

TILBURG UNIVERSITY

**The impact of the current financial crisis on the dividend  
payout policy of listed firms in the Benelux**

Master Thesis Finance

Name student: Bram van Wijk

Administration number: 393219

Date: 30-11-2013

Supervisor: Dr. Fabio Castiglionesi

School of Economics and Management

Department of Finance

Master Finance

## Contents

1. Introduction .....	3
2. Literature review.....	7
2.1 The financial crisis .....	7
2.2 Dividend payout policy .....	7
2.3 Dividend payout theories.....	8
3. Data & Methodology.....	12
3.1 Hypotheses .....	12
3.2 Data .....	16
3.2.1 Data collection .....	16
3.2.2 Sampling.....	17
4. Results.....	18
4.1 Trend analysis .....	18
4.2 Subsample analysis .....	22
4.3 Regression analysis .....	25
4.4 Panel data analysis.....	29
5. Conclusion.....	32
5.1 Discussion and conclusions.....	32
5.2 Managerial implications.....	34
5.3 Limitations & suggestions .....	34
6. References .....	36
7. Appendix .....	38

## 1. Introduction

The dividend payment decision has been stated to be the primary and active decision variable in almost every situation already in 1956 by John Lintner. Since then, there has been abundant research on dividend payout policies and the factors driving dividend payout decisions. Still, how the current financial crisis that started in 2008 affected dividend payout decisions is less examined. The 2008-financial crisis was the starting point of the largest recession since “the Great Depression” of the 1930s. Thus it would be interesting to see if and how the financial crisis impacts dividend payout decisions.

In research from the United States, Case, Hardin and Wu (2012) already found that during the 2008-2009 financial crisis managers of US REITs (Real Estate Investment Trust) - severely affected by the current financial crisis - reduced their dividend payments to their shareholders in 2009. However, although Case, Hardin and Wu (2012) do take into account the current financial crisis, they focus on dividend payments of REITs (Real Estate Investment Trust) in the US, data on listed firms in the Benelux is (largely) lacking. Due to the global current financial crisis, which started as a sub-prime mortgage crisis in the U.S. in 2007, even the leading financial group of the Benelux and one of the top five financial institutions in the EU, Fortis, collapsed (Fassin and Gosselin, 2011). Thus, the Benelux is expected to be heavily affected by the crisis and therefore it is interesting to look at what the impact of the current financial crisis is on other listed companies in the Benelux. Also, since dividend reductions are often followed by negative stock price reactions (Daniel, Denis and Naveen, 2008) it could be interesting for listed firms in the Benelux to see how the financial crisis impacts dividend payments in order to determine a strategy to mitigate investor uncertainty and negative stock price reactions. This thesis fills the gap in that it investigates the impact of the current financial crisis on the dividend payout policy of listed firms in the Benelux.

The focus of this thesis will be on exploring the impact of the current financial crisis on the dividend payout policies of listed firms in the Benelux. More specifically, how the financial crisis starting in 2008 affected dividend payout decisions of listed companies in the Benelux is of interest. In order to find an answer to this main research question of the thesis, firstly, the trend of total dividend payments over time of listed companies in the Benelux will be analyzed and compared with the trends of possible dividend payout decision influencing factors derived from previous literature. Then, the main financial differences between companies that reduced total dividend payments and companies that did not reduce total dividend payments due to the current financial crisis are examined. Subsequently, dividend payout policies pre-crisis will be compared with the dividend payout policies during the crisis.

Main research question:

What is the impact of the current financial crisis on the dividend payout policy of listed firms in the Benelux?

Secondary research questions:

- What is the trend of total dividend payments by listed companies in the Benelux over time?
- In the Benelux, how do listed companies that dropped dividend payments due to the current financial crisis financially differ from companies which did not drop dividend payments?
- What are the main differences between dividend payout policies before the crisis (1993 – 2007) and during the crisis (2008 – 2012) for listed companies in the Benelux?

To answer these different questions hypotheses will be formed in order to help solving the main research question of this thesis. Data from the period 1993 - 2012 will be retrieved from DataStream on dividend payments and other independent variables that could influence dividend payments according to previous literature, such as free cash flow or profitability. For a detailed overview of all the (in)dependent variables in the dataset see Appendix I. SPSS and Excel are used to present trend lines to see what happened to the dividend payments and the possible influencing independent variables over time and especially during the crisis.

Then, the total sample will be divided into three subsamples of companies on the basis of the sensitivity of their dividend payout decision to the current financial crisis. Group 0 (=crisis stable) contains companies that did not reduce total dividend payments in 2009 in comparison to 2008. Group 1 (=crisis susceptible) contains companies that decreased their total dividend payments up to 50% in 2009 in comparison to 2008. Group 2 (=strongly crisis susceptible) contains companies which reduced total dividend payments with 50% or more in 2009. The medians and distributions of the possibly influencing independent variables will be tested between these subsamples to see in what way crisis-stable firms differ from crisis-susceptible firms in order to define which variables possibly affect dividend payout decisions during the current financial crisis.

Subsequently, linear regressions are used to see if there are causal relationships between the independent variables and the dividend payout decision and if these causal relationships differ between a "normal economic year" (2005) and a crisis year (2009). Finally, a panel data analysis is done to compare the dividend payout policies pre-crisis (1993 – 2007) with the dividend payout policies during the crisis (2008 – 2012).

The results of the trend analysis show an upward sloping trend of total dividend and dividends per share from 1993 to 2007. There is an unusual high peak in total dividends in 2008 and a large decrease in 2009 and the difference in total dividends between 2008 and 2009 is significant ( $p < 0.001$ ). From the trend analysis of the independent variables it appears that free cash flow and profitability are positively related with total dividend that is paid out.

The results from the subsample analysis – comparing crisis-stable, crisis-susceptible and strongly crisis-susceptible firm - show that dividends per share, dividend yield and payout ratio are significantly lower for companies that dropped total dividend payments by more than 50% from 2008 to 2009. Besides, free cash flow and net profit are also lower for companies with strongly crisis sensitive dividend payout policies.

The results of the regression analysis show that whether there is financial crisis or not, market capitalization has a positive impact on the total dividend that the firms pay out. Furthermore, in the crisis year 2009, firms with higher free cash flow available paid out more dividends. Other regression results for free cash flow were not significant. In line with previous results, in regressions of both 2005 and 2009, a firm's profitability is positively related to the amount of total dividend the firm pays out. During the crisis, retained earnings are positively related with total dividend payout while during a normal economic year, companies that retain more earnings pay out fewer dividends.

The panel data analysis results show that over time, before as well as from the start of the current financial crisis, the market capitalization of the firms in the sample is positively related to the total dividend they pay out. Before the crisis, the factor time does not play a significant role and the total dividend paid out by the companies is, next to the market capitalization, positively influenced by the number of shares outstanding, net profit and retained earnings. From the beginning of the crisis, the factor time is strongly negative and significantly related to total dividend. Next to the market capitalization, only net debt positively influences the amount of total dividend that firms in the sample pay out.

Previous literature on the impact of the current financial crisis on dividend payout policies states that during the current financial crisis, the market value of many U.S. REITs declined dramatically and their managers therefore reduced dividend payments (Case, Hardin & Wu, 2012). They also found that U.S. REITs with low market-to-book values and high market leverage were more vulnerable to lower their dividend payment during the crisis. More specifically, when the crisis started in 2008, firms with higher market leverage and lower market-to-book values cut dividend payments while firms with lower market leverage and higher market-to-book values sustained dividend payments.

Additionally, according to Abreu and Gulamhussen (2013), larger, more profitable and low growth banks in the U.S. pay out more dividends before the current financial crisis as well as after the beginning of the crisis.

Reddemann, Basse, and von der Schulenburg (2010) declared that during the current financial crisis, European insurance companies use dividend cuts in order to strengthen their financial status. According to them, cutting dividends during the current financial crisis will not automatically lead investors to assume future problems.

This thesis concludes that the current financial crisis had a large impact on the dividend payout policies of listed companies in the Netherlands and Belgium. Many companies had to cut dividend payments because of lower profits and less free cash flow available. It also turns out that companies with high market leverage and low market-to-book values made greater dividend cuts than firms with less market leverage and higher market-to-book values. This is in line with previous results from US REIT's, as mentioned before. Furthermore, this thesis can conclude that profitable companies with a high market capitalization can more easily cope with a financial crisis in terms of maintaining dividend payments compared to less profitable, smaller firms. It can also be concluded that that during the current financial crisis fewer factors play a role in the dividend payment decision of listed firms in the Benelux and that over time firms in the sample just have to reduce dividend payments.

The main limitation of this thesis is the rather small sample size and especially the number of missing values in the dataset. In the future this problem could be solved by examining the impact of the financial crisis on the dividend payment policy on a greater scale, for example by examining the entire European Union. Also, it could be interesting to study the impact of the financial crisis on dividend payout policies amongst various industries. Another step forward could be to look at how each type of decision regarding dividend payments during the crisis affects future cash flows and earnings of those companies.

This thesis will be organized as follows: section 2 will provide an overview of previous literature regarding dividend payout policies; section 3 will thoroughly discuss the methodology and hypotheses based on previous literature will be presented accompanied by the kind of analysis that will be used to test them; section 4 will describe the actual data and results of the analyses in order to test the hypotheses from section 3. Finally, when results are calculated and interpreted, conclusions will be drawn in section 5. This section will also present managerial implications, limitations of the research and recommendations for future research.

## 2. Literature review

This section will begin with a short introduction about the financial crisis that began in 2008.

Subsequently, an overview will be given of different theories regarding the dividend payout policy. Thus, the main drivers for companies to pay out dividends or to cut dividends will be discussed. Hopefully this section will be a good starting point to explain the possible developments in dividend payout policies caused by the current financial crisis.

### 2.1 The financial crisis

The financial crisis that began in 2008 was the starting point of the largest recession since “the Great Depression” of the 1930s. The crisis has had worldwide impact on economic performance, labor productivity and employment. Besides, the effects of a financial crisis on production, income, expenditure, etc. are always delayed. “During the 2008–2009 crisis, dysfunctional capital markets created an exogenous shock to firms dependent on external capital flows. The broad stock market lost about half of its value, particularly during the fourth quarter of 2008 and the first quarter of 2009, making new and seasoned equity issuances difficult” (Case, Hardin & Wu, 2012, p.388). Interesting is now if and how companies change their dividend payout policies in reaction to these consequences of the crisis.

### 2.2 Dividend payout policy

In 1956, John Lintner stated that the dividend payment decision is the primary and active decision variable in most situations. He argues that the dividend payout policy is leading and that the magnitude of savings is generally a by-product of the decisions regarding dividends. According to Lintner (1956), changing a companies’ current dividend rate in order to optimize the interests of the company and stockholders is the main dependent variable in the dividend payout decision. Thus, the decision whether to change the existing dividend rate or not is more important than the actual amount of dividend that is paid out. Lintner (1956) explains that many companies believe that stockholders prefer a stable dividend rate and that it is only fair to distribute part of the earnings to the stockholders through dividends. Moreover, “a prudent fore-sighted management will always do its best to plan ahead in all aspects of financial policy to avoid getting into such uncomfortable situations where dividends have to be cut substantially below those which the company's previous practice would lead stockholders to expect on the basis of current earnings” (Lintner, 1956, p. 101). Nevertheless, Lintner (1956) points out that earnings are almost always the only and dominant factor in deciding to change anything regarding the

dividend payout policy or not. In addition, he states in his 1956 paper that “the higher the tax liability, the smaller the net earnings reported and the smaller the dividend” (p. 107).

## 2.3 Dividend payout theories

### Signaling theory

In general, firms are very reluctant to cut dividend payments because dividends are very important to investors and because dividend reduction announcements are often followed by large negative stock price reactions (Daniel, Denis and Naveen, 2008). Moreover, Benartzi, Michaely and Thaler (1997) and many others (e.g. Miller, Merton, and Rock, 1985) state that changes in dividend payments are signals of future earnings of the firm and are used by management to inform the firm’s investors. This use of dividends to communicate information to shareholders is also referred to as the signaling theory.

According to Brav et al. (2005), paying dividends shows the confidence of management in future cash flows and thus helps mitigating the uncertainty of outside investors. As found by Case, Hardin and Wu (2012), during a crisis, investors who normally prefer high dividends think it is very important that the company preserves cash in order to cope with financial distress and prevent bankruptcy. Besides, during a crisis, when announcing a dividend decrease, managers show that they are dealing with the exogenous shock and uncertainty of investors is also decreased. Thus, companies that cut or suspend dividends can even have positive cumulative abnormal returns over the post-announcement period. Li and Lie (2006) elaborate on this by stating that “the capital market rewards managers for considering investor demand for dividends when making decisions about the level of dividends” (p. 293). This is also in line with the dividend catering theory which will be explained in more detail later on.

According to the dividend smoothing hypothesis, management should only increase dividends when they expect that future earnings are sufficient to prolong these higher dividends (Reddeman et al. 2010). The dividend smoothing hypothesis may also be seen as precautionary signaling and it assumes a robust relation between dividends and earnings. Many observers do argue that capital is scarce following a major financial crisis (Reddemann, Basse, and von der Schulenburg, 2010). According to them, a dividend cut is a suitable solution to liquidity problems and thus a valid tool to raise capital during a financial crisis. However, they also address that a dividend cut could be interpreted by investors as a negative signal for future returns. Moreover, Sagi (2011) states that the current business cycle has a major impact on the interpretation of investors of dividend announcements. More specifically, compared to normal economic conditions, during depressions, dividend announcements are perceived as solid and trustworthy signals about the condition of the corporation. This would imply that in times of



financial crisis, it is even more important to keep in mind that a dividend cut can be interpreted by investors as a signal for negative future returns.

### Share repurchasing

However, Brav et al. (2005) believe that the relation between earnings and dividends has decreased and that managers nowadays prefer to repurchase shares. The reason would be that share repurchases are more flexible and that they can be used to increase earnings per share and to time the market. In line with that, Skinner (2008) found that share repurchases are nowadays even the most used payout form.

As Fama and French (2001) found in their research, the proportion of firms paying out dividend to shareholders dropped from 65.5% in 1978 to 20.8% in 1999. According to them, this was partly due to the increasing proportion of small companies with low profitability and strong growth opportunities within the population of publicly traded firms. On top of that, Fama and French (2001) show that regardless of a firm's characteristics, they have become less likely to pay dividends. Reddeman et al. (2010) also state that due to the financial crisis, insurers in Europe pay out 60% less dividends.

Though, DeAngelo, DeAngelo and Skinner (2004) state that, even though the proportion of dividend paying firms has decreased, the total real dividends paid by firms grows. The reason for this would be that the reduction of the proportion of payers occurs almost entirely among firms that paid very small dividends, and that the increased real dividend from the large dividend payers is larger than the dividend reduction from the loss of many small payers.

### Agency theory

"Many explanations for the existences of dividend payments are based on agency theory. It is, for example, quite common to argue that dividends reduce free cash flow and thereby force the firms to obtain capital from external sources more frequently when trying to finance new investment projects. This mechanism provides additional external monitoring and thus reduces agency costs" (Reddeman et al., 2010, p. 54). However, while increased dividends lead to decreased agency costs, it also increases the transactions costs associated with external financing (Rozeff, 1982). According to Rozeff (1982), in order to get to the optimal dividend payout policy, managers have to trade-off between decreased agency costs and increased transaction costs of external financing.

## The dividend catering theory

The dividend catering theory (Baker and Wurgler 2004, Li and Lie 2006) states that a firm's decision to pay dividend is mainly driven by the demand of its investors. While in turn, the dividend demand of investors varies over time and dividends are also related to the share price. According to Baker and Wurgler (2004) "the essence of the catering theory is that managers give investors what they currently want" (p. 1160). Recently, Kuo, Philip and Zhang (2013) concluded that risk has a significant impact on the dividend policy of firms. Their results indicate that "the role of catering reflects the risk-reward relationship in the changing propensity to pay dividends." On the other hand, Sawicki (2009) found that "dividends are an outcome of both legal and internal mechanisms protecting minority shareholders' interests" (p. 228).

## Market leverage and market-to-book value

In their research, Case, Hardin and Wu (2012) found that during the 2008-2009 liquidity crisis, firms with the highest market-to-book ratios and/or low market leverage sustained dividends, while firms with the lowest market-to-book ratios and/or high market leverage suspended dividends. In addition, they state that firms with high market leverage and low market-to-book ratios are more likely to cut dividends.

## Investment opportunities

Smith and Watts state, in their 1992 paper, that firms with greater investment opportunities pay out less dividend. More specifically, firms with greater access to positive net present value projects have lower dividend yields, lower leverage, higher executive compensation, and greater use of stock-option plans. In addition, Rozeff (1982) states that "firms with greater investment, as measured by greater current and prospective growth rates of revenues, have lower dividend payouts" (p. 258). Furthermore, Smith and Watts (1992) also found that regulated firms have higher dividend yields, higher leverage, lower executive compensation and fewer use of stock-option plans. Finally, the paper states that firm size is positively related to dividend yields and the level of executive compensation. In addition, these findings imply a positive relation between leverage and dividend yield, and a negative relation between dividend yield and the use of stock-option plans. Moreover, Jensen (1986) explains that when a firm has more growth opportunities, which indicates fewer assets in place, their dividend payout will be lower since they have less free cash flow left due to large investments. He refers to the agency theory in order to explain the impact of the amount of free cash flow on the dividend payout policy. Free cash flow is the cash that is left after investing in all the positive present value projects. When there is a lot of free

cash flow, conflicts will rise between managers and shareholders about what to do with the free cash flow and thus about the dividend payout policy. In addition, Gaver and Gaver (1993) also conclude in their research that non-growth firms have significantly higher dividend yields than growth firms.

### Life cycle theory

DeAngelo and DeAngelo (2006) combine the agency theory of Jensen (1986) with the influence of the investment opportunity set to explain the dividend payout policies of firms. Their life-cycle theory suggests that, over time, firms adjust their dividend payout policy to their evolving investment opportunities. According to this theory, young firms pay few dividends since free cash flow is low due to large investment opportunities. Later on, when investment opportunities shrink, firms will pay more dividends, because there is more free cash flow available. As we saw earlier, the financial crisis created an exogenous shock to firms dependent on external capital flows, more specifically, the broad stock market lost about half of its value. Thus, due to the crisis, the available free cash flow is expected to be low for not only young companies but to all companies. So one would expect companies in general to pay less dividends during and after the financial crisis.

### Profitability

According to Denis and Osobov (2008), larger, more profitable firms, and firms with a lot of retained earnings as part of total equity, have a higher tendency to pay out dividends. In times of crisis, one could imagine that firms are less profitable and have less retained earnings. Thus, in line with the theory of Denis and Osobov (2008), the financial crisis would lead to lower tendency to pay out dividends. They also found that the reductions in the tendency to pay dividends in the period between 1994 and 2002 are mainly caused by new companies that fail to pay dividends.

### Flexibility

As stated by Blau and Fuller (2008), "flexibility considerations help us understand various dimensions of dividend policy that existing theories do not explain." They have developed a corporate dividend policy model based on the assumption that managers are in favor of operating flexibility. Blau and Fuller (2008) argue that managers can increase operating flexibility by reducing dividend and maintaining cash. According to them, managers have to tradeoff between two aspects of reducing dividend and conserving cash. On the one hand, it makes investing in projects with positive net present values easier. However, reducing dividends and thus maintaining cash will also reduce stock prices.

### 3. Data & Methodology

In this section, the hypotheses developed on the basis of previous literature will be given, it will be explained which data is needed to test these hypotheses and finally the data collection methods to collect the data will be presented.

#### 3.1 Hypotheses

In order to help solving the main research problem and the accompanying research questions, hypotheses will be formed on the basis of previous literature provided in the literature review. The first hypothesis will tackle the main research problem concerning the impact of the current financial crisis on the dividend payout policy. The remaining hypotheses will mainly test the secondary research questions, thus testing which variables actually affect the dividend payout policy in general and during the current crisis. Following each hypothesis, the methodology and type of analysis to test it are presented.

As found by Case, Hardin and WU (2012) managers of REITs (Real Estate Investment Trust), severely affected by the current financial crisis, reduced their dividend payments to their shareholders in 2009. In order to examine whether listed companies in the Benelux also reduced their dividend payments due to the crisis, the following hypothesis is developed.

***HYPOTHESIS 1: The total dividend paid out to shareholders by listed companies in the Benelux is lower during the current financial crisis***

To test this hypothesis, first, a line graph is plotted of the medians of *Total cash dividends paid (TOTDIV)* of the entire sample to observe what happens to the total dividends being paid before and during the crisis. Medians are used instead of means to prevent grave outliers in the data to create bias, as appropriate when data is not normally distributed. Next, a nonparametric test is used to test whether the total dividend paid during and after the start of the crisis in 2008 is significantly lower than before the start of the crisis. Finally, a panel data analysis is performed to test what happens to total dividend payments during the crisis over time, compared to total dividend development pre-crisis.

Previous literature stated that larger, more profitable firms, and firms with a lot of retained earnings as part of total equity, have a higher tendency to pay out dividends (Denis and Osobov, 2008). To investigate whether this theory holds for listed companies in the Benelux during the current financial crisis, hypothesis 2 was created.

**HYPOTHESIS 2:** *In the Benelux, larger, more profitable firms, and firms with a lot of retained earnings as part of total equity are less crisis sensitive in terms of their dividend payments*

The independent variables that account for size of a firm in the analysis are: i) the number of employees (E), ii) shares outstanding (SO), and iii) market capitalization (MC) of the firm. The profitability is measured with Net Profit (NP). Retained earnings (RE) are specifically present in the dataset. To investigate if these variables indeed have an effect on the amount of dividend that is paid out by companies during the crisis, first, line graphs of these variables and of the dependent variable *Total cash dividends paid (TOTDIV)* are analyzed to see if there is a trend that is in line with the hypothesis.

Subsequently, the companies in the sample are divided into three groups, group 0, 1 and 2 (see table 1), reflecting a company's dividend payout policy's susceptibility to the crisis. These subsamples are made to analyze how companies that cut dividends during the financial crisis differ from companies that did not cut dividend payments. Group 0 (=crisis stable) contains companies that did not pay out less total dividend (TOTDIV) in 2009 in comparison to 2008 or paid out even more. Group 1 (=crisis susceptible) contains companies that decreased their total dividends (TOTDIV) up to 50% in 2009 in comparison to 2008. Group 2 (=strongly crisis susceptible) contains companies with a decrease in total dividends paid out (TOTDIV) of 50% or more in 2009 compared to 2008. Then, a nonparametric independent samples test is used to compare the distributions and medians of the independent variables E, SO, MC, NP and RE between the three groups for the years leading up to and during the financial crisis. This will show if there are significant differences in these variables between the different groups and thus if these variables could have played a role in the dividend payout decision of these companies.

**Table 1: Groups based on crisis susceptibility of company's dividend payout policy and sample size**

	<b>N</b>	<b>Percentage</b>
<b>Group 0 = Crisis stable</b>	53	46,1%
<b>Group 1 = crisis susceptible</b>	34	29,6%
<b>Group 2 = Strongly crisis susceptible</b>	28	24,3%
<b>Total</b>	115	100%

According to Jensen (1986) companies with more growth opportunities, have less free cash flow and thus pay out lower total dividend. The following hypothesis is created to test whether listed firms in the Benelux indeed pay out fewer dividends when the available free cash flow is lower.

***HYPOTHESIS 3: During the current financial crisis, listed firms in the Benelux with less free cash flow pay out lower total dividends***

Hypothesis 3 is tested in the same way as hypothesis 2 in the sense that for hypothesis 3, the trend of the independent variable free cash flow (FCF) of the companies in the sample is analyzed and in the subsample analysis, the difference in free cash flow available between the three subsamples is examined.

Case, Hardin and Wu (2012) state that during the 2008-2009 liquidity crisis, firms with the highest market leverage and lowest market-to-book ratios were more likely to cut dividends. The following hypothesis is developed to test whether this also holds for listed companies in the Benelux.

***HYPOTHESIS 4: During the current financial crisis, listed firms in the Benelux with high market leverage and low market-to-book ratios are more likely to cut dividends***

Hypothesis 4 is also tested in the same way as hypothesis 2 and 3, however, here the independent variables tested are net debt (ND) and the market-to-book values (MTB) of the companies in the sample. Net debt accounts for the level of market leverage of the companies in the sample. Thus, the trends of net debt and the market-to-book values are analyzed and the differences in these variables between the three subsamples are explored.

### Cross-sectional regressions

Next, to test what the specific causal relationship is between each of the independent variables and the dividend payment decision during a "normal economic year" (2005) and during a "crisis year" (2009), linear cross-sectional regressions will be used. The variable share buybacks (SB) was excluded from the regressions because of all its missing values. Ahead of the regressions, it was checked whether all (in)dependent variables in the linear regression models fulfill the linearity assumption. If the assumption was not fulfilled, variables were transformed to logarithmic or exponential values as appropriate.

First, it will be tested how the different independent variables in 2008 affected the total dividend payment in 2009 (TOTDIV 2009). The dependent variable total dividend in 2009 could be seen as the "crisis dividend" since the line graph of total dividend paid (TOTDIV) shows that in 2009 the total

dividend paid out by the companies in the sample dropped enormously after the peak in 2008. Thus it would be interesting to see how the variables in the previous year (2008) are related or maybe even can explain the dividend payment drop from 2008 to 2009. To compare the causal relationships between the different independent variables and the dependent variable total dividend paid during the crisis with their causal relationships during “normal” economic times, the independent variables in 2004 will also be regressed on the dependent variable total dividend in 2005 (TOTDIV2005). The results of these regressions can be found in tables 6.1 and 6.3. Their regression equations can be written down as follows:

$$\hat{Y}_{it} = \alpha + (\beta_{SO} \times SO_{it-1}) + (\beta_{MC} \times MC_{it-1}) + (\beta_E \times E_{it-1}) + (\beta_{FCF} \times FCF_{it-1}) + (\beta_{ND} \times ND_{it-1}) + (\beta_{NP} \times NP_{it-1}) + (\beta_{MTB} \times MTB_{it-1}) + \beta_{RE} \times RE_{it-1} + \varepsilon_{it}$$

Where the dependent variable  $\hat{Y}_{it}$  is the total dividend paid out by firm  $i$  at time  $t$  and  $\alpha$  is the constant term of total dividend paid. Thus the Betas in tables 6.1 and 6.3 show the impact of the change of one unit of measurement of a firm’s shares outstanding (SO), market capitalization (MC), number of employees (E), free cash flow (FCF), net debt (ND), net profit (NP), market-to-book value (MTB) and retained earnings (RE) on time  $t-1$  on total dividend on time  $t$ .

Next, to analyze the direct relationships between the various independent variables and total dividend in a normal economic year (2005) and the crisis year (2009), two additional regressions will be performed. First, the independent variables and their values in 2009 will be regressed on the total dividend paid in 2009 (TOTDIV2009). Then, the same regression will be done for 2005. The results of these different linear regressions can be found in tables 6.2 and 6.4. Their regression equations can be written down as follows:

$$\hat{Y}_{it} = \alpha + (\beta_{SO} \times SO_{it}) + (\beta_{MC} \times MC_{it}) + (\beta_E \times E_{it}) + (\beta_{FCF} \times FCF_{it}) + (\beta_{ND} \times ND_{it}) + (\beta_{NP} \times NP_{it}) + (\beta_{MTB} \times MTB_{it}) + \beta_{RE} \times RE_{it} + \varepsilon_{it}$$

Where the dependent variable  $\hat{Y}_{it}$  is the total dividend paid out by firm  $i$  at time  $t$  and  $\alpha$  is the constant term of total dividend paid. Thus the Betas in tables 6.2 and 6.4 show the effect of the change of one unit of measurement of a firm’s shares outstanding (SO), market capitalization (MC), number of

employees (E), free cash flow (FCF), net debt (ND), net profit (NP), market-to-book value (MTB) and retained earnings (RE) on time  $t$  on total dividend on time  $t$ .

## Panel data analysis

Finally, two panel data analyses, also known as a cross-sectional time-series analyses, are done to look at the total dividend payments of all the companies, the 'panel,' over time. The variable share buybacks (SB) was again excluded because of all its missing values. For the panel data analysis, the data is divided into two time periods. Namely, the period before the crisis (1993 – 2007) and the period since the starting point of the crisis (2008 – 2012). The MIXED procedure (Analyze>Mixed Models>Linear in the SPSS menus) is used to perform the panel data analyses. The estimates in table 7.1 (1993 – 2007) and 7.2 (2008 – 2012) can be interpreted as unstandardized Betas and the regression equations can then be written down as shown below.

$$\hat{Y}_{it} = \alpha + (\beta_{time} \times TIME) + (\beta_{SO} \times SO_{it}) + (\beta_{MC} \times MC_{it}) + (\beta_E \times E_{it}) + (\beta_{FCF} \times FCF_{it}) + (\beta_{ND} \times ND_{it}) + (\beta_{NP} \times NP_{it}) + (\beta_{MTB} \times MTB_{it}) + \beta_{RE} \times RE_{it} + \varepsilon_{it}$$

Where the dependent variable  $\hat{Y}_{it}$  is the total dividend paid out by firm  $i$  measured over the specified time period  $t$ , and the constant  $\alpha$  is the intercept of total dividend paid over the specified time period. Thus the estimates in tables 7.1 and 7.2 show the effect of the change of one unit of measurement of time (TIME), of a firm's shares outstanding (SO), market capitalization (MC), number of employees (E), free cash flow (FCF), net debt (ND), net profit (NP), market-to-book value (MTB) and retained earnings (RE), over time during the specified time periods.

## 3.2 Data

Section 3.1.1 will elaborate on the sample used for the analysis and section 3.1.2 will explain how the data needed to perform the analysis is collected.

### 3.2.1 Data collection

In order to find data on dividend payout and the factors influencing it, from before and during the current financial crisis, Datastream will be used. The most important dependent variable is *total cash dividends paid (TOTDIV)*, which represents the total common and preferred dividends paid to shareholders of the company.

From the literature review, some independent variables that possibly have an effect on the



amount of dividend that companies pay out are used to form hypotheses (section 3.3). The independent variables that that will be retrieved from Datastream in order to test the hypotheses are free cash flow (FCF), market-to-book value (MTB), net debt (ND), net profit (NP), the number of employees (E), number of shares outstanding (SO), market capitalization (MC), dividend yield (DY), payout ratio (PR), retained earnings (RE) and share buybacks (SB). These variables will be collected over the period 1993 – 2012, so a period of 20 years will be tested. For a detailed overview of all the variables in the dataset see Appendix I.

### **3.2.2 Sampling**

The sample will consist of listed firms in the Benelux (The Netherlands and Belgium) with at least 20 years of data available. This leads to inclusion of 265 companies which are listed on the Euronext Amsterdam or Euronext Brussels exchange. All available data on the variables above will be collected via Datastream and subsequently, transferred to SPSS in order to analyze the data and test the hypotheses generated on the basis of the literature review.

## 4. Results

In this section, the results of the analysis of the data in SPSS and Excell will be displayed. First, the trends of different variables are presented independently in section 4.1 to see what the expected outcomes of the hypotheses will be on the basis of the entire sample. Here, also the outcomes of nonparametric related-samples tests will be presented with respect to the trend of total dividends paid (TOTDIV) over the years. Section 4.2 will provide the results of analyzing the three subsamples which were created on the basis of the crisis susceptibility of the dividend payout policies of the companies in the sample. Later on in section 4.3 the results of the regression analysis are presented. Finally, the results of the panel data analysis will be given in section 4.4.

### 4.1 Trend analysis

In order to take a first look at if the financial crisis has had an impact on the dividend payout policy of companies in The Netherlands and Belgium, a graph was made in SPSS that shows the trend of total cash dividends paid out over the period 1993 – 2012 (figure 1). Due to large outliers in the data on total cash dividends paid for whatever reason, instead of the means, the medians are used to construct the graph.

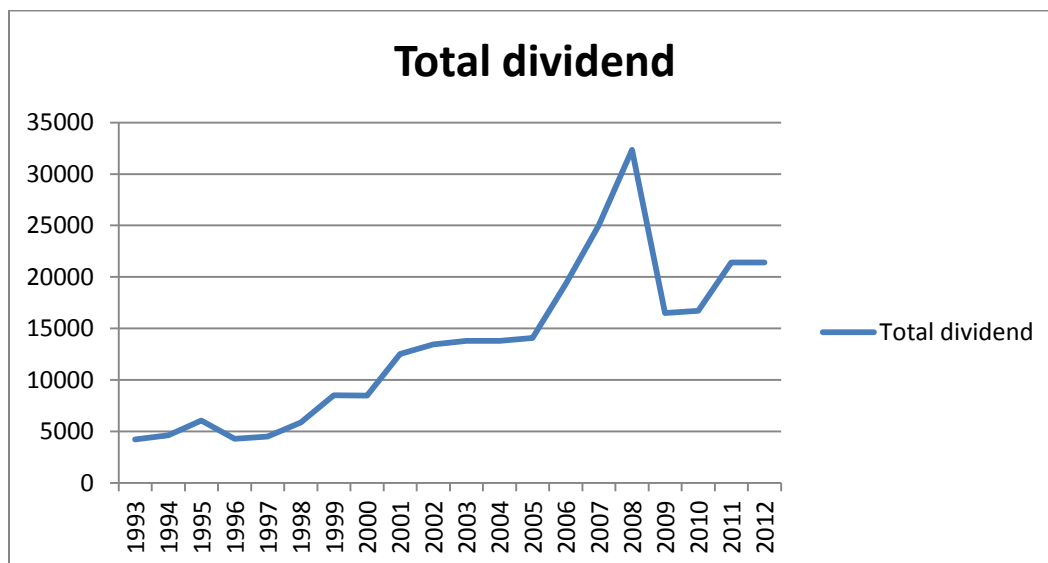


Figure 1 Trend line total dividend paid (TOTDIV)

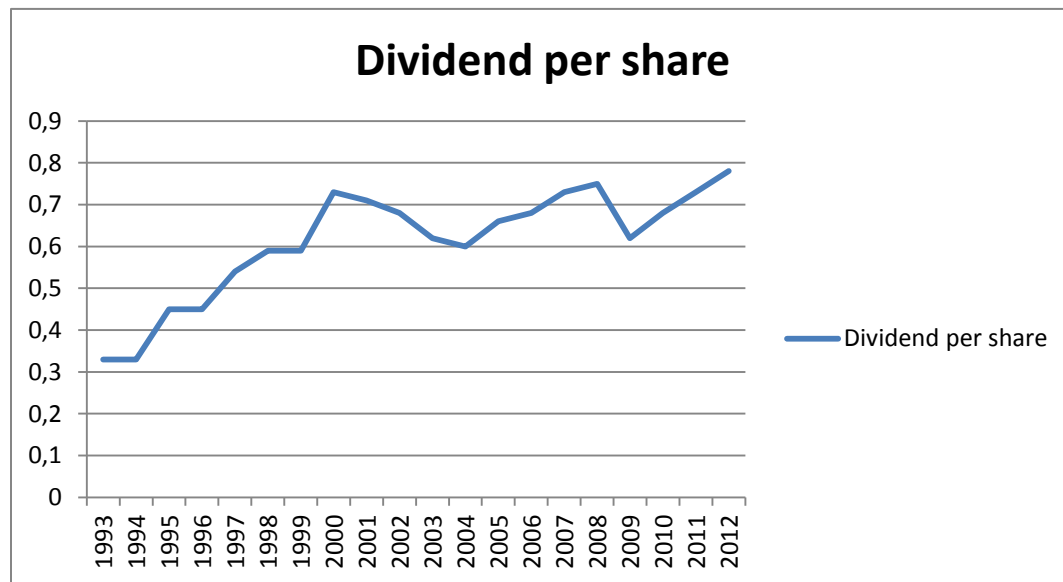
The graph shows a large, almost exponential growth until the start of the crisis in 2008, and after 2008 a large, almost exponential decrease in total cash dividends paid towards the lowest point in 2009. So the financial crisis clearly had a large negative impact on the dividend payout policy. From 2009 onwards, the decline stabilizes with small fluctuations, which indicates that there is not really a new balance yet in

the total dividend that is being paid out. Additionally, it is also interesting to mention that the value of total dividend in 2009 is in line with the upward sloping trend that can be seen until 2005. Thus, despite of the large reduction in total dividend from 2008 towards 2009, the trend over time is still that total dividend is growing. So one could say that the rapid increase of total dividend from 2005 to 2008 is more conflicting with the trend over time than is the decrease in 2009.

With a nonparametric related samples test the difference in total dividend paid out between 2008 and 2009 was tested and it turns out that this difference is significant (table 2). Thus, on the basis of the trend line in figure 1 and the nonparametric related samples test hypothesis 1 is retained.

**Table 2** Related-samples Wilcoxon signed rank test; Median [range 25 – 75] \* p<0.10, \*\* p<0.05, \*\*\* p<0.01

Total dividend 2008	Total dividend 2009	p-value	Sample size
16.199 [3.697 – 64.000]	10.000 [800 – 53.035]	0.000***	115



**Figure 2** Trend line dividend per share (DPS)

Also, when we look at figure 2, we see that the dividends per share paid by the companies in the sample increased heavily until 2008, after which the dividends per share dropped heavily towards 2009. Here, since 2009, there is an upward sloping linear trend in the dividends per share, in contrast with the total dividend being paid out in figure 1, indicating that upward sloping trend in dividend per share is already restored.

As Case, Hardin and Wu (2012) stated, firms with a low market-to-book value are more likely to cut dividends. We already saw that in general companies paid out a lot less dividend during the crisis (figure

1), which insinuates that the market-to-book value should also be lower during the crisis. As we can see in figure 3 this indeed is the case since the decrease in dividend payment is parallel to the decrease in market-to-book value. More specifically, where the market-to-book value reaches a peak in 2007 and then falls down heavily towards 2008, the total cash dividends paid and the dividends per share reach their peak in 2008 and fall down towards 2009. Thus, on the basis of these line graphs, the falling market-to-book value could have been an indication for the decreasing dividend payments. However, where figure 1 shows a clear upward sloping trend of total dividend over time, figure 3 does not show a specific trend over time. Again, medians were used in the graph to avoid grave outliers.

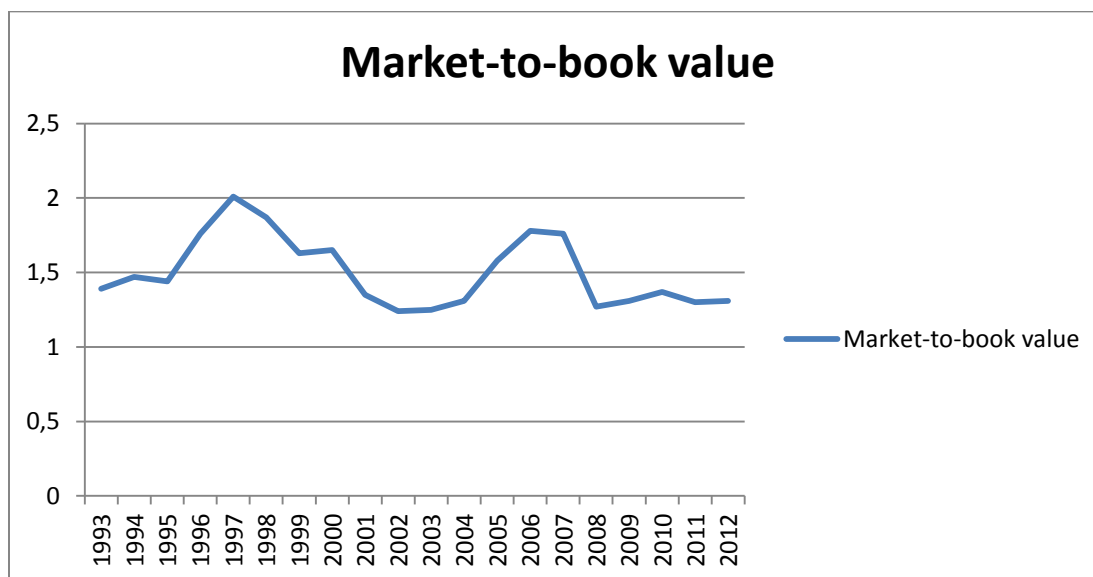


Figure 3 Trend line market-to-book value (MTB)

Figure 1 already showed that during the financial crisis, dividend payments dropped heavily from 2008 until 2009. According to DeAngelo and DeAngelo (2006) and Jensen (1986) firms that invest more, have lower free cash flows and thus pay out fewer dividends. Thus, one would also expect a decrease in free cash flow from 2008 until 2009. Figure 4 shows the trend of free cash flow over time in a trend line plotted with the use of the medians of free cash flow of the companies in the sample over time. It indeed shows the same trend as the total dividend paid (figure 1), which indicates that there indeed is a relation between the available free cash flow of a company and the total amount of dividend that it pays out.

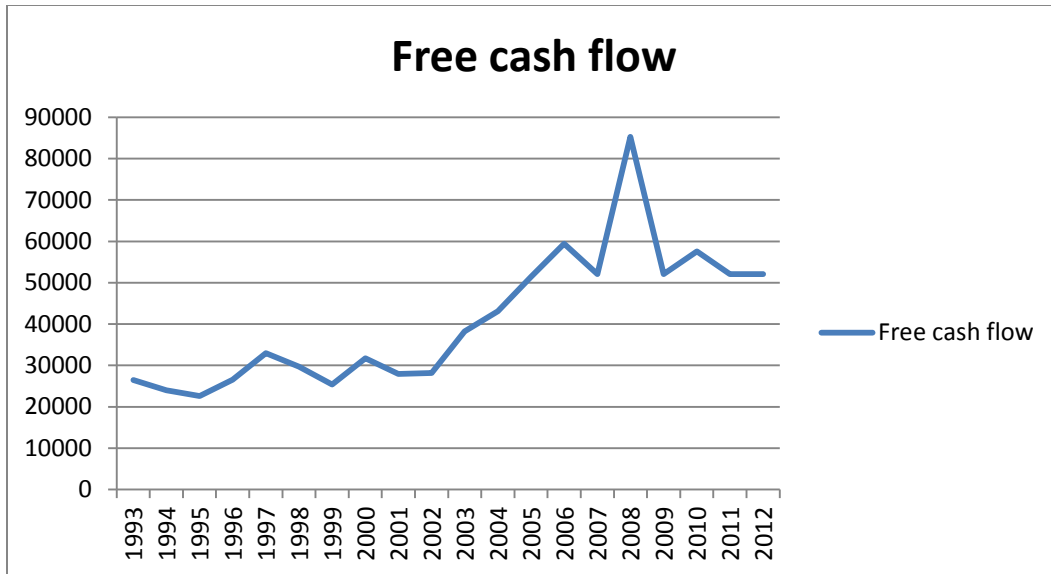


Figure 4 Trend line free cash flow (FCF)

Hypothesis 2 stated that, next to larger firms and firms with more retained earnings, more profitable firms pay out larger dividends. In figure 5 the medians of total dividend (TOTDIV) and net profit (NP) over time are plotted. It shows that the lines are quite parallel and that both have a peak just before the beginning of the crisis in 2008 and decrease heavily after that towards 2009. Thus, on the basis of figure 5, a positive relationship between profitability and total dividend paid out would be expected.

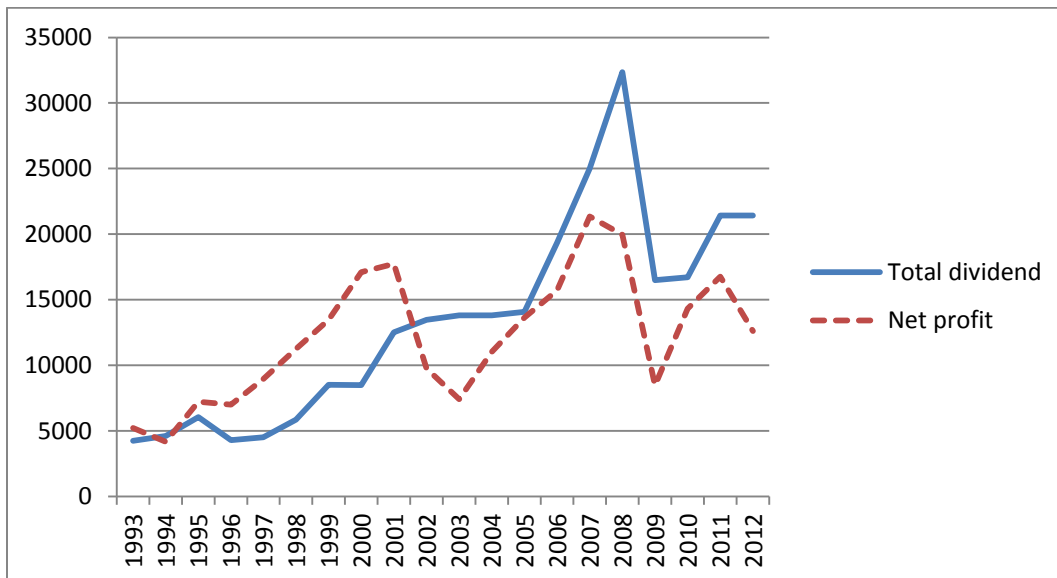


Figure 5 Trend line total dividend (TOTDIV) and net profit (NP)

## 4.2 Subsample analysis

Table 5 provides the results of the analysis of the differences in the median and distribution of the different (in)dependent variables of 2009 between companies with crisis stable dividend payout policies (Group 0), companies with crisis susceptible dividend payout policies (Group 1), and companies with strongly crisis susceptible dividend payout policies (Group 2).

Logically, the median of the difference in total dividend paid out between 2008 and 2009 for Group 2 (-21.992,50) is much larger and negative in comparison with Group 0 (300) and Group 1 (-4.160), since these subsamples (Group 1, 2 and 3) are created on the basis of the crisis susceptibility of the dividend payout policies of the companies in the total sample. The same holds for the medians of the percentage change in total dividend paid out. The table also shows that companies that are strongly sensitive to the crisis in terms of total dividend paid (Group 2) pay out significantly less dividend per share (0) than companies that have less crisis sensitive dividend payout policies (Group 1: 0,64; Group 0:0,65). Besides, also the dividend yield and the payout ratio are lowest in 2009 for companies most sensitive to the crisis (dividend yield and payout ratio Group 2: 0), in comparison to companies with total dividend payments less sensitive to the crisis (dividend yield Group 1: 2,88; payout ratio Group 1: 38,875) and companies which are "crisis stable" (dividend yield Group 0: 1,89; payout ratio Group 0: 30,77). Furthermore, it turns out that these differences between the three subsamples are highly significant since the p-value of the independent-samples Kruskal-Wallis test for these variables is 0.000.

It turns out that the free cash flow in 2009 is significantly different between the three subsamples since the p-value of the Kruskal-Wallis test is 0.009. Where companies which decreased their total dividend payment with more than 50% during the crisis have the lowest free cash flow (Group 2: 21.916), companies with decreasing total dividend values up to 50% (Group 1) have more free cash flow available in 2009 (145.456) than companies that did not decrease their total dividend payments (Group 0: 35.708,50).

In 2009 the market-to-book value is lowest for companies in group 2 (0,985), while the market-to-book value for group 1 (1,26) is higher than for companies in group 0 (1,12). However, the difference in the medians and distribution of the market-to-book values between the groups is not significant (p-value: 0.149).

Looking at the variables in 2009 that account for the size of the companies in the sample, firstly, table 5 reveals that companies with total dividend payments that are more crisis susceptible, have more

employees (Group 0: 1.131; Group 1: 1.656; Group 2: 4.696). In addition, the table also shows that these companies in general have more shares outstanding (Group 0: 18.367; Group 1: 33.117; Group 2: 48.228). In contrast with the median number of shares outstanding in 2009, the median market capitalization of 2009 is highest for Group 1 (1.025.161) and lowest for Group 2 (305.085), while it is 311.342 for Group 0. This shows us that the value per share is smallest for companies that decreased their total dividend payment by more than 50% (Group 2), since they have the most shares outstanding and the lowest market capitalization. Unfortunately, these differences in size between the different groups are not significant (see p-values in table 5).

Looking at net debt and net profit, companies with total dividend payments that are strongly crisis sensitive have a high median net debt (177.106) and the lowest median net profit (-22.520,50). Companies that are crisis stable have a median net debt of 13.900 and a median net profit of 5.302. Group 1 has the highest median net debt (205.968) but a positive median net profit of 11.510. Where the differences in medians and distribution of net profit are significant (p-value: 0.004), the differences in medians and distributions of net debt are not (p-value: 0.178).

The results of the analysis of differences in medians and distributions of retained earnings in 2009 between the groups are not significant (p-value: 0.459). Nonetheless, the actual medians of the groups show that the more susceptible companies are, the more earnings they retain (Group 0: 31.827; Group 1: 86.936; Group 2: 109.179).

Concerning share buybacks, according to the independent samples test, companies that are crisis stable, in other words, companies that did not decrease their total dividend payments during the crisis, are the only companies that buy back shares (14.685.000). These results have a p-value of 0.040 and are thus significant.

**Table 5** Subsample analysis: Characteristics of firms divided by their susceptibility to the crisis with regard to total dividend payments

Variable	Median [range 25-75] Group 0 (stable)	Median [range 25-75] Group 1 (susceptible)	Median [range 25-75] Group 2 (strongly susceptible)	p-value
<b>Total dividend 2009</b>	11.075 [506 – 57580]	30.736 [5709,75 – 73756,75]	400 [0 – 11922,75]	0.000***
<b>TOTDIVdif (2009-2008)</b>	300 [0 – 4.235]	-4.160 [-23.561 – -495]	-21.992,50 [-107.362,5 – -6.300]	0.000***
<b>TOTDIVdif percentage(2009-2008)</b>	0,0360 [0 – 0,1675]	-0,1886 [-0,3357 – -0,0524]	-0,9975 [-1 – -0,7751]	0.000***
<b>Dividend per share 2009</b>	0,65 [0 – 1,29]	0,64 [0,365 – 1,85]	0 [0 – 0,3025]	0.000***
<b>Dividend yield 2009</b>	1,89 [0 – 3,455]	2,88 [2,255 – 5,7875]	0 [0 – 2,305]	0.000***
<b>Payout ratio 2009</b>	30,77 [1,325 – 48,855]	38,875 [29,45 – 60,4]	0 [0 – 32,6175]	0.000***
<b>Free cash flow 2009</b>	35.708,50 [3753,25 – 171.774,25]	145.456 [22.096 – 358.376,50]	21.916 [-7.003,25 – 106.861,50]	0.009***
<b>Market-to-book value 2009</b>	1,12 [0,725 – 1,62]	1,26 [0,945 – 1,8375]	0,985 [0,675 – 1,4075]	0.149
<b>Employees 2009</b>	1.131 [48 – 8.317]	1.656 [301,75 – 19.261,75]	4.696 [1.536,75 – 10.941]	0.082
<b>Shares outstanding 2009</b>	18.367 [2.070,50 – 64.130]	33.117 [7.472,25 – 125.129,75]	48.228 [8.057,25 – 107.005,50]	0.128
<b>Market Capitalization 2009</b>	311.342 [46.577 – 1.437.229]	1.025.161 [166.942 – 2.357.165,75]	305.085 [91.324,25 – 2.600.983,25]	0.257
<b>Net debt 2009</b>	13.900 [-2.675,5 – 229.335]	205.968 [-2.471 – 716.047]	177.106 [8.055,5 – 367.208,25]	0.178
<b>Net profit 2009</b>	5.302 [-510 – 68.821,5]	11.510 [-6357,25 – 71.307]	-22.520,50 [-101.628 – 7.477]	0.004***
<b>Retained earnings 2009</b>	31.827 [1.833,50 – 1.225.863,75]	86.936 [19.057,5 – 1.127.474,5]	109.179 [23.100 – 509.400]	0.459
<b>Share buybacks 2009</b>	14.685.000 [2.500.000 – 63.956.250]	0 [0 – 3.210.000]	0 [0 – 0]	0.040**

Data is presented as median [interquartile range 25-75%]. Independent-Samples Kruskal-Wallis Test is performed to test whether the distributions and medians of the variables are the same in the three different groups; Group 0 = crisis stable dividend payout policy, Group 1 = crisis susceptible dividend payout policy, Group 2 = extremely crisis susceptible dividend payout policy; p-values in last column, \* p<0.10, \*\* p<0.05, \*\*\* p<0.01



### 4.3 Regression analysis

Table 6.1 displays the results of regressing the independent variables with their values in 2008 on the dependent variable total dividend paid (TOTDIV) in 2009. The regression was made in order to investigate how the values of certain independent variables in 2008 could have predicted the decrease of total dividend paid in 2009. The R-squared values of the regressions in this section are very close to one. This means that, together, the independent variables explain the dependent variable very well.

**Table 6.1** Cross-sectional regression 1: Total dividend 2009 (TOTDIV 2009) as dependent variable; the Betas (regression coefficients) show what happens to total dividend paid out in 2009 when the independent variables increase by one unit of measurement; Standard Errors of Betas and standardized Betas are also given

Independent Variables	B	SE	Stand. B	p-value
Constant	-1.117,183	12.113,789		0.927
Free cash flow 2008	0,010	0,009	0,042	0.239
Market-to-book value 2008	-10.528,535	8.040,822	-0,014	0.194
Shares outstanding 2008	-0,170	0,08	-0,177	0.036**
Employees 2008	-0,375	0,115	-0,035	0.002***
Market Capitalization 2008	0,050	0,005	0,852	0.000***
Net debt 2008	0,001	0,001	0,039	0.312
Net profit 2008	0,041	0,008	0,129	0.000***
Retained earnings 2008	0,013	0,002	0,187	0.000***
N	101			
R-squared	0,991			

p-values in last column, \* p<0.10, \*\* p<0.05, \*\*\* p<0.01

It turns out that the amount of free cash flow in 2008 has a slightly positive effect on the total dividend in 2009 (0,010), however this result is not significant (0.239). Against expectations, the market-to-book value in 2008 has a negative influence on the total dividend paid in 2009 (-10.528,535), though this is also not significant (0.194). According to the regression, when the number of shares outstanding or/and the number of employees of a firm in 2008 goes up, the total dividend paid in 2009 drops, with Beta's respectively of -0,170 and -0,375. The p-values show that both results are significant. Furthermore, the market capitalization of a firm in 2008 has a significantly positive effect on the total dividend paid out in 2009 with a Beta of 0,050 and p-value 0.000. In contrast with previous literature, net debt in 2008 has a slightly positive effect on total dividend paid in 2009 (0,001). However, this result is not significant (0.312). On the other hand, in line with expectations, when net profit is higher in 2008, total dividend payments in 2009 are higher (0,041) and this result is significant (0.000). Finally, the amount of earnings

that are retained in 2008 have a positive effect on the total dividend paid in 2009 with Beta 0,013 and this result is significant at the 1% level.

Table 6.2 presents the results of the regression analysis of the independent variables in 2009 on the dependent variable total dividend paid (TOTDIV) in 2009. This regression will show how the various independent variables are related to total dividend during a severe financial crisis year where total dividend payments experience a huge fall.

**Table 6.2** Cross-sectional regression 2: Total dividend 2009 (TOTDIV 2009) as dependent variable; the Betas (regression coefficients) show what happens to total dividend paid out in 2009 when the independent variables increase by one unit of measurement; Standard Errors of Betas and standardized Betas are also given

Independent Variables	B	SE	Stand. B	p-value
Constant	-5.968,916	15.779,972		0.706
Free cash flow 2009	1,12	0,013	0,357	0.000***
Market-to-book value 2009	-8.651,552	10.271,013	-0,009	0.402
Shares outstanding 2009	0,237	0,052	0,262	0.000***
Employees 2009	-0,580	0,139	-0,046	0.000***
Market Capitalization 2009	0,009	0,003	0,177	0.004***
Net debt 2009	-0,10	0,001	-0,311	0.000***
Net profit 2009	-0,009	0,003	-0,037	0.006***
Retained earnings 2009	0,031	0,003	0,379	0.000***
N	88			
R-squared	0,992			

p-values in last column, \* p<0.10, \*\* p<0.05, \*\*\* p<0.01

The results show that when a company has more free cash flow in 2009, they pay out larger dividends (1,12). This causal relationship between free cash flow and total dividend is significant at the 1 % level. The causal relationship between the market-to-book value in 2009 and the total dividend paid in 2009 is negative and just as in the first regression this result is not significant (0.402). The table below shows that when a firm has one more share outstanding in 2009, it pays out 0,237 euro total dividend more. Companies that have more employees in 2009 pay out less total dividend in 2009 since the Beta of employees in 2009 is -0,580. The Betas for the number of shares outstanding and the number of employees in 2009 are both significant on the 1% level. Just like the market capitalization in 2008, the market capitalization of 2009 also has a positive impact on the total dividend paid in 2009. This effect is also significant (0.004), however the effect is a little bit smaller (Beta: 0,009). As expected, when a company has more debt (more leveraged) in 2009, it pays out fewer dividends in 2009 since its Beta is -

0,10. This relationship is highly significant (p-value: 0.000). However, in contrast with previous literature, a company's net profit has a negative impact on the total dividend paid out in 2009 (-0,009) and this effect is significant as well (0.006). The effect of retained earnings in 2009 on the total dividend paid out in 2009 is quite similar to the effect of retained earnings in 2008 on TOTDIV2009. For retained earnings in 2009, Beta is 0,031 and it is also significant at the 1% level.

Table 6.3 shows the results of the linear regression of the independent variables in 2004 on the dependent variable total dividend paid (TOTDIV) in 2005. This table is interesting since it can help us compare the causal relationships between the independent variables and total dividend paid in a "normal economic time" with those during a crisis.

**Table 6.3** Cross-sectional regression 3: Total dividend 2005 (TOTDIV 2005) as dependent variable; the Betas (regression coefficients) show what happens to total dividend paid out in 2005 when the independent variables increase by one unit of measurement; Standard Errors of Betas and standardized Betas are also given

Independent Variables	B	SE	Stand. B	p-value
Constant	-15.225,933	8.179,931		0.067*
Free cash flow 2004	-0,001	0,002	-0,010	0.785
Market-to-book value 2004	8.493,423	4.081,712	0,037	0.041**
Shares outstanding 2004	-0,201	0,045	-0,256	0.000***
Employees 2004	-0,812	0,177	-0,097	0.000***
Market Capitalization 2004	0,051	0,005	1,074	0.000***
Net debt 2004	0,003	0,001	0,286	0.000***
Net profit 2004	0,014	0,046	0,029	0.769
Retained earnings 2004	-0,018	0,005	-0,112	0.001***
N	81			
R-squared	0,989			

p-values in last column, \* p<0.10, \*\* p<0.05, \*\*\* p<0.01

The effect of free cash flow available in 2004 on the total dividend paid in 2005 is slightly negative (-0,001) but insignificant (0.785). In line with expectations, companies with lower market-to-book values in 2004 pay out fewer dividends in 2005 since the Beta is 8.493,423 and the relationship is significant at the 5% level. The effect of the number of shares outstanding and the number of employees in 2004 on the total dividend paid in 2005 is quite similar to the effect of these independent variables in 2008 on the total dividend in 2009. The Betas are all negative, and the results are significant. The linear relationship between market capitalization and total dividend paid is also similar during "normal economic times" and during a crisis according to these regressions, with Betas of 0,051 and 0,050

respectively and both results being significant at the 1% level. The effects of net debt and net profit of 2004 on the total dividend paid in 2005 are also similar in the sense that in both regressions both Betas are positive. In table 6.3 their Betas are 0,003 and 0,014 while in table 6.1 they are 0,001 and 0,041. However, where in the first “crisis” regression the Beta of net profit was significant and the Beta of net debt was not. For the Betas of net debt and net profit of 2004 on total dividend in 2005, this is the other way around. In contrast with the regression of the independent variables in 2008 on the total dividend paid in 2009, here the significant effect of retained earnings in 2004 on the total dividend paid in 2005 is negative (-0,018).

Table 6.4 can also be used to compare “normal economic times” effects and crisis effects. Here the independent variables of 2005 are regressed on the dependent variable total dividend paid (TOTDIV) in 2005, thus this table can be best compared with table 6.2.

**Table 6.4** Cross-sectional regression 4: Total dividend 2005 (TOTDIV 2005) as dependent variable; the Betas (regression coefficients) show what happens to total dividend paid out in 2005 when the independent variables increase by one unit of measurement; Standard Errors of Betas and standardized Betas are also given

Independent Variables	B	SE	Stand. B	p-value
Constant	-12.159,596	13.008,528		0.352
Free cash flow 2005	0,001	0,003	0,008	0.729
Market-to-book value 2005	-589,454	2.687,022	-0,280	0.827
Shares outstanding 2005	-0,598	0,076	-0,714	0.000***
Employees 2005	-1,536	0,364	-0,107	0.000***
Market Capitalization 2005	0,053	0,005	1,167	0.000***
Net debt 2005	-0,004	0,000	-0,280	0.000***
Net profit 2005	0,469	0,049	1,133	0.000***
Retained earnings 2005	-0,054	0,007	-0,525	0.000***
N	109			
R-squared	0,966			

p-values in last column, \* p<0.10, \*\* p<0.05, \*\*\* p<0.01

Just as in the crisis year, the effect of free cash flow in 2005 on the total dividend paid in 2005 is positive. However, here the effect is very small (Beta : 0,001) and very insignificant (p-value: 0.729). The effect of the market-to-book value in 2005 on the total dividend paid out in 2005 is positive but insignificant (Beta: -589,454; p-value: 0.827), which is similar to the effect of MTB 2009 on TOTDIV 2009. Where in 2009 the relationship between the shares outstanding and the total dividend paid was positive, in 2005 this relationship is negative (-0,598). Both relationships are significant at the 1% level. In 2005 the

negative and significant effect of the number of employees on the total dividend paid is larger than in 2009 (Betas of -1,536 and -0,580 respectively). The significant positive causal relationship between market capitalization and total dividend paid is stronger in 2005 (0,053) than in 2009 (0,009). Just as in the 2009 regression, when a company has more net debt in 2005, it pays out fewer dividends that year (-0,004). This relation is stronger in 2009 (-0,10) but both Betas are highly significant. In 2005, when a company has more net profit, it pays out larger dividends (0,469), while in 2009, this relationship was slightly negative (-0,009). However, both relationships are significant at the 1 % level. Finally, where during the crisis in 2009, companies which retained more earnings, paid out larger dividends as well (Beta: 0,031), while during “normal economic times” in 2005, companies that retained more earnings, paid out less dividend (Beta: -0,054).

#### 4.4 Panel data analysis

The panel data analysis is done to compare the influences of the various independent variables on the dependent variable total dividend before the crisis (1993 – 2007) with their influences on total dividend during the crisis (2008 – 2012). Table 7.1 presents the results of the panel data analysis of the total sample over the time period 1993 – 2007.

**Table 7.1** Panel data analysis 1, no crisis (1993 - 2007); Total dividend as dependent variable; the estimates (unstandardized Betas) show what happens to total dividend paid out over time when the independent variables increase by one unit of measurement; Standard Errors of estimates are also given

Independent Variables	Estimate	SE	p-value
Intercept	16.625,5682	42.685,23795	0.697
Time	-2.039,58389	3.652,310795	0.577
Free cash flow	-0,005515	0,003651	0.131
Market-to-book value	2.279,873124	3.786,381054	0.547
Shares outstanding	0,220954	0,056788	0.000***
Employees	-0,498514	0,363794	0.173
Market Capitalization	0,0635	0,003364	0.000***
Net debt	0,000583	0,000363	0.110
Net profit	0,0635	0,018184	0.001***
Retained earnings	0,010263	0,004606	0.027**

p-values in last column, \* p<0.10, \*\* p<0.05, \*\*\* p<0.01

In contrast with the trend in section 4.1, time had a negative influence on total dividend paid over the period before the crisis (-2.039,58389). However, the p-value shows that this result is not significant at all (0.577). According to the panel data analysis, free cash flow has a small but insignificant negative

effect on total dividend paid over the time period 1993 – 2007 (-0,005515). In line with the theory, the market-to-book value has a positive effect on total dividend paid (2.279,87324). The p-value of 0.547 however makes clear that this estimate is insignificant. Surprisingly, the number of shares outstanding had a positive and significant effect (0,220954) on total dividend paid out by the companies in the sample over the time period 1993 – 2007. Just as in the regression analysis, the number of employees is negatively related with the total dividend paid (-0,498514). Over time (1993 – 2007) the result is insignificant with a p-value of 0.173. Before the crisis, over time, the market capitalization is positively related with total dividend with an estimate of 0,0635 and a p-value of 0.000. Net debt had a slightly positive but insignificant effect on the total dividend paid out between 1993 and 2007. For net profit the effect on total dividend over time before the crisis was positive (0,0635) and significant (0.001). Finally, before the crisis, when retained earnings are higher, total dividend paid is also significantly higher for the companies in the sample with an estimate of 0,010263 and a p-value of 0.027.

Table 7.2 shows the results of the panel data analysis of the total sample over the time period 2008 – 2012.

**Table 7.2** Panel data analysis 2, crisis (2008 - 2012); Total dividend as dependent variable; the estimates (unstandardized Betas) show what happens to total dividend paid out over time when the independent variables increase by one unit of measurement; Standard Errors of estimates are also given

Independent Variables	Estimate	SE	p-value
Intercept	50.692,31044	18.706,35252	0.007***
Time	-31.233,96688	7.847,504644	0.000***
Free cash flow	0,006507	0,005878	0.269
Market-to-book value	-17,960809	632,034999	0.977
Shares outstanding	-0,018224	0,054498	0.738
Employees	-0,181364	0,178389	0.310
Market Capitalization	0,038908	0,002730	0.000***
Net debt	0,001313	0,000791	0.097*
Net profit	0,009289	0,006905	0.179
Retained earnings	-0,000749	0,003145	0.812

p-values in last column, \* p<0.10, \*\* p<0.05, \*\*\* p<0.01

In line with the trend in section 4.1, during the crisis total dividend paid out significantly (p-value: 0.000) decreases over time (-31.233,96688). The positive relationship between free cash flow and total dividend (0,006507) is again insignificant (0.269). Where the market-to-book value had a positive effect on total dividend over time before the crisis, during the crisis this effect is negative but smaller (-

17,960809). However, the relation is even more insignificant than before the crisis (0.977). Where before the crisis, the influence of shares outstanding on total dividend paid over time was positive and significant, since the start of the crisis, the influence is negative (-0,018224) but insignificant (0.738). The number of employees and total dividend paid are still insignificantly negative related since the beginning of the crisis with an estimate of -0,181364 and a p-value of 0.310. Just as before the crisis, over time, the market capitalization of a firm has a positive influence on the total dividend that a firm pays out during the crisis as well (0,038908). This result is significant at the 1% level. Net debt and net profit are both still positively related with the total dividend paid out. However, where before the crisis, the positive relation between net profit and total dividend was highly significant (0.001), it is not during the crisis. The positive relation between net debt and total dividend was insignificant before the crisis and is only just significant during the crisis (0.097). Table 7.2 furthermore shows that since the start of the current financial crisis, the amount of retained earnings and the amount of total dividend paid by companies in the sample are negatively (-0,000749) but insignificantly (0.812) related.

## 5. Conclusion

This section will firstly provide a discussion of the results, comparing the similarities and differences with previous literature. On the basis of this discussion, conclusions will be drawn and the main research question will be answered. Subsequently, section 5.2 will use these conclusions to form managerial implications. Finally, in section 5.3, the limitations of this research along with suggestions for future research regarding the impact of the financial crisis on dividend payout policies will be presented.

### 5.1 Discussion and conclusions

According to Reddemann et al. (2010) capital is scarce following a major financial crisis and dividend cuts are a logical consequence. The trends over time of total dividend payments and dividend per share already showed that following the start of the financial crisis in 2008, dividend payments dropped excessively. On top of that the decrease in total dividend payments of listed companies in the Benelux due to the crisis was significant. The results of the subsample analysis show that companies with the greatest proportional dividend cuts have the lowest dividend per share, dividend yield and payout ratio. Additionally, the panel data analysis shows that during the crisis, over time the companies in the sample drop dividend payments significantly. Thus it can be concluded that the current financial crisis has a large negative effect on dividend payout policies.

Going more in-depth, previous literature found that for larger, more profitable firms, and firms with a lot of retained earnings as part of total equity, total dividend paid is larger (Denis and Osobov, 2008).

Firstly, section 4.1 provided a trend that showed a positive relationship between profitability and total dividend payments. Subsequently, the subsample analysis and regression analysis provides evidence that firms with lower net profits are more likely to cut dividends during the financial crisis. The results of the panel data analysis show positive relationships between profitability and dividend payments over time and thus this thesis concludes that more profitable firms indeed pay out larger dividends.

On the basis of the results of the subsample analysis, cross-sectional regressions and the panel data analysis it can be concluded that having more employees and more shares outstanding has a negative effect on the total dividend that the firm pays out. However, the market capitalization of a company is generally used as a measure for the size of the firm in previous literature. Since all the results of section 4 regarding the market capitalization show a positive and significant relation between the market capitalization of a firm and the total dividend the firm pays out, it can be concluded that larger firms indeed have the tendency to pay out larger dividends.



Regarding the impact of retained earnings on the dividend payout decision, the regression results and panel data analysis results are in conflict. Thus, there is no evidence to conclude that firms retaining more earnings pay out larger dividends or any other kind of direct relationship between retained earnings and total dividend paid.

Hardin and Wu (2012) stated that firms with high market leverage and low market-to-book ratios are more likely to cut dividends, also during the current financial crisis. The trend and subsample analysis tend to show that firms with low market-to-book values pay out fewer dividends. From the regression analysis followed that during "normal economic times" a low market-to-book value could be an indication for lower total dividend payments in the coming year. Furthermore, slightly insignificant results of the subsample analysis show that firms with more debt pay out less total dividend. Altogether, in general, there is some evidence to conclude that companies with high market leverage (more net debt) and low market-to-book values are more likely to cut dividends.

From previous literature it follows that firms which have less free cash flow available, mainly due to growth and investment opportunities, pay out less dividends. On the basis of the trend line plotted in section 4.1 one would indeed expect that free cash flow and dividend payments are positively related. The subsample analysis in section 4.2 also shows that firms with the lowest free cash flow available made the largest dividend cuts during the crisis. The only significant result of the regression analysis regarding free cash flow also provides evidence for a positive relationship between the free cash flow of a company and the amount of dividend it pays out.

Finally, from the panel data analysis It can also be concluded that that during the current financial crisis fewer factors play a role in the dividend payment decision of listed firms in the Benelux and that over time listed firms in the Benelux just have to reduce dividend payments.

## Summary

In conclusion, the current financial crisis had a large impact on the dividend payout policies of listed companies in the Netherlands and Belgium. A lot of companies had to cut dividend payments because of lower profits and less free cash flow. It also turns out that companies with high market leverage and low market-to-book values carried out greater dividend cuts than firms with less market leverage and higher market-to-book values. Furthermore, profitable companies with a high market capitalization can more easily cope with the financial crisis and maintain dividend payments than less profitable smaller firms.

Finally, during the current financial crisis, the factor time plays an important role in explaining the reduced dividend payments.

## **5.2 Managerial implications**

Due to a financial crisis, many listed companies in the Benelux are less profitable and experience lower amounts of free cash flow and over time they often just have to decrease dividend payments to cope with the crisis. Managers should take into account that decreasing dividend payments could create uncertainty among shareholders which could lead to large negative stock price reactions. Thus, the communication towards shareholders regarding these necessary dividend cuts is very important in order to mitigate investor uncertainty.

This thesis concludes that firms that have a greater market capitalization can maintain their dividend payout levels more easily. Thus, in order to maintain dividend payout levels, companies should try to enlarge their market capitalization. In order to do this, firms can either try to increase the number of shares outstanding or increase the value per share. Companies can use share repurchasing to create higher demand for their shares and thus drive up the value per share. Also, if a company repurchases shares, it can retain more earnings in the future since they do not have to pay dividend on shares they hold themselves. This also leads to higher dividend payments to the remaining shareholders, which also drives up the value per share.

## **5.3 Limitations & suggestions**

The biggest limitation this thesis faces is the sample size and especially the number of missing values in the dataset. This made it very hard to perform multivariable analysis and thus some results are only based on independent tests. In the future this problem could be solved by examining the impact of the financial crisis on the dividend payment policy on a greater scale. For example, this thesis focusses on listed companies in The Netherlands and Belgium and future research could also look at other companies in Europe or even beyond. Another solution could be to look at a smaller time period. This thesis only includes companies in the sample that have data available from 1993 to 2012, which causes companies founded after 1993 and firms without available data in earlier years to be excluded.

Furthermore, in the future it could be interesting to study the impact of the financial crisis on dividend payout policies between various industries regarding. Unfortunately, that was not possible in this thesis because of the limited sample size and the amount of missing values. Future research could

also look at how each type of decision regarding dividend payments during the crisis affected future cash flows and earnings of those companies.

## 6. References

- Abreu, J. F. and Gulamhussen, M.A. (2013). Dividend payouts: Evidence from U.S. bank holding companies in the context of the financial crisis, *Journal of Corporate Finance*, 22, 54-65.
- Baker, M. and Wurgler, J. (2004). A Catering Theory of Dividends, *The Journal of Finance*, 59(3), 1125-1165
- Benartzi, S. Michaely, R. and Thaler, R. (1997). Do Changes in Dividends Signal the Future or the Past?, *The Journal of Finance*, 52(3), 1007-1034.
- Brav, A., Grahama, J.R., Harvey, C.R. and Michaely, R. (2005). Payout policy in the 21st century, *Journal of Financial Economics*, 77, 483-527.
- Case, B., Hardin, W.G. III and Wu, Z. (2012). REIT Dividend Policies and Dividend Announcement Effects During the 2008-2009 Liquidity Crisis, *Real Estate Economics*, 40(3), 387-421.
- Daniel, N.D., Denis, D.J. and Naveen, L. (2008). Do firms manage earnings to meet dividend thresholds?, *Journal of Accounting and Economics*, 45, 2-26.
- DeAngelo, H., DeAngelo, L. and Skinner, D.J. (2004). Are dividends disappearing? Dividend concentration and the consolidation of earnings, *Journal of Financial Economics*, 72, 425-456.
- Denis, D.J. and Osobov, I. (2008). Why do firms pay dividends? International evidence on the determinants of dividend policy, *Journal of Financial Economics*, 89, 62-82.
- Fama, E.F. and French, K.R. (2001). Disappearing dividends: changing firm characteristics or lower propensity to pay?, *Journal of Financial Economics*, 60, 3-43.
- Fassin, Y. and Gosselin, D. (2011). The Collapse of a European Bank in the Financial Crisis: An Analysis from Stakeholder and Ethical Perspectives, *Journal of Business Ethics*, 102, 169-191.
- Jensen, M.C. (1986). Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review*, 76, 323-329.
- Kuo, J.M., Philip, D. and Zhang, Q. (2013). What drives the disappearing dividends phenomenon?, *Journal of Banking & Finance*, 37, 3499-3514.

Lintner, J. (1956). Distribution of incomes of corporations among dividends, retained earnings, and taxes, *American Economic Review*, 46, 97-113.

Li, W. and Lie, E. (2006). Dividend Changes and Catering Incentives, *Journal of Financial Economics*, 80, 293-308.

Miller, M.H. and Rock, K. (1985). Dividend policy under asymmetric information, *Journal of Finance*, 40, 1031-1051.

Reddemann, S., Basse, T. and von der Schulenburg, J.M.G. (2010). On the Impact of the Financial Crisis on the Dividend Policy of the European Insurance Industry, *The Geneva Papers*, 35, 53-62.

Rozeff, M.S. (1982). 'Growth, beta, and agency costs as determinants of dividend payout ratios', *The Journal of Financial Research*, 5, 249-259.

Sagi, A. (2011). Market Reactions to dividend Announcements Under Different Business Cycles, *Emerging Markets Finance and Trade*, 47(5), 72-85.

Sawicki, J. (2009). Corporate governance and dividend policy in Southeast Asia pre- and post-crisis, *The European Journal of Finance*, 15(2), 211-230.

Skinner, D.J. (2008). The evolving relation between earnings, dividends, and stock repurchases, *Journal of Financial Economics*, 87, 582-609.

Smith, C.S. and Watts, R.L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies, *Journal of Financial Economics*, 32, 263-192.

## 7. Appendix

### Appendix I: Variables overview

Abbreviation	Meaning	Dependent/ independent	Comments
<b>TOTDIV</b>	Cash dividend paid - total	Dep.	
<b>TOTDIVdif</b>	TOTDIV 2009 – TOTDIV 2008	Dep.	Accounts for the change in total dividend between 2008 and 2009
<b>DPS</b>	Dividends per share	Dep.	
<b>FCF</b>	Free cash flow	Indep.	
<b>MTB</b>	Market-to-book value	Indep.	
<b>SO</b>	Shares outstanding	Indep.	Measure of size of the firm
<b>E</b>	Number of employees	Indep.	Measure of size of the firm
<b>MC</b>	Market capitalization	Indep.	Measure of size of the firm
<b>ND</b>	Net debt	Indep.	
<b>NP</b>	Net profit	Indep.	
<b>RE</b>	Retained earnings	Indep.	
<b>SB</b>	Share buyback	Indep.	A lot of missing data
<b>DY</b>	Dividend yield	Indep.	Only used in the subsample analysis
<b>PR</b>	Payout ratio	Indep.	Only used in the subsample analysis