation of the market of dividend paying companies. The decision to pay dividends would therefore not depend on the earned equity ratio. DeAngelo, DeAngelo and Stulz (2006) do however find evidence that the decision to pay dividends is depending on the earned equity ratio. The findings of DeAngelo, DeAngelo and Stulz (2006) are also bad news for the signaling theory. This theory namely suggests that firms that are in an early stage of their life are perfect candidates to distribute their earnings because it is for investors namely hard to gauge the future of these firms. This is completely in contrast with the findings of DeAngelo, DeAngelo and Stulz (2006) who say that older more mature firms are more perfect candidates for distributing dividends.

Grullon and Michaely (2004) show that share repurchases by U.S. listed firms increased during the years 1980 – 2000. In 1980 share repurchases were 13,1% of total paid out dividends while share repurchases were 113,1% of total paid out dividends in 2000. This means that the amount of share repurchases has outstripped the amount of dividends paid. They find that corporations view share repurchases as substitutes for dividends. According to Grullon and Michaely (2004) this can explain the declining propensity to pay dividends. Also Skinner (2008) shows that the fraction of firms that are repurchasing shares has increased. He observes three types of companies that payout earnings to shareholders. The first group consists of the firms that only pay dividends, the second group are the firms that pay dividends and occasionally repurchase shares while the third group consists out of firms that pay dividends and regularly repurchase shares. He concludes that in 2005 91% of the firms belong to the latter group while this was 80% in 1980. Skinner (2008) also observes that share repurchases are also used as a replacement for dividends. Skinner (2008) claims that the flexibility of share repurchases to the management of a company, a change in regulation and taxation is the reason for the surge in share repurchases.

In the following paragraph empirical studies on non-U.S. companies are reviewed. Ferris, Sen and Yui (2006) studied the determinants of paying dividends of companies listed in the United Kingdom for
the period 1988-2002. They also find that profitability, growth opportunities and size are influencing the decision to pay dividends. They observe a declining propensity to pay dividends. According to Ferris, Sen and Yui (2006) there is a positive relation between the change in propensity to pay dividends and the dividend premium. They find this evidence by using OLS regression with the change in propensity to pay dividends as dependent variable and the dividend premium as independent variable. These results support the catering theory but are doubtful since a few years later Denis and Osobov (2008) are not able to find supporting evidence for the catering theory in the U.K.

Denis and Osobov (2008) examine the dividend behavior of companies headquartered in six different countries (Canada, France, Germany, Japan, United Kingdom and United States) for the years 1989 till 2002. They are doing this for each country separately. They find that there are common determinants across countries that determine the likelihood of paying dividends. These determinants are in line with the determinants of Fama and French (2001) (profitability, growth opportunities and size) and earned equity. For all countries except for the U.S. they find only small declines in propensity to pay dividends. According to Denis and Osobov (2008) this is caused by newly listed firms that are, by their characteristics, expected to pay dividends that are however not paying dividends. They also observe that dividends are concentrated among the most profitable firms. This casts doubt on the clientele theory. In a capital market in which 90% of the stocks are dividend paying stocks it is implausible to create a well-diversified portfolio for a shareholder that would prefer a non-dividend portfolio. They also cast doubt on the signaling theory. According to the signaling theory it are namely young firms that are most likely to pay dividends. Denis and Osobov (2008) however observe that mature firms are the most dominant dividend payers. Furthermore Denis and Osobov (2008) try to find if the dividend premium (which is a proxy for the catering theory of Baker and Wurgler (2004a, b)) is correlated with the change in propensity to pay dividends. Outside the U.S. they are not able to find evidence that the propensity to pay increases (decreases) when the dividend premium is high (low) which is bad news for the catering theory.

Von Eije and Megginson (2008) research the development and determinants of cash dividends and share repurchases of 15 E.U. countries for the period 1989-2005. They find that the fraction of firms that are paying dividends has declined while the real amount of dividends has increased over the years. They also observe a small decrease in the propensity to pay dividends. They also find that the reporting frequency of a firm (the number of times a firm reports its earnings on an annual basis) is positively influencing the likelihood of paying dividends. Strikingly they don’t find supporting evidence for the lifecycle theory of DeAngelo, DeAngelo and Stulz (2006) when they use retained equity as a proxy for this theory. They do however find evidence that older firms are more likely to
pay dividends. They also find that higher leverage is lowering the probability of distributing dividends.

Ferris, Sen and Yui (2006) also analyzed if the declining propensity to pay dividends by U.K. listed firms may be explained by share repurchase programs. They however observe that the number of firms that are repurchasing shares is relatively small. Therefore they conclude that it is impossible that share repurchases are the reason for the declining propensity to pay dividends.

Von Eije and Megginson (2008) observe that fewer European than U.S. firms are repurchasing shares. The propensity to repurchase has increased for companies listed in 15 E.U. countries. They also show that large scale repurchase share programs have started later in comparison with U.S. firms but have grown rapidly in the years 1995-2005.

Peer effects on corporate policy

Why would a firm’s corporate policy (or more specifically dividend policy) be influenced by the corporate policy/dividend policy of its peers? A reason why companies may mimic the dividend policy comes from herding models. Zeckhauser, Patel and Hendricks (1991) suggest that relative performance evaluation can possible lead to herding behavior. Banerjee (1992) shows that the management of a firm may take into consideration the actions of peer firms in certain corporate policy decisions. This is caused by the fact that there do not exist exact models that can determine the correct choice for these decisions. Firms in which a high level of ambiguity exists may therefore be more inclined to mimic the behavior of their peers. Another reason for mimicking behavior may be the drive of managers to improve or hedge their reputation. In the event of a bad outcome the blame will be shared with managers from peer companies. This will damage the reputation of a manager to a lesser extend in comparison with the situation in which a manager is the only person to blame.

In the past there has not been done a lot of research to the effect of peer firm dividend policy on a firm’s dividend policy. Leary and Roberts (2012) can’t find any evidence that firms are paying dividends because their competitors are doing so. They are however only briefly focusing on this issue since the main topic in their research is about leverage. They try to find evidence for peer influence on dividend policy by using a two staged regression. The variables that are used in this regression are however not equal to the variables that according to e.g. Fama and French (2001) determine dividend policy. This may therefore be the cause for their insignificant results.
3. **Institutional background of dividends in the Netherlands and Belgium**

The institutional background of dividends can play an important role in the dividend policy of a firm. If for example dividends are taxed at a higher rate than capital gains then investors might prefer capital gains.

In the Dutch civil code is described that profits of a company will be distributed to its shareholders as long as the statutes of that same corporation tell this is the case. In almost all cases the statutes of a company state that during the general meeting of shareholders is decided whether profits should be distributed or not. Also the Dutch commission for corporate governance states that this decision needs to be discussed separately during the general meeting of shareholders (Monitoring Commissie Corporate Governance Code, 2012). As soon as a company in the Netherlands becomes “big” it needs to adopt a structured regime (Social Economic Council, 2001). A company is defined as big when its equity capital is bigger than €13 million, has more than 100 employees and it has a workers council. The objective of the structured regime is to give the workers council a voice in the supervisory board of the firm. This mitigates partly the power from shareholder to the workers council of the company. In practice this means that there is less power for shareholders and more power for the employees of a company. According to de Jong, Mertens and Roosenboom (2006) the attendance at shareholder meetings in the Netherlands is low (30% on average). Thereby are manager sponsored proposals (like pay-out policy) rarely contested (9 out of 1583 between 1998 and 2002). This may be caused partly because of this structured regime. This situation is quite different when compared with the situation in, for example, the U.S.

The Belgian law states that a company will in general distribute its profits to its shareholder as long as the statutes of a company tell this is the case. In the statutes of almost all companies is stated that during the general meeting of shareholder is decided whether dividend are disbursed or not. A firm is not allowed to distribute profits when its net-assets (calculated as total assets deducted by debt and provisions) is negative (Wetboek van Vennootschappen, 2013). According to the Belgian corporate governance code of 2009 (Commissie Corporate Governance, 2009) there is no such structure in place that can be compared to the structured regime that can be found in the Netherlands. This suggests that Belgian shareholders (of “big” firms) are a bit more powerful in comparison with their Dutch counterparts. There is namely not a delegation of the workers council present in the supervisory board that can mitigate powers from the shareholders.

In the Netherlands the dividend paying company is obliged to withhold 15% dividend tax. This dividend tax can however be refunded with the personal tax rate (in case the receiver is a natural person) or with the corporation tax rate (in case the receiver is company) (belastingdienst.nl, 2013). The personal tax rate (“box 2” rate) is 25%. At this rate as well capital gains as dividends are taxed. The corporation tax rate for profits above €200.000 is also 25% (while for profits below €200.000 the...
rate is 20%). From a tax perspective Dutch investors should therefore be indifferent towards receiving dividends or realizing capital gains (by either selling in the open market or via a share repurchase program). A corporation that is paying dividends does not need to withhold dividend tax if the receiver is a pension fund that is located in one of the E.U. countries or if the shareholder owns more than 5% of the shares of that same company. Thereby pension funds don’t need to pay corporation tax. This however still does not change the indifference (from a tax perspective) between dividends and capital gains since they are still taxed at the same rate. Foreign investors can in some cases also receive a (partial) refund of the dividend tax. If this is possible depends on whether the country in which the investor is located has made a tax treaty with the Netherlands (rijksoverheid.nl, 2013).

In Belgium the dividend paying company is obliged to withhold dividend tax. This rate fluctuates between 21% and 25%. The difference with the dividend taxation system in the Netherlands is however that these tax rates can’t be refunded with any other type of personal tax. At a personal level no further taxes are paid on dividends or capital gains what suggests that individual investors would prefer the realization of capital gains (by selling their shares with profits if possible) above dividends. This because of the fact that capital gains are not taxed for this type of investor. This can however only be the case if the investor is able to sell its shares with profit. Corporations that receive dividends from another corporation are able to deduct the dividend tax from their corporation tax. This suggests that corporations are indifferent between receiving dividends and realizing capital gains.

In short can be summarized that the Dutch and Belgium taxation system concerning dividends are quite similar. The only big exception is that realized capital gains are not taxed at a personal level in Belgium and that therefore individual Belgian investors would prefer to realize capital gains (if possible) above dividends. This is not the case for Dutch individual and Dutch and Belgian institutional investors. These investors are from a taxation point of view indifferent in receiving dividends or realizing capital gains.

4. Expectation of results

In this chapter expectations of the results will be formulated. This will be done based upon the literature review and the institutional backgrounds of the Netherlands and Belgium. This will be done in the sequence of the research questions that were stated in chapter 1.

*The determinants of paying dividends*
Concerning the determinants of paying dividends there is expected that the determinants that were defined by Fama and French (2001) (profitability, size and growth opportunities) and retained equity as a proxy for lifecycle (as defined by DeAngelo, DeAngelo and Stulz (2006)) also count in the same direction for Dutch and Belgian firms. The way they are having their impact on Dutch or Belgium firms do however differ due to the differences in the institutional backgrounds of these two countries.

First of all it is expected that profitability is having a positive effect on the likelihood of paying dividends. This variable will probably have a smaller impact on the likelihood of distributing dividends by Belgian firms in comparison with Dutch firms. This is caused by the attractive Belgian environment for capital gains by individual investors. If firms are profitable it is more likely that individual investors are able to realize capital gains which are more attractively taxed than dividends. This will decrease impact of the variable profitability on the likelihood of paying dividends by Belgian listed firms.

Secondly it is expected that growth opportunities is having a negative impact on the likelihood of paying dividends. According to the pecking order theory managers namely prefer to use internal funds above external funds. If these growth opportunities are high these managers will be more likely to retain earnings that can subsequently be used to finance these growth opportunities with internal funds. There are no institutional differences between the Netherlands and Belgium that would suggest that there will be major differences in the impact of this variable on the likelihood of paying dividends.

Thirdly it is expected that size is positively influencing the likelihood of paying dividends. This because the principal-agent problem and information asymmetry are relatively bigger at big firms. Managers therefore have more ability to expropriate shareholders if earnings are retained. It is therefore expected that there is more pressure on manager at bigger firms to distribute earnings in the form of dividends. The impact of size on the likelihood of paying dividends will probably be bigger in Belgium. This because of “structured regime” regulation that is in place in the Netherlands for big firms. This regulation mitigates the power of shareholders to the workers council. This work council probably does not prefer dividends but does prefer (internal) investments. Therefore bigger firms (that are obliged to implement a structured regime) become less likely to pay dividends in the Netherlands.

In line with the findings of DeAngelo, DeAngelo and Stulz (2006) it is expected that retained equity is having a positive influence on the likelihood of paying dividends. In other words Dutch and Belgian firms that are more mature are more likely to pay dividends. The reason for this is that the internal funds of more mature firms (that have a higher ratio of earned equity) exceed the growth opportunities of these firms. These firms are therefore more likely to distribute earnings. The difference in taxation can possibly cause a difference in the impact of this variable on Dutch and
Belgium firms. It can namely be the case that Belgian firms are more eager to also increase the price of their share by retaining a part of their earnings and also distribute a part of their earnings as dividends. In this way it is more likely that individual investors are able to realize capital gains (what is from a tax point of view more attractive) while the firms are also pleasing dividend demanding shareholders.

Besides the variables that were defined by Fama and French (2001) and DeAngelo, DeAngelo and Stulz (2006) there is expected that two other variables are having an impact on the likelihood to pay dividends. These variables are leverage and reporting frequency.

Firstly there is expected that leverage is having a significant impact on the likelihood of paying dividends. On the one side this could be a negative impact because higher leverage reduces the agency problem (Jensen, 1986) and thereby the need to distribute dividends. On the other side this could be a positive impact since leverage could be a proxy for stable firms that are able to attract high levels of debt and pay dividends. Whatever the direction of the leverage coefficient will be there is expected that leverage is having a more negative impact on the likelihood of paying dividends for Belgian listed firms in comparison with their Dutch counterparts. This because of the regulation that is in place in Belgium that states that firms with negative net-assets (calculated as total assets deducted by debt and provisions) are not allowed to distribute earnings.

Secondly reporting frequency is expected to have a positive influence on the likelihood of paying dividends. This is in line with the findings of von Eije and Megginson (2008). Intuitively this may be caused by the fact that managers more often have to report their results and that therefore the pressure to report positive news is higher. By paying dividends the managers is bowing down to the pressure. There are no reasons to expect that there are any differences between the magnitude of this variable in Belgium and the Netherlands.

The propensity to pay dividends

Fama and French (2001) showed that the propensity to pay dividends has decreased over the years for U.S. firms. Von Eije and Megginson (2008) showed that his was also the case for 15 E.U. countries. Denis and Osobov (2008) showed that this was also the case for the two countries that border Belgium and the Netherlands (France and Germany). All of these researchers are not able to find an explanation for this decreasing propensity to pay dividends. Since there are still great similarities with these countries there is expected that there has also taken place a decrease in the propensity to pay dividends in Belgium and the Netherlands.

Do firms pay dividends because their peers are doing so?
There does not exist a clear model for managers that can be used to determine whether it is optimal to pay or not to pay dividends. Because it is very hard for the management in a lot of cases to determine whether it is optimal to pay or not to pay dividends the expectation is that the management makes use of the decision that is made by its peers. Thereby a manager wants to hedge or improve his or her reputation. If ex-post it becomes clear that it would have been better to distribute dividends for some reason the blame is shared by more managers in the market. This will damage his reputation to a lesser extent if he was having a contrarian dividend policy.

5. Data selection and descriptive statistics and univariate analysis

5.1 Data Selection

Data is downloaded for all firms that are or were listed in the Netherlands and Belgium. This is done for the period 1989 – 2011. There is chosen for 1989 for two reasons. The first reason is the adoption of the Delors Report in this year. This report meant the creation of the European Monetary Union (EMU). The second reason is that the database Datastream, from which the data is downloaded, provides limited data on this topic prior 1989. There is chosen for 2011 as end year because this is the most recent year that provides complete data. Subsequently companies with similar names are deleted from the database. In this study the focus is on industrial firms. Therefore utility and financial firms are deleted from the sample. This is done with the help of the industry codes that are provided by Datastream. Following Fama and French (2001) we also delete firms that have a negative book value of equity. Also all observations are deleted that contain missing data on common dividends, market capitalization, book value of assets, net income, income tax and net debt. This leads to 116 firm observations in 1989 of whom 100 pay dividends. In 2011 there are 162 firm observations of whom 114 pay dividends. Based on the International Securities Identifying Numbers (ISIN) we download information on share repurchases from the Datastream database. This data is however only available in Datastream from the year 2002 and later. Graph 1 displays the real values of dividends and share repurchases of the above described sample. Both values are converted to real values with the help of the Consumer Price Index (CPI) with 1989 as base level (1989=100). For Dutch firms the Dutch CPI is used while for Belgian firms the Belgian CPI is used.

5.2 Patterns in dividends and share repurchases

In this section there will be researched what patterns can be observed over the years concerning dividend payments. This is interesting to do so because in a later stadium of this research there will be studied what the determinants of paying dividends are and if there has been a change in the propensity to pay dividends. If, for example, over time the characteristics of firms have changed.
towards the characteristics of non-dividend paying firms than this may be the cause for a decrease in dividends. Thereby a decrease in the fraction of dividend payers may be caused by a decreasing propensity to pay dividends.

Graph 1 shows the real amounts of dividends and share repurchases (blue and red line, left vertical axis) and the median pay-out ratio over the years (yellow line, right axis).

Graph 1: Real values of dividends and share repurchases in 1989 euro’s. In Datastream share repurchases are only available from the year 2002 and later. The right vertical axis displays the median payout ratio. The payout ratio is calculated by dividing the amount of dividends by the earnings after taxes but before interest.

As can be seen there is a positive trend in real dividend amounts over the years. The big peak in 1999 is caused by a big dividend payment of Unilever. This positive trend is in line with development of dividends of American listed companies that was researched by DeAngelo, DeAngelo and Skinner (2004).

The number of useable observations for share repurchases is very limited. At its peak in 2008 only 31 observations are recorded. The real amount of share repurchases however outstrips dividends in 2007 (just before the worldwide financial crisis) and sharply drops after this peak. The payout ratio is calculated by dividing dividends by the earnings before interest but after taxes. What can be seen is that the median payout ratio is fluctuating between 0,05 and 0,25.

Graph 2 reports the fraction (expressed in percentages) of observations; that pay dividends (payers), that don’t pay dividends but did in one of the previous years up to 1980 (former payers) and that never paid dividends (never paid).
Graph 2: Fraction of observations that pays dividends in a year, do not pay dividends in a certain year but did in previous years and fraction of observations that never paid dividends in a certain year.

From graph 2 can be concluded that there is a small decline in the fraction of firms that pay dividends, although there is an increase observed in the year 2011 in comparison with 2010. In 1989 the fraction of payers peaks with 87%. After 1989 the fraction of payers goes down a bit and later increase from 1992 till 1997. After 1997 a decrease can be observed. In 2011 the fraction of payers is 70%. The same pattern is observed by Fama and French (2001) for companies listed in the United States (U.S.) over the period 1926 – 1996. So it looks like the same pattern can be observed for Dutch and Belgian firms with the difference that it takes place in a later stage and in a shorter time span. Thereby the decrease in the fraction dividend payers is less extreme in comparison with the results of Fama and French (2001).

Over time a small increase in former payers and firms that never paid dividends can be observed. The increase in former payers can be caused by a declining propensity to pay (later in this study more about this). The increase in fraction of firms that never paid dividends is probably caused by newly listed firms that don’t pay dividends.

Over time it looks like that share repurchases are playing an important role. There are however not a lot firms in the sample what causes this high fraction. The yellow line displayed in graph 2 therefore gives a bit of a biased view.

5.3 Univariate sorting

According to Fama and French (2001) dividend payers are more profitable, have less growth opportunities and are of bigger size. In this chapter a first step is made to check if these characteristics are also held by Dutch and Belgian listed firms. In this chapter this will be done with
the help of sorting information. In a later chapter regression will be used. Thereby an analysis will be made of how the earlier mentioned variables have changed (on average) over the years. A change in these variables/characteristics may namely be the cause of a change in dividend payments. In this study two proxies are used for profitability. The first one is the ratio of earnings after taxes but before interest to book value of assets (Et/At). The second one is the ratio of earnings after taxes but before interest to book value of equity (Yt/Et). Also for growth opportunities two proxies are used. The first one is the ratio of market value of total capital (calculated as book value of assets minus book value of equity plus market value of equity) to the book value of assets. Sometimes this variable is called Market-to-Book value, therefore this variable will be denoted as MtB. The second proxy for growth opportunities is the ratio of change in book value of assets to book value of assets (dAt/At).

For size also two proxies are used. The first one is the book value of assets (At) and the second one is the percentage of firms that have an equal or smaller market capitalization in a certain year (MCb, which stands for Market Capitalization below).

According to DeAngelo, DeAngelo and Stulz (2006) more mature firms are more likely to pay dividends because they are in a lifecycle stage in which their internal funds exceed their investment opportunities. As a proxy for this lifecycle theory the variable “RET/ET” (Retained Earnings, / Equity,) is used.

According to Jensen (1986) leverage (Net Debt, / Assets,) can help to reduce agency costs and thereby the need to distribute dividends. On the other hand leverage may be a good proxy for older, stable and more profitable firms. It is at this moment therefore not very clear what direction leverage pushes the probability of dividend distribution. Nevertheless this variable is used to check whether it is influencing the decision to pay dividends.

All of the above described ratios are Winsorized at a 1% level at the upper and lower side to reduce the power of outliers. Table 1 shows the averages of the several variables sorted by group. A payer is a firm that pays dividends in year t. While a non-payer is a firm that does not pay dividends in year t.

A former payer is a firm that does not pay dividends in year t, but did pay dividends in the years before t up to 1980. A firm that has never paid any dividends since 1980 or since it entered the sample is defined as Never Paid. A new list is a firm which entered the sample for the first time in year t-1. There is chosen for t-1 because the data in year t may not be complete or representing results for the complete year.
Panel A:

<table>
<thead>
<tr>
<th></th>
<th>Et/At</th>
<th>Yt/Et</th>
<th>dAt/At</th>
<th>MtB</th>
<th>Ret/Ét</th>
<th>At (€)</th>
<th>MCb</th>
<th>Leverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payers</td>
<td>7,50%</td>
<td>20,98%</td>
<td>6,77%</td>
<td>1,52</td>
<td>35,84%</td>
<td>2.555.207</td>
<td>54,03%</td>
<td>10,65%</td>
</tr>
<tr>
<td>Non-Payers</td>
<td>-0,39%</td>
<td>-2,12%</td>
<td>-0,44%</td>
<td>1,61</td>
<td>-174,70%</td>
<td>736,574</td>
<td>33,03%</td>
<td>13,82%</td>
</tr>
<tr>
<td>Former Payers</td>
<td>1,97%</td>
<td>5,11%</td>
<td>-2,45%</td>
<td>1,38</td>
<td>-74,01%</td>
<td>966,430</td>
<td>32,48%</td>
<td>18,68%</td>
</tr>
<tr>
<td>Never Paid</td>
<td>-4,07%</td>
<td>-13,33%</td>
<td>2,67%</td>
<td>1,98</td>
<td>-281,59%</td>
<td>379,528</td>
<td>33,89%</td>
<td>6,28%</td>
</tr>
<tr>
<td>New List</td>
<td>7,48%</td>
<td>20,76%</td>
<td>15,57%</td>
<td>1,51</td>
<td>19,36%</td>
<td>217,478</td>
<td>33,07%</td>
<td>12,07%</td>
</tr>
<tr>
<td>Payers</td>
<td>8,46%</td>
<td>23,24%</td>
<td>16,66%</td>
<td>1,37</td>
<td>24,87%</td>
<td>228,376</td>
<td>33,89%</td>
<td>10,65%</td>
</tr>
<tr>
<td>Non-Payers</td>
<td>4,61%</td>
<td>13,50%</td>
<td>12,34%</td>
<td>1,94</td>
<td>7,24%</td>
<td>185,424</td>
<td>30,67%</td>
<td>16,25%</td>
</tr>
</tbody>
</table>

Panel B:

<table>
<thead>
<tr>
<th></th>
<th>Et/At</th>
<th>Yt/Et</th>
<th>dAt/At</th>
<th>MtB</th>
<th>Ret/Ét</th>
<th>Assets</th>
<th>MCb</th>
<th>Leverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989-1994</td>
<td>7,26%</td>
<td>21,87%</td>
<td>16,63%</td>
<td>0,52</td>
<td>14,23%</td>
<td>1.054.617</td>
<td>48,47%</td>
<td>12,18%</td>
</tr>
<tr>
<td>1995-2000</td>
<td>7,16%</td>
<td>21,33%</td>
<td>20,24%</td>
<td>1,32</td>
<td>-0,27%</td>
<td>1.502.542</td>
<td>49,13%</td>
<td>12,70%</td>
</tr>
<tr>
<td>2001-2006</td>
<td>4,02%</td>
<td>9,47%</td>
<td>25,60%</td>
<td>0,87</td>
<td>-44,04%</td>
<td>2.379.210</td>
<td>47,98%</td>
<td>11,87%</td>
</tr>
<tr>
<td>2007-2011</td>
<td>3,08%</td>
<td>6,50%</td>
<td>23,68%</td>
<td>0,92</td>
<td>-44,63%</td>
<td>3.330.473</td>
<td>47,83%</td>
<td>9,02%</td>
</tr>
</tbody>
</table>

Table 1: Panel A: averages for proxies of profitability (Et/At & Yt/Ét) , growth opportunities (dAt/At & MtB), lifecycle (Ret/Ét), size (At & MCb) and leverage per type of firm (payers, non-payers, former payers, never paid and new lists). Panel B: averages for the same variables for all firms per different time period.

**Profitability**

As can be seen dividend paying firms are on average more profitable than non-dividend paying firms for both proxies of profitability. Over the entire period the ratio of earnings before interest but after taxes to book value of assets is on average 7,50% while this is -0,39% for non-dividend paying firms. Of these non-dividend paying firms former payers are one average more profitable. Newly listed companies are relatively profitable what could be a cause for increasing dividends.

**Growth opportunities**

The ratio of change in assets to assets (dAt/At) is on average bigger for payers in comparison with non-dividend paying firms. This suggests that dividend paying firms have more growth opportunities. Of the firms that don’t pay dividends former payers have less growth opportunities on average.
These results are not in line with the findings of Fama and French (2001) who observed higher growth opportunities for non-dividend paying firms. What also can be seen from table 1 is that newly listed firms have relative high growth opportunities what can in this case cause an increase in dividends. The variable MtB leads to different results. According to the averages of this variable non-dividend paying firms have higher growth opportunities. Thereby firms that never paid any dividends have on average bigger growth opportunities. Using MtB as a proxy for growth opportunities yields to contradicting results in comparison with using dAt/At as a proxy for growth opportunities. MtB however also takes into consideration the views of investors and is less influenced by accounting rules. Therefore MtB will be used in the sequel of this study.

**Lifecycle**

There seems to be a clear difference between dividend and non-dividend paying firms when it comes to ratio of retained earnings to equity. According DeAngelo, DeAngelo and Stulz (2006) this variable is a good proxy for the lifecycle a firm is in. A high ratio means that a firm is more mature. According to the averages dividend paying firms are more mature in comparison with non-dividend paying firms. Of the non-dividend paying firms former payers tend to be more mature firms. Newly listed firms have on average the characteristics of dividend paying firms when looking at RET/Et ratio.

**Size**

On average dividend paying firms are bigger than non-dividend paying firms according to both proxies for size (this is also the case when there is made a correction for inflation). When looking at book value of total assets former payers are on average bigger in comparison with firms that have never paid dividends before. When looked at the variable MCb the opposite is however the case.

**Leverage**

On average dividend paying firms have lower leverage ratios. This is in line with Jensen (1986) who claims that higher levered firms are exposed to agency costs and that therefore there is a lower need to distribute dividends at these firms. Firms that don’t pay dividends but did in the past are on average more levered in comparison with firms that have never paid any dividends. An explanation for this phenomenon may be that in some periods it may be harder for debt holders to monitor firms and that they therefore require firms to retain earnings instead of distributing them to ensure their debts are repaid.

Summarizing when only looked at averages we can state that on average dividend paying firms are more profitable, are more mature and are bigger of size. This is in line with the findings of Fama and
French (2001) and DeAngelo, DeAngelo and Stulz (2006). When MtB is used as a proxy for growth opportunities we can also state that non-dividend paying firms have on average more growth opportunities what is also in line with the findings of Fama and French (2001). This is however not possible when the variable dAt/At is used as a proxy for growth opportunities. Thereby dividend paying firms have on average lower leverage ratios in comparison with non-dividend paying firms.

Panel B reports the evolution in the averages of firm characteristics over the years. What can be seen is that firms have become less profitable what is a property of a non-dividend paying firm. About growth opportunities it is harder to make conclusions. Using dAt/At as a proxy it can be observed that growth opportunities first increase on average for the period 1995-2000 later increase again for the period 2001-2006 and later decrease for the period 2007-2011. When MtB is used as a proxy for growth opportunities first an increase for the period 1995-2000 from 0,52 to 1,32 can be observed and a decrease in growth opportunities for the period 2001-2006 to 0,87 while later an increase to 0,92 can be observed for the period 2007-2011. These fluctuations cause that there can't be made a uniform suggestion if the characteristics of firms tend to converge to the characteristics of dividend payers or non-dividend payers. The proxy for lifecycle stage (REt/Et) declines sharply of the sample period what suggests that on average firms exhibit characteristics of non-dividend payers. The average firm size measured by book value of assets has increased. Recall that big firm size is a typical characteristic of a dividend paying firm. The average level of leverage approximately stays the same for the period 1989-2000. After these years the average level of leverage however declines what is from a theoretical point of view a characteristic that fits a dividend paying firm. Over the years the averages of two firm characteristics (profitability and lifecycle) have changed towards the properties of non-dividend paying firms. However two other variables (size and leverage) have changed toward the properties of dividend paying firms. It is therefore not possible to say that a decline in the fraction of dividend payers is merely caused by changing firm characteristics. Firms could for example have become less inclined to pay dividends.

In order to check whether firms with higher values of certain firm characteristics are more inclined to pay dividends the firms are sorted into four quartiles/buckets. Subsequently the fraction of dividend paying firms is calculated within each bucket. This is done to check whether our data confirms the theories that state that firms that have higher profits, have less growth opportunities, are bigger of size and are less levered are more inclined to pay dividends. Table 2 shows the fraction of payers per quartile of a specified variable.
As well for profitability as for growth opportunities the findings that are done with the help of this table are not completely in line with what is expected from theory. For both profitability proxies counts that the more profitable a firm is the higher the fraction of payers is until the third quartile. In the fourth quartile the fraction of payers suddenly drops to 84% and 81% for the variables Et/At and Yt/Et respectively. From this analysis it looks like that really profitable firms are a bit less inclined to pay dividends. For growth opportunities the same pattern can be observed. The fraction of payers increases till the third quartile. What would suggest that firms with more growth opportunities are more inclined to pay dividends. In the fourth quartile the fraction of payers however drops to 73% and 72% for the variable dAt/At and MtB respectively. This again suggests that firms with really big growth opportunities are a bit less inclined to pay dividends. The findings for the variable REt/Et are completely in line with the lifecycle theory. The fraction of payers increases of all of the four quartiles what suggests that more mature firms (that are in a later lifecycle stage) are more inclined to pay dividends. Also for size the theoretical prediction comes out. For both proxies we can observe that quartiles that contain bigger firms also contain relatively more dividend paying firms what suggests that bigger firms are more inclined to pay dividends. For leverage mixed results can be observed. Initially higher leverage means a higher fraction of payers while a further increase means a lower fraction of payers. This suggests that high levels of leverage cause lower agency costs and thereby a lower need to distribute dividends.

De Angelo, DeAngelo and Skinner (2004) showed that dividends of U.S. listed firms have become more concentrated over the years among big firms. They argue that this is partly explaining the decreasing fraction of dividend paying firms and increasing real values of dividends. Graph 1 and graph 2 showed that the real amount of dividends of Dutch and Belgian listed firms have increased over the years while the fraction of firms that are paying dividends has decreased. This may also be caused by a concentration of dividends. In table 3 all the firms are ranked by the amount of dividends paid in the years 1990, 2000 and 2010. What can be seen is that the amount of dividends paid is quite concentrated e.g. in 1990 the top 20 dividend payers are responsible for 79% of total dividends of that year. In 2000 and 2010 this amount is even higher (in 2000 80% and 88% in 2010). So even though graph 1 showed an increase in the real amount of dividends we now see that dividends have

<table>
<thead>
<tr>
<th>Quartile</th>
<th>Et/At</th>
<th>Yt/Et</th>
<th>dAt/At</th>
<th>MtB</th>
<th>REt/Et</th>
<th>Assets</th>
<th>MCb</th>
<th>Leverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>46%</td>
<td>48%</td>
<td>55%</td>
<td>65%</td>
<td>28%</td>
<td>54%</td>
<td>50%</td>
<td>75%</td>
</tr>
<tr>
<td>2</td>
<td>77%</td>
<td>77%</td>
<td>79%</td>
<td>75%</td>
<td>70%</td>
<td>68%</td>
<td>71%</td>
<td>79%</td>
</tr>
<tr>
<td>3</td>
<td>86%</td>
<td>86%</td>
<td>84%</td>
<td>80%</td>
<td>80%</td>
<td>81%</td>
<td>83%</td>
<td>75%</td>
</tr>
<tr>
<td>4</td>
<td>84%</td>
<td>81%</td>
<td>73%</td>
<td>72%</td>
<td>89%</td>
<td>89%</td>
<td>88%</td>
<td>64%</td>
</tr>
</tbody>
</table>

Table 2: fraction of payers per quartile of several variables of the entire period of 1989-2011.
become increasingly concentrated. This suggests that big companies have swamped the decrease of small dividends that were paid by firms that decided to quit paying dividends. This development is bad news for the signaling theory. According to this theory small and young firms would be most likely to pay dividends. The future prospects of these firms are namely hard to gauge for investors. According to the data it are however the firms with the biggest market capitalizations that are paying most of the dividends. The top 20 dividend payers represent 76% of the market capitalization in 2010. This is bad news for the clientele theory. This theory namely suggests that some firms do pay dividends and others don’t in order to fulfill the heterogeneous demand of investors. This means that some investors do want to hold a portfolio that contains dividend paying firms while others don’t prefer this. It is however implausible for an investor that prefers a zero dividend portfolio to create a well-diversified portfolio when approximately 93% of the market is paying dividends.

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent of dividends</th>
<th>Market capitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 20</td>
<td>79%</td>
<td>80%</td>
</tr>
<tr>
<td>20-40</td>
<td>12%</td>
<td>13%</td>
</tr>
<tr>
<td>40-60</td>
<td>5%</td>
<td>4%</td>
</tr>
<tr>
<td>60-80</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>80-100</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Table 3: Fraction of total dividends and market capitalization for the years 1990, 2000 and 2010 sorted by the ranking of payers.

6. The determinants of paying dividends

In the past Fama and French (2001) showed that U.S. firms with high profits, low growth opportunities and that are relatively big of size are more inclined to pay dividends. Later DeAngelo, DeAngelo and Stulz (2006) showed that U.S. firms that are more mature (in other words have higher retained equity) are more likely to pay dividends. Jensen (1986) thereby states that firms with higher values of leverage have lower agency costs. Therefore these firms may be less inclined to pay dividends. Finally von Eije and Megginson (2008) showed that a higher reporting frequency (the number of times a firms reports its earnings per year) leads to a higher probability of paying dividends. In the previous chapter was already shown that there are clear differences in these characteristics between Dutch and Belgian listed companies that do and don’t pay dividends. These results do however not control for the (joint) effects of other variables. In this chapter this is done with the help logit regression. Later the evidence from these logit regressions can be used to study for a change in the propensity to pay dividends.

Table 4 shows the results for logit regression. The dependent variable takes the value one when a firm is a dividend payer and zero otherwise. First regression is performed over the entire sample.
Subsequently separate regressions are performed for Dutch and Belgian firms. Column one till three are showing the results for the regression which only uses Et/At , MtB, MCb as independent variables (respectively as proxies for profitability, growth opportunities and size). The regression in column four till six uses three additional variables; leverage, reporting frequency and retained equity (REt/Et). Leverage is added because Jensen (1986) states that higher leverage can reduce agency problems and therefore reduce the need to pay dividends. On the other side higher leverage can be a sign of older more stable firms what can increase the likelihood of paying dividends. Reporting frequency represents the number of times a firm reports its earnings on an annual basis. This variable is added following von Eije and Megginson’s (2008) finding that a higher reporting frequency leads to a higher likelihood of paying dividends. Finally the variable retained equity is added following the lifecycle theory of DeAngelo, DeAngelo and Stulz (2006). This theory suggests that firms that are in a more mature lifecycle are more likely to pay dividends because their internal funds exceed their investment opportunities, while firms that are in an earlier lifecycle are less likely to pay dividends because their investment opportunities are exceeding their internal funds. The standard errors are clustered by firm. The dataset namely consists out of successive firm year observations. Not clustering for standard errors could lead to induced and biased standard errors.
Table 4: logistic regression of dividend payers. The dependent variable takes the value one if a firm is a dividend payer and zero otherwise. Regression is performed over the entire period (1989 – 2011). Standard errors are clustered by firm. In columns 1 and 4 the entire sample is used. In columns 2 and 5 only Dutch firms are used while in columns 3 and 6 only Belgian firms are used. The columns “t-stat interaction term” are showing the t-statistics for the interaction terms that were used in a separate regression. This is done to check for a significant difference between the coefficients of the regression that were performed on solely Dutch firms and the coefficients that were the result of the regression that was performed on solely Belgium firms. *, **, ***, means statistically significant at respectively the 10%, 5% and 1% level.

First the results of the regressions that were performed on the entire sample will be discussed. Subsequently the results and the differences in the results of the regressions that were performed on the Dutch and Belgian sample will be discussed.

What can be seen from the regressions with the first model (column 1) is that profitability (with Et/At as proxy) is positively influencing the probability of distributing dividends. This suggests that more profitable firms are more likely to distribute dividends. Growth opportunities (with MtB as proxy) are negatively influencing the likelihood of paying dividends. This can be caused by the preference of managers to use internal funds instead of external funds to fund these growth opportunities. This suggests that firms with bigger growth opportunities are less likely to pay dividends. Size (with MCb) as proxy is also positively influencing the likelihood of paying dividends. This result suggests that bigger firms are more likely to pay dividends. This can be caused by the agency problem that is potentially bigger at big firms. The results for profitability, growth opportunities and size are in line with the results of Fama and French (2001).
Subsequently three additional variables are added to the regression equation. The results from this regression are displayed in column 4. From this column can be seen that profitability is positively influencing the likelihood to pay dividends. This again suggests that more profitable firms are more likely to pay dividends. What also can be seen is that growth opportunities (with MtB as proxy) is again negatively influencing the likelihood to pay dividends. This suggests that higher growth opportunities decrease the likelihood to pay dividends. Thirdly the results suggests that bigger firm size (with MCb as proxy) is increasing the likelihood to pay dividends. It is not possible to make an inference about the variable leverage because the coefficient is not significant. This is not completely in line with the agency theory of Jensen (1986) and the signaling theory. This theory suggest that higher leverage reduces the agency problem and thereby the need to use dividends as signal for the shareholder concerning the financial wellbeing of the firm. It may therefore be the case that leverage is not playing a role as determinant of dividends. On the other side it may be the case that leverage can proxy for two different situations. The first situation is that the firm is a mature and stable firm and therefore is able to attract high debts and pay dividends. The second situation is that leverage proxies for unstable firms that are not able to pay dividends. The two possible situations that are the opposites of each other may be the cause for the insignificant results. The coefficient of the variable reporting frequency is however positively significant. This suggests that a higher reporting frequency is increasing the likelihood that a firm is paying dividend. Intuitively this may be caused by higher pressure from shareholders. The more frequent the results are publicized the more frequent the company is confronted with shareholders. Also the coefficient of retained equity (REt/Et) is positively significant. This result suggests that firms that are in a later lifecycle phase are more likely to pay dividends. This result is in line with the lifecycle theory of DeAngelo, DeAngelo and Stulz (2006). In short based on the second regression we can infer that on average firms that; are more profitable, have less growth opportunities, are bigger of size, report their earnings more frequently and that are more mature are more likely to pay dividends. This is all in line with the expectations that were stated in chapter 5 except for the leverage variable for which no significant results were found.

As was described in chapter 3 the institutional background of dividend in Belgium and the Netherlands differ. In general Dutch shareholders have less power and individual investors are not taxed for their capital gains in Belgium. Therefore there are made separate regressions per country to see whether these differences make any difference in the likelihood of paying dividends. In order to check whether the coefficients are significantly different from each other a separate regression is performed (the results of this regression are not reported). This regression is performed over the entire sample (so as well Dutch as Belgian firms). In this regression the dependent variable is one when a firm pays dividends and zero otherwise. The independent variables are the same as in column 1 and column 4 with the difference that for each variable an interaction variable is added.
This interaction term is calculated by multiplying the original value of the variable with a dummy variable that takes the value one when the company is Dutch and zero otherwise. If this interaction term is statistically significant it also means that the Dutch coefficient is significantly different from the Belgian coefficient. The t-statistics from these interaction terms are displayed in the columns after column 3 and column 6.

What can be seen is that according to model 1 profitability is having a smaller impact on the likelihood of distributing dividends in Belgium in comparison with the Netherlands. This is in line with the expectations that were stated in chapter 4. In Belgium realized capital gains are namely taxed more attractively for some investors. If a company is making profit the likelihood that investors are able to realize capital gains is bigger. Therefore these investors will probably demand that companies don’t distribute earnings (because this will lower the share price and diminish capital gains). This situation is causing that this coefficient is having a smaller magnitude in Belgium in comparison with the Netherlands.

According to model 1 and model 2 there is no significant difference between the coefficients of the variable that proxies for growth opportunities (MtB). This in line with the expectations that were stated in chapter 3. There is namely no difference in the institutional backgrounds of Belgium and the Netherlands that would suggest that growth opportunities would have a different impact on the decision to pay dividends by Dutch or Belgian firms.

According to model 1 size is having a bigger impact on the likelihood of paying dividend in Belgium in comparison with the Netherlands. This is also in line with the expectations stated in chapter 3. There is namely a structured regime in place in the Netherlands that causes that a part of the power from shareholders of big firms is mitigated to a workers council. This workers council probably prefers to retain earnings and invest these retained earnings in for example employee training. This situation reduces the likelihood that big firms are distributing dividends in the Netherlands. According model 2 there is however no significant difference between the coefficient of the regression that was performed on the Dutch sample and the coefficient that is the result of the regression that was performed on the Belgian sample.

What furthermore can be seen is that leverage is having a more negative influence on the likelihood of paying dividends in Belgium in comparison with the Netherlands. First of all this variable is not significant on the regressions that are performed on the entire sample and the sample that only consists out of Dutch firms. This variable however becomes significant at the 10% level when only Belgium firms are used in the regression. This is possibly caused by the regulation that is in place in Belgium. This regulation states that Belgian firms are not allowed to distribute dividends as soon as their net-assets (calculated as total assets deducted by debt and provisions) are negative. As soon as leverage becomes bigger the probability that net assets becomes/is negative also becomes bigger.
Therefore leverage is probably playing a significant role in the determinants of paying dividends in Belgium.

There is no significant difference between the coefficients of reporting frequency. This is in line with the expectations since there are no reasons to assume that there are any fundamental differences between the Netherlands and Belgium that would result in a difference in the magnitude of these coefficients.

It was expected that the influence of retained equity in Belgium would be bigger. It may namely be the case that firms in Belgium are more eager to simultaneously retain earnings and distribute dividends. This because capital gains are more attractively taxed for some investors in Belgium. There is however no significant difference between “Dutch” and the “Belgian” coefficient. This suggests that Belgian firms are not more eager to retain earnings because of this difference in taxation.

7. Propensity to pay dividends

In graph 1 and graph 2 was shown that the real amounts of dividends increased over the years while the fraction of firms that are paying dividends decreased. Panel B of table 1 showed that firm characteristics changed over the years. Furthermore table 3 showed that dividends have become increasingly concentrated among big earning firms. This chapter will research if we can observe a change in the willingness/propensity to pay dividends among firms when there is controlled for their characteristics. This chapter is divided into two sections. The first section will research whether there have been changes in the propensities to pay dividends. The second part will try to find possible causes for changes in these propensities to pay dividends.

7.1 Changes in propensity to pay dividends

This section will research whether there has taken place a change in the propensity to pay dividends. Is it like that firms, given their characteristics, have become less (or more) likely to pay dividends? From table 1, panel B could be seen that firms have on average become less profitable and less mature what are the characteristics of non-dividend paying firms. On the other hand firms have on average become bigger over the years. In this chapter we take into consideration the change in firm characteristics and check whether firms have become less likely to pay dividends.

Graph 3 plots the fraction of dividend payers among firms with typical characteristics of dividend payers. These characteristics are profitability, more earnings than investments and positive retained equity.
What can be seen from graph 3 is that the fraction of firms with certain firm characteristics have decreased. In 1989 87% of the firms with positive earnings were paying dividends while in 2011 this fraction was only 76%. Furthermore in 1989 81% of the firms that have higher earnings than investments pay dividends while this is only 71% in 2011. Finally 86% of the firms with positive retained equity paid dividends in 1989 while this decreases to 82% in 2011. Firms that in the past typically used to pay dividends choose now not to do so. Have these firms become less likely to pay dividends over the years?

In order to check for a change in propensity to pay dividends the expected fraction of dividend payers are compared with the actual fraction of firms that are paying dividends. The expected fraction of firms that is paying dividends in a certain year is calculated with the help of a logit model. The coefficients of this logit model are estimated with the help of a base period. This base period are the first five years in the sample (1989 – 1993). Subsequently the expected fraction of dividend paying firms is calculated by using this model. Using this model ensures that there is controlled for changing firm characteristics. This will initially be done for the entire sample. Subsequently this will be done for Dutch and Belgian firms separately. Possible differences in the results of these two countries may be caused by the differences in the institutional backgrounds of these countries.

The dependent variable of the logit model will take the value of one when a firm is a dividend payer and zero otherwise. The independent variables are Et/At, MtB, MCb, reporting frequency and RET/Et. The variable leverage is dropped (in comparison with the variables of the second model of the previous chapter) because it was not very significant. The base period, which is used to estimate the coefficients of this model is 1989-1993. Again the standard errors are clustered by firm. The
probability that a firm will be paying dividends is subsequently calculated as follows: \( \Pr(Payer_{it} = 1) = \text{logit}(\alpha + \beta \left( \frac{Et_{it}}{At_{it}} \right) + \gamma MtB_{it} + \delta MCB_{it} + \eta \text{ReportFreq}_{it} + \theta \frac{RET_{it}}{Et_{it}}) \). To calculate the expected fraction of dividend payers in a certain year all the estimated probabilities per firm are summed up and divided by the number of firms. Finally the actual fraction of payers is deducted from the expected fraction of payers. A decreasing propensity to pay dividends is observed when this value is positive. Table 5 shows the expected minus actual fractions of firms that are paying dividends.

<table>
<thead>
<tr>
<th>Year</th>
<th>Expected - Actual</th>
<th>All</th>
<th>NL</th>
<th>BE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>4%</td>
<td>7%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>6%</td>
<td>19%</td>
<td>-5%</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>16%</td>
<td>23%</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>17%</td>
<td>24%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>15%</td>
<td>19%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>25%</td>
<td>40%</td>
<td>-7%</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>15%</td>
<td>16%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>4%</td>
<td>9%</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>-3%</td>
<td>-9%</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>5%</td>
<td>-3%</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>2%</td>
<td>-2%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>7%</td>
<td>7%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>15%</td>
<td>11%</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>12%</td>
<td>6%</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>-6%</td>
<td>-12%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>6%</td>
<td>-6%</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>13%</td>
<td>9%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>-7%</td>
<td>-15%</td>
<td>10%</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: estimated fraction of payers compared with the actual fraction of payers. Estimations are made with a logit model. The years 1989 – 1993 are used to estimate regression coefficients. The model uses \( \frac{Et}{At} \), \( MtB \), \( MCB \), reporting frequency and \( \frac{RET}{Et} \) as explanatory variables.

To make things a bit more clear the values for expected fraction of payers minus the actual fraction of payers is plotted in graph 4.
When looked at the entire sample it can be seen that there is a decreasing propensity to pay dividends in all the years except 2002, 2008 and 2011. For the Netherlands there is also a decreasing propensity to pay dividends observed except for the period 2002-2004, the period 2008-2009 and 2011. In Belgium a decreasing propensity to pay dividends can be observed for all the years except for the years 1995 and 1999. The difference with the results of Fama and French (2001) for U.S. firms and von Eije and Megginson (2008) is that the expected minus actual fraction of payers is fluctuation over time in this case. Von Eije and Megginson (2008) and Fama and French (2001) both showed that this value was increasing over time and that therefore there was a clear trend in the decrease of propensity to pay dividends. It therefore looks like that Dutch and Belgian listed firms are differently thinking on their dividend policy in comparison with e.g. U.S. listed firms. The next section will research whether this fluctuation in changes in propensity to pay dividends is linked to e.g. a dividend premium or a surge in share repurchases.

7.2 Possible causes of changes in propensity to pay dividends
A possible cause for a change in the propensity to pay dividends may be that the catering theory of Baker and Wurgler (2004a) is right. In this theory they suggest that firms will initiate to pay dividends when investors demand for shares of dividend paying firms is higher. As a proxy for this demand they created the dividend premium. This dividend premium is calculated by first calculating the book value weighted average of Market-to-Book ratios of dividend payers and non-dividend payers separately. The dividend premium is subsequently the log difference of these two averages. A high dividend premium suggests that investors’ demand for dividend paying shares is higher. If this dividend premium is a reason for firms to initiate dividends then an increase in the propensity to pay dividends should be observed. In order to test for the existence of a dividend premium first the proxy
for this dividend premium is calculated per year for the entire sample, for the Netherlands only and for Belgium only. According to Baker and Wurgler (2004b) the demand of an uninformed investor fluctuates faster than companies can or do adjust to this changing demand. Therefore the dividend premium is lagged by one year with respect to the change in propensity to pay dividends. In order to test for any existence of a dividend premium the following OLS regression equation is estimated:

\[
\text{Change in propensity to pay}_{t} = \alpha + \beta \times \text{Dividend Premium}_{t-1} + \epsilon_{t}
\]

Performing this regression however leads in no case (that means not when used the entire sample but also when only Belgian or Dutch firms are used) to any significant results. Also the pairwise correlation coefficients of these combinations are not significant. This suggests that the catering theory of Baker and Wurgler (2004a, b) catering theory is not correct in this case.

Another possible cause for a change in the propensity to pay dividends may be share repurchases. Companies may see share repurchase programs as substitutes for dividends. Share repurchase data is in DataStream only available from the year 2002 and later. Table 6 shows that only a small number of Dutch and Belgian listed firms are repurchasing their shares.

<table>
<thead>
<tr>
<th>Year</th>
<th>Repurchasers</th>
<th>Dividend Payers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>2003</td>
<td>2</td>
<td>100%</td>
</tr>
<tr>
<td>2004</td>
<td>6</td>
<td>100%</td>
</tr>
<tr>
<td>2005</td>
<td>11</td>
<td>100%</td>
</tr>
<tr>
<td>2006</td>
<td>15</td>
<td>93%</td>
</tr>
<tr>
<td>2007</td>
<td>21</td>
<td>90%</td>
</tr>
<tr>
<td>2008</td>
<td>21</td>
<td>100%</td>
</tr>
<tr>
<td>2009</td>
<td>8</td>
<td>100%</td>
</tr>
<tr>
<td>2010</td>
<td>12</td>
<td>100%</td>
</tr>
<tr>
<td>2011</td>
<td>12</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 6: the number of companies that are repurchasing shares in a certain year. The column “dividend payers” represents the percentage of these repurchasing firms that are also paying dividends.

From table 6 can be concluded that at this moment share repurchases are hardly a substitute for dividends. Of the firms that are repurchasing shares almost all firms are also paying dividends (except for the years 2006 and 2007). Because of the fact that non-dividend paying firms that repurchase shares are only a really small fraction of the sample leads to the conclusion that share repurchases are not responsible for a change in the propensity to pay dividends.

There is still not found an explanation for the fluctuation in the propensity to pay dividends. In order to check what type of firms are causing the fluctuation in propensity to pay the approach of Denis and Osobov (2008) is followed. An assessment is made whether firms are abandoning their dividends
or if newly listed firms are failing to initiate dividends. This is done by sorting firms into two groups; one group of firms are the firms that are in the sample at the beginning of the forecast period (the year 1993) and the second group is called new lists and consists out of the firms that are entering the sample in a later year. Subsequently both groups are divided into two subgroups; payers and non-payers. A firm that is already in the sample in 1993 and pays dividend belongs to the group payers. A firm that entered the sample later than 1993 (and therefore belongs to the “new lists” group) and paid any dividends in the following years belongs to the subgroup payers. Subsequently there is per group calculated what the unexpected shortfall in the number of dividend payers is per year. This is again done by subtracting the actual fraction of dividend payers from the expected fraction of dividend payers. This is done for the first time in the year 2001. In this year the group new lists becomes as even big as the group non-new lists. The results of this exercise are shown in table 7.

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-new lists</th>
<th></th>
<th>New lists</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Payers</td>
<td>Non-payers</td>
<td>Payers</td>
<td>Non-Payers</td>
</tr>
<tr>
<td>2001</td>
<td>-2</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2002</td>
<td>-2</td>
<td>1</td>
<td>-5</td>
<td>4</td>
</tr>
<tr>
<td>2003</td>
<td>-1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2004</td>
<td>0</td>
<td>1</td>
<td>-3</td>
<td>5</td>
</tr>
<tr>
<td>2005</td>
<td>1</td>
<td>0</td>
<td>-5</td>
<td>16</td>
</tr>
<tr>
<td>2006</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>2007</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>22</td>
</tr>
<tr>
<td>2008</td>
<td>-2</td>
<td>0</td>
<td>-21</td>
<td>12</td>
</tr>
<tr>
<td>2009</td>
<td>-2</td>
<td>1</td>
<td>-1</td>
<td>12</td>
</tr>
<tr>
<td>2010</td>
<td>-1</td>
<td>1</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>2011</td>
<td>-1</td>
<td>0</td>
<td>-16</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 7: the unexpected shortfall (expected – actual) of dividend payers for the years 2001 - 2011 divided over two categories; firms that were already listed in 1993 and firms that entered the sample in a later stadium. Both categories have two subcategories; payers and non-payers. A firm that was already listed in 1993 and paid dividends is defined as a non-new listed payer. A firm that entered the sample after 1993 and paid dividends in one of the years is defined as a new listed payer. Totals may not add up to each other due to rounding differences.

What is striking in the results of table 7 is that newly listed firms that don’t pay dividends at all are dominating the total unexpected shortfall for all years except for the years 2011, 2008 and 2002. This suggests that newly listed companies which have the characteristics of dividend paying companies fail to initiate dividends. Exactly in the earlier mentioned years 2011, 2008 and 2002 a negative shortfall can be observed (what suggests an increasing propensity to pay dividends). The increasing propensity to pay dividends in these three years is caused by firms that already paid dividends in some of the years and are now unexpectedly doing so. This is the cause why there is not observed a
uniform decrease in the propensity to pay dividends; firms that are newly listed and paid any dividends are in the years 2011, 2008 and 2002 unexpectedly doing so.

8. Do firms pay dividends because their peers are doing so?

8.1 Introduction
In this chapter will be discussed whether Dutch and Belgian listed firms pay dividends because their peers are doing so. It is already earlier suggested that peer firms are having big influence on the corporate policy of a company. For example Bertrand (1883) states that a firm’s product price is determined by its peers while Cournot (1838) states that the output of a firm is adjusted to the output of peers. The question that is addressed in this chapter is whether peer’s dividend policy is influencing a firm’s dividend policy. For example if it is the case if a manager is unsure concerning his dividend policy this manager may mimic the dividend policy of a peer in order to ensure that his firm will not leap behind its competitors. From an empirical point of view this is however hard to prove due to the reflection problem that was described in detail by Manski (1993). This problem arises when actions or characteristics of a group are influencing the actions or characteristics of an individual within that group. In this context the reflection problem arises because the dividend policy of a firm may be influenced by the dividend policy of its peers within the same industry in which this individual firm is also operating. It is therefore hard to identify if the environment (like industry characteristics) or competitors are influencing the dividend policy. This problem is the reason why there will be made use of two-stage regressions instead of e.g. ordinary least squares. Before there is explained how the research of peer firm influence on dividend policy is performed first argumentation will be given why this approach is conducted. First in section 7.2 there will be described what is from an empirical point of view so special about this research question. In section 7.3 arguments will be given why there is chosen for average peer idiosyncratic shock as an instrument variable. Finally in section 7.4 the results will be given.

8.2 Empirical challenge
To check whether a firm’s decision to pay dividend is influenced by other firms the following regression equation could be used:

$$\Pr(Payer_{ijt} = 1) = \alpha + \beta \bar{y}_{-ijt} + \gamma \bar{X}_{-ijt-1} + \lambda \mu_{jt-1} + \delta \mu_j + \phi \nu_t + \epsilon_{ijt}$$  \hspace{1cm} (1)

This equation is based on the equation of Rajan and Zingales (1995) and Frank and Goyal (2007) which they use for determining a firms capital structure. The indices $i, j$ and $t$ stand respectively for firm, industry and year. In this case $\bar{y}_{-ijt}$ is the average of peer firms that are paying dividends. $\bar{X}_{-ijt-1}$ are the lagged averages of the determinants of paying dividends of peer firms. These
determinants are for example size, profitability growth opportunities etc. $X_{ijt-1}$ are the lagged determinants of paying dividends of the firm itself. $\mu_j$ and $\nu_t$ stand for firm fixed and year fixed effects respectively. Peer is here defined as firms that are operating in the same industry. Industry is here defined with the help of the three digit industry code provided by the DataStream database. The problem with this equation is however the endogeneity that exists between the dependent variable and the explanatory variable that is equal to the average of peer firms that are paying dividends ($\bar{y}_{ijt}$). If a firm’s dividend decision is namely influenced by one another then firm $i$’s decision to pay dividend is influencing firm $j$’s decision to pay dividends but also vice versa. This endogeneity leads to biased and inconsistent estimators. A solution to this problem is to find a so called instrument variable that is influencing the peer group decision to pay dividends. Thereby this variable has to influence the firm’s decision to pay dividends exclusively through the peer group’s dividend decision. In other words a variable needs to be found which is a determinant of dividend policy that is unique to a firm (and therefore not shared by other firms). Only if these so called relevance and exclusion conditions are met there is made use of a valid instrument variable. Let this be illustrated with an event study example. A researcher wants to test whether random observable events at peer firms is influencing the dividend policy of a firm. It is however hard to say that the event is not having any spill-over effects what causes that the event becomes relevant for the firm’s dividend policy in different ways and is therefore not exclusive anymore. For example the government bail-out of ABN-AMRO in 2008 may be relevant for the Rabobank due to the financial response of competitors. But the bail-out may also be relevant for the Rabobank due to the stricter regulations for bank’s their capital structures that followed after this bail-out. These stricter capital requirements may cause the Rabobank to cut dividends. In this way the event is not influencing the dividend policy of the Rabobank exclusively through its peers’ response but also directly due to stricter regulation. That is exactly not the type of variable there is searched for in this case. In this case a variable is searched that is determining a firm’s capital structure and that is unique to a given firm. There is chosen to use average idiosyncratic shock of peer firms as an instrument variable. The argumentation for doing this is explained in the next section.

8.3 Argumentation for instrument variable

Correlation that exists between the dividend policy of an individual firm and its peers can have two causes. The first cause has its roots within the self-selection mechanism of firms into peer groups. A firm selects on its own which firms are its peers. These peers have similar (but not exactly the same) characteristics (like investment opportunities and production technology). It is however for outsiders not possible to observe how each firm selects its peers. Peer firms have on their turn their own
measures in determining their dividend policy. These measures are a proxy for unobservable factors that are common for firms within peer groups. These measures may be right but may also be biased. If a firm is using peer policy for its own policy than the correlation between a firms’ policy and its peers is reflecting these unobservable factors or biased factors. Secondly the correlation between a firm’s dividend policy and its peers’ dividend policy may be caused by a response of a firm to observable actions (e.g. change in dividend policy) or characteristics (e.g. profitability or size) of its peers. Summarizing the correlation can be caused by unobserved common industry factors or by a response of a firm to the actions or characteristics of its peer firms. The empirical challenge in this context is to identify these causes separately. In order to identify the first explanation of correlation between a firms’ dividend policy and the dividend policy of its peers the approach of Leary and Roberts (2012) is used. The approach of Leary and Roberts (2012) uses idiosyncratic risk as an instrument for the dividend policy of peer firms. An instrument variable needs to satisfy two requirements: relevance and exclusion. Especially from the behavioral finance camp evidence is found that stock returns and dividends are related to each other (relevance requirement). In a perfect market a dividend payment would cause a drop in the stock price immediately after the announcement. This drop should be equal to the dividend payment. Michaely, Thaler and Womack (1995) investigated whether dividend payments, dividend omissions and dividend abandonments are having an influence on a stock price in the long- and short-run. They find evidence that there takes place over- and under-reaction in the short- and long-run. Thereby return shocks are uncorrelated with the shocks of other firms. Furthermore there is assumed that shocks don’t forecast future shocks of its own returns and/or of returns of other firms. Finally return shocks are not correlated with other explanatory variables that are used in this research (e.g. industry average profitability, size etc.). In order to make this variable exclusive the idiosyncratic shock of the returns are calculated with the help of the CAPM model. The idiosyncratic shock of peer firm’s return is used as an instrument variable for their dividend policy. This means that in equation 1 the variable $y_{-i}^{t}$ is equal to the average idiosyncratic shock of peer firms.

The above described approach is used in Leary and Roberts (2012) paper. The arguments for this approach are the same as in their paper. Besides the econometric reasons that were earlier mentioned in this chapter there are also practical reasons for using idiosyncratic shock. First of all idiosyncratic shock in stock returns is used because it is available for a broad set of firms what increases the statistical power of this research. Thereby stock returns are not influenced by accounting measures. Thirdly there is almost all valuable information reflected in stock returns. Fourth there is a vast majority of literature that describes how to calculate idiosyncratic/firm-specific shocks in order to make the variable an exclusive instrument variable. The downside of this approach is however that there exists no correct way of calculating the idiosyncratic part in stock
returns. There is therefore no guarantee that idiosyncratic returns contain no traces of variation that is common across companies or industries.

8.4 Research method
Before idiosyncratic returns can be calculated first the expected returns need to be calculated. This is done with the help of the CAPM model. Expected returns are calculated as follows:

$$E[R_{ijt}] = \alpha_{ijt} + \beta_{ijt}^M(RM_t - RF_t) + \eta_{ijt} \quad (2)$$

More recent research of Fama and French (1993) and Carhart (1997) show that other factors like firm size, growth opportunities and momentum can improve the linear factor model for expected returns. These factors are however not added in this research because Leary and Roberts (2012) show that in this context is does not matter that much whether these variables are omitted or not. $E[R_{ijt}]$ is the expected return for firm $i$ in industry $j$ at time $t$. $(RM_t - RF_t)$ is the equity risk premium at time $t$. As a proxy for the market the MSCI indexes for both countries are used. For the risk-free rate the short term interbank rates are used. Prior to the use of the euro these are country specific after 1999 (the year of the introduction of the euro for financial markets) these rates are the same for the Netherlands and Belgium.

The expected returns are initially calculated on a monthly basis using historical returns. A beta is calculated per year and based on the returns of the last five years. At least 24 months of returns are required. For example; in order to calculate the expected return for Philips in 1990 we first use the CAPM on monthly returns for the period 1985 – 1989 in order to estimate the beta. The resulting coefficients are used to estimate the expected returns of Philips in the months January 1990 till December 1990. The same is done for the year 1991 except for the fact that the coefficients are estimated based on the period 1986 – 1990. Betas are therefore firm specific and time-varying. The expected returns are subsequently compounded to annual returns. The annual idiosyncratic shock is calculated by subtracting the annual expected return of a stock from the annual realized stock return. As a final step the average peer idiosyncratic shock is calculated per firm. This is done by calculating the average idiosyncratic shock of all firms within an industry excluding the idiosyncratic shock of the firm itself. Let this be illustrated with an example. Suppose there are three firms within an industry; A, B and C. The average peer idiosyncratic shock in a certain year for firm A is the average of the idiosyncratic shocks in that year of firm B and C.

8.5 Results
The average peer idiosyncratic shock variable will act as the instrument variable in the two step regression that will be used to research whether a firm’s decision to pay dividends is influenced by
the decision of its peer firms to pay dividends. In order to remove between industry variation industry fixed effects are used. Because the idiosyncratic shock is firm-specific within industry variation is also removed by using this variable. Doing this also reduces the threats that come from correlation between idiosyncratic shock and unobservable or omitted dividend policy determinants.

Table 8 presents the results of a two-step probit regression. In this case probit is used instead of logit because the statistical software package better supports this type of regression. For completeness also 2SLS regression is added. All variables on the right side of the equation are lagged. This is done because it would take time for a firm to respond to a peer firm’s decision to change its dividend policy. In addition also the pay-out ratio is used as a dependent variable (see column 4 and 5).
The instrument becomes weaker when there is controlled for industry fixed effects and firm fixed effects are not significant at the 5% level. The instrument becomes weaker when there is controlled for industry fixed effects and firm fixed effects are not significant at respectively the 10%, 5% and 1% level.

From the first stage regressions can be seen that the instrument variable is significant in all cases at the 5% level. The instrument becomes weaker when there is controlled for industry fixed effects.

<table>
<thead>
<tr>
<th>Peer firm averages:</th>
<th>2SLS</th>
<th>Two step probit</th>
<th>Two step least squares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Payers / Pay-out ratio</td>
<td>-0.12</td>
<td>1.98</td>
<td>-0.57</td>
</tr>
<tr>
<td>t-stat</td>
<td>-0.15</td>
<td>0.89</td>
<td>-0.10</td>
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<tr>
<td>EdivA</td>
<td>0.79</td>
<td>-0.61</td>
<td>3.86</td>
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<td>t-stat</td>
<td>0.77</td>
<td>-0.20</td>
<td>0.43</td>
</tr>
<tr>
<td>MtB</td>
<td>-0.03</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>t-stat</td>
<td>-0.47</td>
<td>0.01</td>
<td>0.37</td>
</tr>
<tr>
<td>MCB</td>
<td>0.05</td>
<td>-0.04</td>
<td>-0.05</td>
</tr>
<tr>
<td>t-stat</td>
<td>0.09</td>
<td>-0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td>Rep. Freq.</td>
<td>0.00</td>
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<td>0.19</td>
</tr>
<tr>
<td>t-stat</td>
<td>0.02</td>
<td>1.31</td>
<td>0.49</td>
</tr>
<tr>
<td>Ret/Et</td>
<td>-0.01</td>
<td>-0.08</td>
<td>-0.09</td>
</tr>
<tr>
<td>t-stat</td>
<td>-1.00</td>
<td>-1.38</td>
<td>-0.85</td>
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<tr>
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<tr>
<td>EdivA</td>
<td>1.37***</td>
<td>6.97***</td>
<td>8.37***</td>
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<td>7.26</td>
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<tr>
<td>MtB</td>
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<td>-0.31***</td>
<td>-0.21*</td>
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<tr>
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<td>1.61***</td>
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<td>0.57***</td>
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<td>Rep. Freq.</td>
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<td>0.10***</td>
<td>0.04*</td>
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<tr>
<td>Year fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Observations</td>
<td>1140</td>
<td>1140</td>
<td>996</td>
<td>1137</td>
<td>1137</td>
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</table>

Table 8: Two stage regressions with dividend payer dummy and pay-out ratio as dependent variables. Dividend payer dummy takes the value one if a firm is a dividend payer and zero otherwise. Pay-out ratio is calculated by dividing dividends by earnings before interest but after taxes. The instrument variable for peer firm average dividend payers is lagged average peer firm idiosyncratic shock. All explanatory variables are lagged with one period with respect to the dependent variable. Year fixed effects and firm fixed effects are not reported in this table. T-statistics are reported below the estimators in a smaller font size. *, **, *** means statistically significant at respectively the 10%, 5% and 1% level.
(column 1, 3 and 5). The main variables of interest in table 8 are the average peer firms that are paying dividend and the average pay-out ratio of firms. As can be seen in table 8 the estimates of the coefficients are not significant in all cases. This means there can’t be made any inferences regarding whether the dividend policies of peer firms is influencing the dividend policy of a firm itself. The same counts for peer firm characteristics (proxies for earnings, growth opportunities, size, reporting frequency and lifecycle). In all regressions all the coefficients of the average peer firm characteristics are namely not significant. This also means that there can’t be made any inferences concerning whether firms are responding to peer firms characteristics.

In chapter 3 the expectations were drawn peer firms’ dividend policy was having effect on the dividend policy of a firm. This expectation is not fulfilled concerning the above described results. It may therefore be the case that a firm’s dividend policy is not influenced by the dividend policies of its peers. The dividend policy is maybe merely influenced by other factors than peer’s dividend policy. Thereby are managers not concerned about their reputation when making the dividend decision. Another reason why these expectations are not met may be that the instrument variable that is used in this research is not correct. The average idiosyncratic shock is maybe not strong enough to encounter the reflection problem.

**Summary and conclusions**

Examining the dividend payment behavior of Dutch and Belgian listed firms between the years 1989-2011 shows that the real amount of dividends has increased over the years while the fraction of firms that are paying dividends has decreased. Furthermore there is found that the concentration of dividends has increased among big firms. This suggests that the increase in dividends by big firms has swamped the decrease of dividends by small firms that decided to quit dividends. This also suggests that the signaling theory is not correct. This theory namely suggests that small firms (which future prospects are hard to gauge) are the ideal candidates to pay dividends. In 2010 the top 60 dividend payers represented over 90% of the market capitalization. This suggests that the clientele theory of dividends is not correct. It is for example hard to create a well-diversified portfolio for an investor that wishes to hold only non-dividend paying Dutch and Belgian shares if he can only choose out of 10% of the shares outstanding.

In as well Belgium as the Netherlands there are found results that suggest that the decision to pay dividends is affected by profitability, growth opportunities, size, reporting frequency and lifecycle. Higher profitability seems to have a positive effect on the likelihood of paying dividends. This effect is even stronger in the Netherlands in comparison with Belgium. This may be caused by the taxation environment in Belgium that makes it more attractive for some investors to realize capital gains.
above receiving dividends. Higher growth opportunities seem to have a negative effect on the likelihood of paying dividends. This is possibly caused by the preference of managers to fund these growth opportunities with internal funds and therefore retain earnings instead of distributing them. No fundamental differences can be found between the Netherlands and Belgium concerning the effect of growth opportunities on dividend payments. Higher firm size is positively affecting the likelihood of paying dividends. This may be caused by higher agency problems at higher firms. Some evidence is found that this effect is even stronger in Belgium than in the Netherlands. This could be caused by the so called structured regime that is in place in the Netherlands. This causes that a part of the power of shareholders is mitigated to a workers council. Only in Belgium there is found small evidence that leverage is playing a negative role in the likelihood of paying dividends. This is possibly caused by regulation that is in place in Belgium that forbids firms with negative net-assets (calculated as total assets deducted by debt and provisions) to pay dividends. Furthermore evidence is found that a higher annual reporting frequency is increasing the likelihood to pay dividends. Reasons for this can be an increasing pressure on the management as the number of reporting events increase. Finally there is found evidence for the life-cycle theory. Higher retained equity (what is a proxy for the lifecycle a firm is in) leads to a higher likelihood of paying dividends. The reason for this can be that at more mature firms the internal funds exceed the growth opportunities. Therefore these internal funds are distributed in the form of dividends.

There is found evidence for a change in the propensity to pay dividends. In most years a decrease in the propensity to pay dividends can be observed. There is however not observed a clear trend in the propensity to pay dividends. Thereby there is not found any evidence for a catering theory of dividends. This theory suggests that firms start to initiate paying dividends when the market’s demand for dividend paying firms is high. There is however not found a significant correlation between the dividend premium (discount) and an increasing (decreasing) propensity to pay dividends. Thereby there is not observed a surge in share repurchases that are therefore probably not (yet) acting as a substitute for share repurchases. If a decrease in the propensity to pay dividends takes place, this decrease is caused by newly listed firms that fail to initiate dividends. In this research there is not found a good reason for a change in the propensity to pay dividends. This is therefore a suggestion for further research.

There is not found any evidence that the decision of a firm to pay dividends is affected by its peer firms to pay dividends. It may be the case that a firm’s dividend decision is merely affected by other factors than firm’s peer policy. It can namely be the case that the decision to pay dividends is not affected by the dividend policy of a firm’s peers but for example only by the financial wellbeing and opportunities of the firm itself. Thereby managers may not be concerned that much about their
reputation when making a dividend decision. For further research it can be suggested to find an instrument variable that fits better in this context.
References


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Wetboek van Vennootschappen (2013). Chapter 4 section 2.