Erasmus University Rotterdam
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"The dividend policy of Dutch Public Companies"

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Abstract:
In this thesis the dividend policy of Dutch public companies is described for the period 2001 till 2010. Two models are implemented, explaining the average dividend payout ratio and the speed of dividend adjustments. Using a sample of 91 companies, evidence is provided that supports the signalling and transaction cost theory. Furthermore, evidence is provided that suggests the existence of an industry effect. The model that explains the average dividend payout ratio provides a good fit. Evidence also suggests that the average dividend payout ratio of Dutch public companies has not changed in thirty years.

Keywords: *Dividend policy, payout, signalling, transaction cost, Dutch public companies.*

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1. Introduction

The present thesis studies the dividend policy of Dutch public companies. Dividends are part of the profit that a firm can pay to the shareholders. In 1995, de Haan (de Haan; 1995) published a paper concerning the dividend policy of Dutch public firms. The paper by de Haan (1995) will be used as a starting point for this thesis.

Although dividend policy is a popular subject for research, studies on the dividend policy of Dutch firms are scarce, except for the de Haan (1995) study. Hence, this thesis aims to, firstly, study more recent literature on dividend policy and the theories concerned and, subsequently, conduct a quantitative research with recent data of Dutch companies.

The main purpose of this research is to describe what the actual dividend policy of Dutch public companies is, making use of different theories to explain the dividend policy. The main question of the present research is; "*What is the dividend policy of Dutch public firms*?"

To answer this question, dividend policy is divided into two aspects;

- Payout ratio; How much dividend is payed?
- Adjustment speed of dividend; How fast do companies adjust their dividends?

The payout ratio is the core of this research considering the descriptive nature of this thesis.

Regarding the payout ratio there are two important problems that affect how much dividend is payed; Agency problems and asymmetric information. Market imperfections like agency problems and asymmetric information can influence the actual dividend payout, which is why it is studied in this thesis.

Easterbrook (1984) concludes that increasing the dividend means lowering the agency costs. High dividend payout leads to less available cash for investments, and therefore the firm is acquired to raise cash from the capital markets. Because the company is then active on the capital market, it is being 'judged' by the capital market. Therefore managers of the company are less able to act in their

own interest. Managers have to be as efficient as possible, in order to raise sufficient cash on the capital markets.

Regarding asymmetric information, two well-known theories are the signalling and the pecking order theory. The signalling theory states that dividends may be used as an instrument to tell something about the profitability in the future of the company. For example, a company that has stable dividends over a long period of time may increase dividends to tell investors that their company is a good investment and thus is able to attract more capital. The pecking order theory suggests that companies first use their own resources for new capital funding, before searching for external capital providers. This means that companies that follow the pecking order theory will use their profit to fund new (net present value) investments, instead of giving part of that profit back to shareholders as dividend. The pecking order theory states that firms finance new investments according to the principle of the least amount of effort. First, available cash is used, if the available cash is insufficient to finance the investments, new debt is issued. If issuing more debt is not sensible anymore, the firm issues equity to finance new net present value investments. Raising equity is regarded as means of last resort.

Other important aspects that can influence the payout ratio are transaction costs, taxes and the type of business the company is in. Transaction costs can influence the dividend payout, since issue costs makes attracting external capital more expensive. When issue costs are high, companies will use their profits first to invest in new projects. This means that companies will pay less or no dividend at all, since the profit is needed as capital. Taxes can also influence the payout ratio. In the Netherlands profits from dividends are charged with income taxes, while actual stock gains are not fully charged (at least not if you hold on to your stocks). Box 3 of the income tax uses a notional return of four percent on the taxable income in box 3. Therefore, stock gains that exceed four percent are not charged with income taxes. In theory, this means that high taxes make dividend payout less attractive, because if the company holds on to this cash, it will be reflected in a higher stock price, and the shareholder does not have to pay tax for this stock gain.

The last subject that is studied regarding the payout ratio is the type of business the company is in. Dempsey, Laber and Rozeff (1993) studied this industry effect hypothesis and found that the type of business influences the dividend payout ratio. According to Lintner (1956), it is possible that certain industries show signs of 'dividend leadership'. Dividend leadership means that firms react to the dividend policies of other firms in the same industry. It also suggests a competitive element in dividend policy for firms in the same industry. For example, Lintner (1956) states that the oil industry shows signs of dividend leadership.

The second aspect of the main question of this thesis is the adjustment speed of dividends. Dividend adjustment speed is studied using two known theories; the signalling theory and the pecking order theory. Because both theories are already briefly explained, this needs no further explanation in this section.

Since this thesis conducts the same research as de Haan (1995), we can formulate some expectations based on the conclusions of his research. We expect, when looking at the payout ratio;

- The signalling theory to be supported
- The agency theory to be supported
- The pecking order theory to be supported

Looking at the speed of dividend adjustment, we expect that dividends are lowered faster than they are increased. Therefore, it is expected that the pecking order theory is supported in the speed of dividend adjustment section.

The empirical results of this research provide support for the transaction cost theory and the signalling theory. The agency cost theory is supported by one of the three variables that test for the agency cost theory. Contrary to de Haan (1995) this research shows no strong support for the agency cost theory and no support for the pecking order theory. There appears to be an industry effect, since nine dummy variables that test for an industry effect are significant.

This paper will continue as follows:
First, relevant literature is reviewed for an elaborate understanding of dividend policy and the previous briefly introduced theories. Particularly interesting is whether new papers have emerged with different assumptions on dividend policy since the de Haan (1995) paper. After the literature review, the data and methodology are discussed. Based on the reviewed literature, certain proxies are defined, after which the dataset will be explained. Subsequently, the results of the payout ratio and the speed of dividend adjustment are discussed, using the theories mentioned above. The discussion section follows, with implications and recommendations for further research, followed by the conclusion. Finally, the present paper will conclude with two sections concerning respectively the references and the appendices.

2. Review

Dividend policy is an important aspect of the financing decision of a company. The dividend payout ratio determines the amount of earnings that are available as a source of financing. However, retaining more earnings in the firm means that less cash is available for dividend payments. An important aspect of the dividend policy of a firm is the decision about the allocation of profits; the firm has to decide to either pay dividend or add profits to the retained earnings.
But also important are other issues regarding a firm's overall dividend policy: legal, liquidity, and control issues; stability of dividends; stock dividends and splits; stock repurchase and administrative considerations. This thesis will, of course, not be able to consider all these issues.
Miller & Modigliani propose that dividends are irrelevant (Miller & Modigiliani; 1961). They argue that the payout ratio is a mere detail and that it does not affect the wealth of shareholders. Thus the shareholder is said to be indifferent between receiving dividends and having earnings retained by the firm.
A firm is unable to create value simply by altering the mix of dividends and retained earnings, according to Miller & Modigliani (1961).
This leads to an interesting question; why study dividend policy? As research indicates, dividend policy is one of many tools for managing a firm. Research also indicates that theories may be contradictory. Research definitely shows that dividend policy is not a detail; it is considered important by both investors and firms. The review part of this thesis will show the current state of academic and empirical researches. Important researches on the theories mentioned in the introduction will be discussed. Furthermore, empirical studies that study the dividend policy like the de Haan (1995) paper, but in different countries, will also be discussed. These papers form an important basis for the empirical part of this thesis together with the de Haan (1995) paper.

Agency problems.

Jensen & Meckling, in their 1976 paper, state that agency problems arise because the interest of managers and shareholders differ (Jensen & Meckling; 1976). For example, the target of management may be the biggest possible growth, while this may not be in the best interest of the shareholders. Therefore, firms must do something to make sure that management maximises the shareholder value. Due to the possible conflict of interests, firms make costs for monitoring and regulating the management in order to maximize shareholder value. These cost are called agency costs. Easterbrook (1984) states that a relative high dividend payout may reduce the agency costs. High dividend payout means that a firm needs more external funding than firms that hold on to their cash and therefore need cash from the capital market. The capital market in this sense, works as a controlling mechanism for the firm. Therefore, companies that need cash from the capital markets, get a "free control" by the market, while firms that use their own capital, do not have this market controlling system.

The agency costs hypothesis offers one explanation for the decisions regarding dividend policy of a firm. Rozeff (1982) and Easterbrook (1984) find evidence supporting the agency cost theory. Though both researches are widely cited, the study by Rozeff (1982) is clearly supported by empirical evidence. Dempsey and Laber (1992) conducted the exact same research as Rozeff (1982) but with more recent data and under different economic circumstances. The studied time period is the 1980's, and the economy showed strong growth, low inflation and lower taxes. The model both Rozeff (1982) and Dempsey and Laber(1992) use, contains five explanatory variables to proxy for agency and transaction cost effects. This is the so-called five-factor model. In the Rozeff (1982) paper, nearly half of the cross sectional variation in mean payout ratios is explained. The sample contained one thousand firms and studies seven years of data. Dempsey and Laber (1992) use the exact same structure, although slightly less companies are studied (968). Dempsey and Laber (1992) compare their results with the results from Rozeff (1982) and find lower payouts, higher systematic risk, fewer shareholders and lower indicated growth. Both Rozeff (1982) and Dempsey and Laber (1992) show that the model used has a high R-square (0.48 and 0.41) and

all the coefficients are significant at the one per cent level. Studying these two papers, we can conclude that the model provides both high explanatory power and stability over time. Thus the significance of the model suggests that agency costs and transaction costs are significant factors to explain dividend payout.

When studying the effect of agency costs on payout, Holder, Langrehr and Hexter (1998) draw the following conclusions regarding used proxies for agency costs. They find that a greater degree of insider ownership is negatively related to payout, that the number of shareholders is positively related to the payout ratio and that free cash flow is positively related to payout ratios. Also, when studying transaction costs, Holder, Langrehr and Hexter (1998) find that firms with higher standard deviations of returns and higher sales-growth firms have lower payout ratios. Interestingly, this study provides support for the free cash flow as a more direct measure for agency costs.

Moh'd, Perry and Rimbey (1995) argue that agency theory offers an explanation for two questions. Agency theory offers an explanation why firms pay dividend, but it also explains how much dividend firms should pay. The empirical research Moh'd, Perry and Rimbey conduct is based on the previously mentioned studies by Rozeff (1982) and Dempsey and Laber (1992), but differs in the following ways;

- Tests are conducted using time-series cross sectional analysis across eighteen years;
- Regression variables are not aggregated, but move through time;
- Instead of using stock betas as a proxy, measures of operating and financial leverage are used in the model;
- The test for an industry effect is conducted directly.

One of the results is that high rates of revenue growth tend to establish lower dividend payouts. Another result is that dividend payout increases when the firm size increases. This result is seen as evidence that larger firms have higher agency costs and relatively lower transaction costs. Although the research by Moh'd, Perry and Rimbey (1995) is slightly different than the one by Rozeff (1982) in the sense that agency theory is also tested within firms across time,

their research adds more evidence supporting agency theory. The last important conclusion to mention from the Moh'd, Perry and Rimbey (1995) paper is that dividend policy is found to be a significant function of firm size, rate of growth, operating/financial leverage mix, intrinsic business risk and ownership structure. Also evidence is provided that states that firms do appear to minimize the sum of agency costs toward an optimum level of dividend payout.

As the previously discussed papers show, the model by Rozeff (1982) is very important for empirical studies on agency theory and dividend policy.
This is no different in the study by Manos (2003). Manos (2003) takes the central idea from the Rozeff (1982) study, that is the so called five factor model.
Manos (2003) puts this model to use in a study on Indian firms, to see if the conclusions from the Rozeff (1982) study also hold for Indian firms. Although the cost minimization model by Rozeff (1982) is the basis for most studies regarding dividend policy and especially agency and transaction costs theory, the model has been adjusted through time. We can divide the adjustments of the cost minimization model in three different categories, according to Manos (2003);

1. Simple modifications; for instance adding new variables to the model;
2. More fundamental modifications; these adjustments capture new aspects of dividend policy;
3. Studies that focus on specific factors for a better understanding of agency theory.

Examples of studies that research simple modifications of the cost minimization model are Lloyd et al (1985) and Schooley & Barney 1994). More fundamental modifications of the cost minimization model are put in effect in papers by Moh'd et al (1995) and Holder et al (1998). Examples of studies that focus on specific factors for a better understanding of agency theory are papers by Hansen et al (1994) and Rao & White (1994). Rao & White (1994) for example, focus on private firms instead of public firms. Manos (2003) notes that all the previously mentioned studies (Lloyd et al (1985); Schooley & Barney (1994); Moh'd et al (1995); Holder et al (1998); Hansen et al (1994) and Rao & White (1994)) focus on US firms, and that the results may not necessarily apply for Indian firms, as is suggested by Samuel (1996). Samuel (1996) finds empirical results for the

hypothesis that agency problems in India are less severe that in the United States. Manos (2003) concludes that the agency theory, as formulated by Easterbrook (1984) and modelled by Rozeff (1982), is supported by the empirical results of his research. He notes that relationships between variables are more complex than assumed in previous research. Another point that may be important for this thesis is the implication that government intervention increases conflict of interests within a firm and therefore influences the dividend policy decision. Manos (2003) suggests that an important determinant for the firm's target payout ratio is the percentage of shares held by central and state government.

La Porta (2000) also studies dividend policy and agency theories. Using a cross sectional analysis of more than 4000 firms from 33 countries, La Porta (2000) tries to understand some of the key elements of the agency problems regarding dividend policy. Using data from 33 countries, La Porta also investigates whether a factor that varies in different countries, such as legal issues, can explain the differences between dividend policies. Legal issues in this case are a conflict of interest between corporate insiders, such as managers and controlling shareholders and outside investors. An insider is a term that is interpreted differently in countries. A general and simple explanation of the problem is as follows. Corporate insiders are able to make decisions that benefit them as a shareholder of the firm. However, this may not need to be the best decision for outside investors. Thus, insiders are able to serve their own interest, while not doing what is best for outside investors and all shareholders of the firm. Typical insiders are of course board members and members of the supervisory board. A solution to this problem is simple; make up laws that prevent this behaviour. Lopez-de-Silanes and Shleifer (1999) point out that legal protection of outside investors differs between countries. Because legal issues influence, and tell something about agency costs, shareholder protection is used as a proxy for agency problems in this paper. Empirical results of the La Porta (2000) paper suggests that the agency approach is highly relevant for a good understanding of dividend policies across different countries. La Porta (2000) concludes that firms in countries with better protection of minority shareholders pay higher

dividends and that fast growth firms pay lower dividend than slow growth firms. Another interesting conclusion is that La Porta (2000) finds no conclusive evidence for a tax effect on dividend policies.

Belden, Fister and Knapp (2005) conduct a study on the effect of outside directors on dividend policy. The results show that companies with more outside directors pay higher dividend, which in effect reduces agency costs. Thus, according to Belden, Fister and Knapp (2005) the results justify changing regulation to require more outside board members, since outsiders can be an instrument in reducing agency costs.

Signalling

Fairchild (2010) provides a study with recent empirical results on the dividend signalling model and the free cash flow theory. The model Fairchild (2010) provides is worth mentioning, since its purpose is to develop a model in which two different hypotheses, namely the agency theory and the free cash flow theory, are integrated in one model. Although literature provides different models for both theories (Easterbrook; 1984, Jensen; 1986, Fluck; 1995), a model that integrates both theories did not exist, up to this paper.
Free cash flow theory suggests that dividend policies address agency problems between managers and outside investors. Results show that high dividends may have a positive effect on firm value, both by providing a positive signal and by reducing free cash flow problems. In addition, when good NPV investments are available, Fairchild (2010) shows that a high dividend payout may be value reducing, which provides evidence for the free cash flow hypothesis. Dividends in the model by Fairchild (2010) served two purposes: they signal current earnings, and affect the ability of the company to invest in new projects. An obvious conclusion from these results is that dividends may provide confusing signals. To be more specific, in this model a dividend increase is seen as favourable, since the increase gives a positive signal of the current income, but is also interpreted as a negative signal, since the firm may lack good investment

opportunities. This may come as no surprise, since the model combines two contradictory theories in one model.

Hand and Landsman (2005) analyse if dividends are a simple proxy for publicly available information that helps to predict future abnormal earnings, or signals that management has private information. The empirical evidence does not support both hypotheses. Empirical evidence does suggest that dividends are positively priced because they are a proxy for mispricing of current earnings and/or book equity by investors. According to Hand and Landsman (2005), the empirical results in this research point to an anomaly.

Goddard, McMillan and Wilson (2006) study firms in the United Kingdom. The research studies dividend smoothing and dividend signalling. Dividend signalling is discussed before, however, dividend smoothing is a theory not yet discussed in this section. Dividend smoothing is when dividends are kept relative to earnings per share. Taking all empirical results in account, the results of the study show that neither the dividend smoothing nor dividend signalling theory is supported. Not a single hypothesis regarding the determination of dividends and the predictive quality of dividends for earnings and prices dominates, resulting in inconclusive results.

Li and Zhao (2008) analyse the relation between firm dividend policy and asymmetric information. The results casts doubts on the validity of signalling models. Noted is a weak negative relation between repurchases and measures of information asymmetry.

Trade off and pecking order theory

Fama and French (2002) test the trade off theory and the pecking theory. According to their empirical results, on many issues there is no conflict between the models used for both theories. For example, both models predict that more profitable firms have higher dividend payout ratio, and that firms with more investments have a lower payout. Evidence is provided which shows that firms

with more investments have less market leverage. Fama and French (2002) also observe a positive relation between leverage and firms size, and between dividend payout and firm size. According to the empirical results, Fama and French (2002) state that long-term dividend policy conforms to the Lintner (1956) model and that support for the pecking order model is provided, in line with the previous study by Fama and French (2001). To be conclusive, a small part of the trade-off theory is not supported (negative relation between leverage and profitability), an important part of the pecking order theory is not supported (large equity issues of small low-leverage firms) and one section is inconclusive about both theories.

Future earnings growth

Arnott & Asness (2003) conclude that historically low payout ratios lead to low earnings growth. They find statistically strong and robust evidence to support this conclusion.

Zhou and Ruland (2006) investigated the relationship between current dividend payout and future growth in earnings at an individual company level. Zhou and Ruland (2006) where motivated by the previously discussed paper by Arnott and Asness (2003). In contrast to most empirical literature, Arnott and Asness (2003) found a positive relation between the current dividend payout ratio and the future earnings growth. The results from Zhou and Ruland (2006) are in line with the conclusions form Arnott and Asness (2003); high dividend payout is related to high future earnings growth. Hereby, more recent literature that examines the relation between dividend payout and future earnings growth shows a positive relation.

Industry effects

Dempsey, Laber and Rozeff (1993) published a paper that tests for industry effects after controlling for other firm-specific factors that are known to influence dividend payout. For example, Lintner (1956) proposes an industry

related leadership hypothesis. Dempsey, Laber and Rozeff (1993) compare their results with the five-factor model by Rozeff (1982). Dempsey, Laber and Rozeff (1993) find that industry affiliation complements, rather than substitutes, the agency and transaction cost variables in Rozeff's (1982) model. However, though the industry effects add significant explanatory power to Rozeff's five-factor model, specific industry effects that significantly differ from zero are scarce. Five industries out of 42 are found to be significant and persistent and ten industries out of 42 are found to be significant but not persistent. These results suggest that the five-factor model by Rozeff (1982) does not fully capture the systematic influences on the payout decisions. However, Dempsey, Laber and Rozeff (1993) note that their findings seem to be more consistent with a proxy misspecification in the five factor model than provide evidence for the industry related dividend hypothesis by Lintner (1956).

Corporate ownership

Barclay, Holderness and Sheehan (2010) study corporate shareholders and corporate blockholders in particular. They find that corporate blockholders are two times more likely to be found in firms that do not pay dividends than in firms that do pay dividend. Another conclusion is that the ownership of corporate blockholders is not clustered around the levels that offer tax benefits for cash dividends. The conclusion by Barclay, Holderness and Sheehan (2010) that investors do not appear to have a tax preference for cash dividends is in line with the conclusions from Brav et al (2005). Brav et al (2005) state that the tax situation of large shareholders does not influence the dividend policy of the firm, since top financial officers state that they do not consider the tax situation when making their dividend decisions.

Dividend payout

Holder, Langrehr and Hexter (1998) conclude that corporate focus is negatively related to dividend payout ratios, according to their empirical results. Firms with fewer lines of business (so called "focused firms") tend to have lower dividend

payout ratios. Another conclusion is that large firms have a higher dividend payout than smaller firms.

Fama and French (2001) find that the nature of publicly listed firms changed in the period from 1978 till 1999. Over time, characteristics of publicly listed firms on the NYSE, AMEX and NASDAQ shifted towards typical characteristics of non-dividend paying firms. Typical characteristics of non-dividend paying firms are small size, low earnings and large investments relative to earnings. Fama and French (2001) argue this shifts explains, in part, the decline in dividend paying firms from 1973 till 1999. Another, more interesting result of their study is that given the firm characteristics, firms are less likely to pay dividends, measured over the same time period. Important to note is that the effects of changing characteristics and propensity to pay varies among the studied dividend groups.

DeAngelo, DeAngelo and Skinner (2004) compare dividend payments in 1978 and 2000 and examine the differences. The paper reports that dividends from industrial firms are highly concentrated and that this concentration has increased over the examined time period. Less firms pay dividends, but aggregate real dividends have increased. This combination reflects a high and increased earning concentration. DeAngelo et al (2004) mention two important reasons for the decrease in dividend paying firms. The first and most important reason is acquisitions. Almost 60% of the firms that paid dividend in 1978 and do not pay dividends in 2000 are delisted because of acquisitions. The second reason is financial distress. Payout ratios seem to remain the same over time, with very small differences. Also, evidence suggests that the type of industry seems important for dividend payout. For example, the industrial sector rewards shareholders with high dividends, while technology firms with high earnings do not seem to payout dividends quite as much. Results also raise questions about the importance of dividend clientele and signalling theories. Other important results show that high earning firms almost always tend to pay dividends, except for the previously mentioned technology firms and that large firms almost always pay dividends. Final conclusion of the DeAngelo (2004) paper is that major changes took place in corporate payout in the last

25-50 years. This paper states that the development of dividends for the period 1978 till 2000 shows a high and increasing level of dividend concentration.

Ferris, Sen and Yui (2006) study the dividend payouts in the United Kingdom. The reason for this research is that Fama and French (2001) studied the dividend payout of US firms, and concluded that there was a significant reduction in the number of firms paying dividends. Ferris, Sen and Yui (2006) examine if the same is true for firms in the United Kingdom. The result differs from Fama and French's (2001) results in two ways. First, firms in the United Kingdom did not decrease their dividend payouts as much as US firms. Second, the propensity to pay did not decline as much as in the US and the decline was not as lengthy as in the US. Interestingly, Ferris, Sen and Yui did not find any evidence that the change of tax law in the United Kingdom in 1997 influenced dividend payouts. The final conclusion of their study is that the results provide evidence for the hypothesis that the demand by investors is what drives dividend payout decisions.

Banerjee, Gatchev and Spindt (2007) provide evidence that firms with less liquid stocks are more likely to pay dividend, even when controlled for firm characteristics. They also find that firm size, growth opportunities and profitability do not fully explain the declining amount of dividend paying firms on the US stock market.
One final, and important, conclusion from the paper by Banerjee et al (2007) is that, according to the empirical results they provide, cash dividend payments and stock market liquidity are viewed as substitutes from an investors point of view.

Surveys on dividend policy

Contrary to most empirical studies on dividend policy, which usually studies share price reactions or surveys corporate executives for their point of view, Dong et al (2005) focus on individual investors. Dong et al (2005) survey individual investors and the main focus of the survey was why they want to

receive dividends and if they prefer cash or stock dividends. The results show that individual investors have a strong preference to receive dividends. When a company is not able to pay cash dividends, individual investors prefer to receive stock dividends instead of no dividend at all. Part of the preference for receiving dividends is because of transaction costs. Surprisingly, and contrary to many empirical studies, no support is found for the agency theory by Easterbrook (1984). However, Dong et al (2005) find strong support for signalling theories by Bhattacharya (1979) and Miller and Rock (1985).

Chiang, Frankfurter, Kosedag & Wood Jr. (2006) conduct a survey among professional investors to discover the perception of dividends by professional investors. From their point of view, most academics play a losing game by doing empirical research based on market data. Main point of critique is that data are always "yesterdays' news". Therefore, it is possible that different results for the same hypothesis are found. This is why Chiang et al (2006) conduct a survey; this way professional investors can actually tell their perception of dividends, instead of drawing conclusions from market data, which in fact are old news and can also be inconclusive. Chiang et al (2006) further note that empirical research based on market data is important since it shows the temporal nature of dividends. Important conclusions from the survey (the statements with the strongest consensus are used) are that signalling theory is supported, since respondents agree with the statement that an increase of dividends sends a message of financial strength. It seems, based on results from another statement, that this is not the perception of professional investors, but that professional investors think this is the way the market behaves. Almost 50% of the respondents state that they do not consider dividends to be an important source of information for their investment decision.

Taking all previously discussed studies into account, it is hard to come to a final conclusion or final expectation regarding dividend policy that corresponds with the literature. Since de Haan (1995) is the only paper that studies the dividend policy of Dutch firms specifically, expectations can best be based on this research. Of course, general trends in dividend payout, as discussed in the

dividend payout section, need to be considered. In the next section the dataset and methodology is discussed.

3. Data and Methodology

In this section the dataset will be described and subsequently the methodology will be explained. Since the data and methodology is different for the dividend payout and the speed of adjustment, this section is split into two sections. Firstly, the data and methodology for dividend payout is discussed. Secondly, the data and methodology for the speed of adjustment are discussed.

Dividend payout ratio

The main question in this thesis is; what is the dividend policy of Dutch public companies? Therefore, it is important to define inclusion criteria of Dutch public companies to be included in the dataset. This thesis studies data collected in a period of ten years. Firms are included when they were active and publicly listed in the period from 2001 till 2010. Compustat is used to derive a list of firms that were active during this period and were listed on the AEX, AMX or AscX.
Financial firms are excluded from the list. Financial firms, like banks or insurance companies, have a different financial structure than non-financial companies. Therefore it is to be expected that the dividend payout will differ significantly from non-financial firms and will influence the results.
Within the stated period of ten years, data of the companies must be available for six consecutive years. Most companies that do no meet this criterion were publicly listed in 2000 and delisted in 2001 or 2002, and therefore have no value for this study. The sample of firms after this selection procedure is 104 companies.

The next step is to determine the model and to define the variables that will explain the dividend payout and thus the dividend policy. Since this section discusses the dividend payout ratio, the variable to be explained is the dividend payout. This thesis only covers the payout of cash dividends. Although excluding stock dividends could lead to an underestimation of the total dividends, stock dividends are excluded due to possible measurement problems. According to Berk and DeMarzo (Berk and DeMarzo; Corporate Finance; p. 560), stock

dividends of 50% or more are generally referred to as stock splits. The average dividend payout ratio is defined as the sum of the total cash dividends divided by the sum of the positive net incomes. Negative values for net income influence the dividend payout ratio in an undesirable manner. Not excluding negative values could lead to a negative payout ratio for a certain year, which is not possible. Again, this definition is in line with de Haan (1995) and Rozeff (1982).
In the review section of this paper, most studies use the model of Rozeff (1982) to determine the dividend payout ratio. The model used by de Haan (1995) is also based on this model, however some adjustments are implemented. The model de Haan (1995) uses in his paper is as follows;

(1) $$PAYOUT = b_0 - b_1 VOL - b_2 INTBUR + b_3 TOBINSQ - b_4 GROWTH - b_5 BETA - b_6 LARGESHARE - b_7 INS + b_8 INST + b_9 SIZE + b_{10} IND$$

PAYOUT = average payout ratio in ten years
VOL = volatility of the profits
INTBUR = interest burden
TOBINSQ = Tobin's Q
GROWTH = average sales growth in sample period
BETA = beta coefficient of the company
LARGESHARE = percentage of common shares owned by large shareholders
INS = percentage of common shares owned by insiders
INST = percentage of common shares owned by institutional investors
SIZE = natural logarithm of the average sales in the sample period.
IND = the type of industry the firm is in (using dummy variables)

Important is that this model contains more explanatory variables in comparison to the model of Rozeff (1982). The volatility of the profits, the interest burden, percentage of common shares owned by large and institutional shareholders, firm size and type of industry are added to the original five factor model. Tobin's Q proxies for the forecasted future growth, and therefore is not a new variable. This model uses an ordinary least squares regression. The values of the payout ratio, interest burden, growth and size are averages of the sample period. Tobin's Q is calculated using the last available year in the sample period, since it is a proxy for future earnings growth. Beta is calculated using the last five

available years in the sample period. The percentage of common shares owned by large shareholders, insiders and institutional investors is calculated in the last year of the sample period. Ownership information is only available for the last year in the sample period. Companies that were not publicly listed in 2010 therefore have no ownership information and are excluded from the dataset.

Thomson One Banker is used as source for information, using Worldscope as source for determination of the beta's and financial information. The ownership report section in Thomson One Banker is used to determine the percentage of common shares owned by large shareholders, insiders and institutional investors. Large shareholders own five percent or more of the common shares. Insiders are members of the executive team or supervisory board. Institutional investors are for example mutual funds, pension funds, hedge funds, insurance companies and investment banks. The volatility of the profits is determined by taking the standard deviation of the profits in the sample period. The interest burden is calculated by dividing the interest expenses by the earnings before interest and taxes of each year in the sample period and subsequently taking the average of those years. Tobin's Q is calculated in the last available year of information in the sample period. The last year is used since Tobin's Q should proxy for future growth; therefore it would not make sense to take an average of the sample period. Tobin's Q is calculated using the following formula;

$$(2)\ Tobin's\ Q = \frac{(Market\ value\ equity + Liabilities\ book\ value)}{(Book\ value\ equity + Liabilities\ book\ value)}$$

To be able to perform a useful regression using firm size, the natural logarithm of the average sales in the sample period is taken. Using absolute values will cause a very large difference between firms. Taking the natural logarithm of the average sales in the sample period is necessary, since the differences in average sales are very large and therefore not usable as proxy for firm size. Taking the natural logarithm gives useful values for the size of the firms. Primary SIC codes are used to determine the type of industry of the firm. SIC codes consist of four digits. Since almost all companies in the sample have different four digit SIC codes, only the first two digits are used. The effect is that industries are more

generalized, but also easier to use in the regression analysis. Beta measures the risk of a specific company with regard to the market portfolio. A beta greater than one means that the stock of the firm has a higher risk than the market portfolio. Consequently, a beta smaller than one means that the stock of the firm has a lower risk than the market portfolio.

After calculating the variables, another thirteen companies were excluded from the dataset, either due to missing beta's, ownership information or both. The final dataset for the dividend payout ratio includes observations for 91 companies. The average payout ratio is 31 percent, the median is 30 percent and 23 companies do not pay dividends.

The following table summarizes the hypotheses regarding the variables in the regression analysis.

Table 1: Hypotheses

Variable	**Expected sign**	**Theory supported**
Interest pressure	-	Agency
Large shareholders	-	Agency
Inside shareholders	-	Agency
Volatility of the profits	-	Signalling
Tobin's Q	+	Signalling
	-	Pecking order
Growth	-	Pecking order
Institutional investors	+	Tax clientele effect
Beta	-	Transaction costs
Size	+	Transaction costs

The industry variable is not included in the table, since this variable does not test for a specific theory, but only tests if there is an industry effect.

As discussed in the review, the agency theory represents problems that may arise due to a conflict of interest between the managers and shareholders of the company. Possible solutions for this problem include a high dividend payout ratio. Due to a high dividend payout ratio, the company needs to raise capital on the capital market to finance new investments. The capital market will "judge" the company and this may lead to lower agency costs, since managers are less able to act in their own interest. Therefore it is to be expected that the interest

burden is negatively related to the dividend payout ratio. Companies with high interest expenses will have less capital available to pay dividends. Another effect is that management needs to be as efficient as possible and is less able to act in their own interest.

A small group of large shareholders is more able to assure that management acts in the best interest of the shareholders, than is the case when shareholders are widely spread. Therefore it is to be expected that the percentage of common stock owned by large shareholders is negatively related to the dividend payout ratio, since a high dividend payout is not necessary to monitor management.

A large percentage of stock owned by insiders means that shareholders and management are the same; therefore a high dividend payout ratio is not needed to enable management to act in the best interest for shareholders. To support agency theory, a large percentage of stock owned by insiders should be negatively related to the dividend payout ratio.

A high dividend payout ratio can signal a positive future earnings growth to the market. In order to support signalling theory, volatility of the profits should be negatively related with the payout ratio, since high volatility does not reflect a stable earnings growth. Positive future earnings growth however, should lead to a higher dividend payout, according to Zhou and Ruland (2006) and Rozeff (1982). Tobin's Q, the proxy for future earnings growth, must be positively related to the payout ratio in order to support signalling theory.

If Tobin's Q is negatively related to the payout ratio, the pecking order theory is supported. Pecking order theory states that a company uses available capital as much as possible for internal financing. As a result, companies try to avoid funding positive investment opportunities with external capital as much as possible. High growth firms on average have more positive investment opportunities and therefore need more capital. In order to support pecking order theory it is to be expected that high earnings growth and high expected future earnings growth are negatively related to the payout ratio. Fama and French (2002) for example find evidence that supports pecking order theory.

Institutional investors have to pay a different tax percentage than individual investors, according to de Haan (1995). Institutional investors are subject to corporate taxes ('vennootschapsbelasting' in Dutch), while individual investors

are subject to income taxes. It is to be expected that investors with a low marginal tax rate are more interested in dividend paying shares than investors that are subject to a high marginal tax rate. To study this hypothesis, the percentage of common shares owned by institutional investors is used. Institutional investors are subject to lower taxes than individual investors, and therefore it is possible to study if this difference in tax rates influences the average dividend payout ratio. Since we assume that institutional investors are subject to a lower tax rate, it is expected that institutional investors are more interested in shares with a high dividend payout ratio than investors with a high marginal tax rate. A positive sign in the regression is therefore expected.

High transaction costs makes dividend payout more expensive and therefore less attractive. Although it is difficult to measure these costs, Rozeff (1982) and de Haan (1995) use the beta and the size of the company as a measure for the transaction cost theory. De Haan (1995) states that according to Crutchley and Hansen (1989) issue costs are high for small companies with relatively risky stocks. When issue costs are low, it is relatively more attractive for a firm to payout dividend. Issue costs are assumed to be high for small companies, making it less attractive for small companies to payout dividends. As a result, a positive relation between firm size and dividend payout is expected. Also, issue costs are assumed to be high for firms with relatively risky stocks. Therefore a negative relation between beta and dividend payout is expected.

The last variable, not included in table 1, is the industry variable. To test for an industry effect, dummy variables are constructed using the first two digits of the primary SIC code of the company. Both de Haan (1995) and Dempsey, Laber and Rozeff (1993) find evidence that supports the existence of an industry effect.

Dividend adjustment

Although most theories regarding dividend policy are studied in the previously discussed model, the speed of adjustment of the dividends is also of interest. To explain the speed of adjustment, it is necessary to use a panel data model. Using a panel data model, it is possible to understand the effect of both time and company on the adjustment of dividends. The equation in model (1) only explains the difference in payout between companies. De Haan (1995) uses a model defined by Lintner (1956). Fama and French (2002) for example also use this model, and it is regarded as a simple but effective model. The model is defined as follows:

$$(3)\ \Delta D_{it} = a_1 W_{it} + a_2 D_{i,t-1} + a_{0i} + a_{0t} + \varepsilon_{it}$$

$t = 2002, \ldots\ldots, 2010$

i = 1,……., 61

ΔD_{it} = Actual change of the dividend

W_{it} = Profit divided by the total assets

$D_{i,t-1}$ = Actual dividend in year t-1 divided by the total assets

a_{0i} = Company effects

a_{0t} = Year effects

At least five positive values for the variables must be available for the inclusion of a company. Positive values are necessary because although profits can have negative values, actual dividend payment can never be negative. Therefore, many negative values could influence the regression results. As a result of calculating the actual change of dividends (ΔD_{it}) the year 2001 is excluded from the dataset. After the selection procedure 61 companies are included in the sample. Model 4 states that the changes in dividends depend on the profit of that year and the actual dividend in the previous year. Time effects and company effects are also included; this is possible due to the panel data structure.

If profits are negatively related to the actual dividend payout, pecking order theory is supported. If, for instance, a company has high profits and does not change the dividend payout accordingly, we can conclude that the company uses these higher earnings for financing positive value investments. Therefore the

company has a preference for internal capital to finance new investments, exactly what pecking order theory states. Signalling theory states that companies can signal positive future earnings using dividend payout as a positive signal. However, companies only tend to raise dividend payout if it is certain that these higher payouts can be sustained in the future, since lowering dividends sends a negative signal to the market.

Concluding, when a company has higher profits, but does not raise the dividend payout accordingly, this points to a dividend stabilization policy.

4. The payout ratio; results

After calculating the variables, an ordinary least squares regression is performed. Due to readability, the dummy variables that test for an industry effect are not included in table 2. However, they are included in table 5 in the appendix. Using Eviews as software for this analysis, the following results are given as output.

Table 2: Regression output average payout ratio

Dependent Variable: PAYOUT Method: Least Squares Included observations: 91					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	Theory supported
C	0.072373	0.127929	0.565728	0.5740	
BETA	-0.191480	0.050972	-3.756.540	0.0004***	Transaction costs
GROWTH	0.081639	0.089094	0.916321	0.3636	
INS	-0.353533	0.156358	-2.261.044	0.0279**	Agency costs
INTBUR	0.094763	0.011323	8.368.750	0.0000***	
LARGESHARE	0.081232	0.083564	0.972090	0.3354	
SIZE	0.031552	0.010254	3.076.892	0.0033***	Transaction costs
VOL	-0.012461	0.002211	-5.635.963	0.0000***	Signalling
TOBINSQ	0.055444	0.010708	5.177.902	0.0000***	Signalling
INST	-0.214315	0.075165	-2.851.256	0.0062***	
R-squared	0.804365	Mean dependent var		0.310573	
Adjusted R-squared	0.667790	S.D. dependent var		0.268061	
S.E. of regression	0.154504	Durbin-Watson stat		1.974.315	
Sum squared resid	1.265.195				
F-statistic	5.889.535				
Prob(F-statistic)	0.000000				

* = Significant at 10% level
** = Significant at 5% level
*** = Significant at a 1% level

When studying the output, the first conclusion is that the variables growth and largeshare are not significant at a ten percent level. The variable for the percentage of common shares owned by insiders is significant at a five percent level. Furthermore, if the significance level is lowered to one percent, it is clear that beta, interest burden, size, volatility of the profits and Tobin's Q are significant. The adjusted R-square is 0.67 and is expected for this type of

research. De Haan (1995) for instance finds an R-square of 0.62, while Dempsey and Laber (1992) report an R-square of 0.41.

To study the results more carefully, several extra tests are performed.

The first test is the White test for heteroskedasticity. The results are in table 6 in the appendix. The null hypothesis is not rejected. Therefore no significant evidence is provided to support heteroskedasticity.

Secondly a test for serial correlation is performed, using the Breusch-Godfrey test. The null hypothesis of no serial correlation is not rejected. Thus there is no significant evidence for serial correlation. The test results are showed in table 7 in the appendix.

Another assumption is that the residuals are normally distributed. To test for normality the Jarque-Bera statistic is used. The results, including the histogram are included in the appendix, table 8. There is no significant evidence for non-normality.

To examine whether the significant variables in this model hold, a forwards stepwise regression is performed using a five percent significance level. The results are in table 9 in the appendix. The stepwise regression procedure selects the most significant variables first and removes variables if they do not remain significant when other variables are added. Interestingly, this procedure leads to the exclusion of the size variable, which is significant in table 2. Four dummies that test for an industry effect also remain significant. The variable growth is significant in the stepwise regression, but not in table 2. The other variables hold and the adjusted R-square is 0.66.

The previously discussed tests suggest that the regression output is valid. The stepwise regression procedure shows that one variable that is significant in table 2, is not robust. The variable growth is significant in the forwards stepwise regression, but not in table 2. Consequently, this suggests that the variable growth is not robust. When the results from table 2 are compared to the results from de Haan (1995), four variables that were not significant in his paper are significant in this research. These four variables are the beta of the company, the percentage of shares owned by insiders, the size of the firm and the percentage of shares owned by institutional investors. Important to note is that the output from the stepwise regression suggests that the size variable is not robust.

The positive relation between the interest burden and dividend payout does not support the agency theory. This was not the case in the paper by de Haan (1995). The beta coefficient has the expected negative sign, and therefore the transaction cost theory is supported. Agency theory is only supported by the negative sign of the insider variable. Other variables that could provide evidence for the agency theory are not significant. Although firm size is significant in table 2, the results of the performed stepwise regression show that it in fact is not a robust variable. This leads to the conclusion that firm size does not provide robust evidence for the support of transaction cost theory.

Signalling theory is fully supported by the negative sign of the volatility of the profits variable and the positive sign of Tobin's Q. Due to the positive sign of Tobin's Q, there is no evidence that supports pecking order theory.

The percentage of shares owned by institutional investors is negatively related to the dividend payout and significant at a one percent level. This outcome does not provide evidence for the existence of a tax clientele effect as formulated in table 1.

There appears to be an industry effect, since nine industry dummies are significant at a five percent level. The stepwise regression suggests that four of the industry dummies are robust at a five percent level. In the paper by Dempsey and Laber (1993) five out of 42 dummy variables are significant. The results in table 5 show that eleven out of 28 dummy variables are significant at a ten percent level, nine dummies are significant at a five percent level and six dummies are significant at a one percent level.

Concluding, there is significant evidence that supports the transaction cost theory and signalling theory. Agency theory is supported by the percentage of shares owned by insiders, but not by interest pressure. This leads to the conclusion that agency theory is not fully supported in this research. The negative relation between the percentage of common shares owned by institutional investors and the dividend payout ratio does not provide evidence for the tax effect hypothesis. The results differ from the results by de Haan (1995). De Haan provided strong evidence for both the agency theory and pecking order theory. Therefore we can conclude that the dividend payout policy of Dutch public companies over the last thirty years has changed.

5. Dividend adjustment; results

The panel least squares regression for model (3), provides the following results.

Table 3: Regression output speed of adjustment

Dependent Variable: Delta Dividend Method: Panel Least Squares Sample (adjusted): 2003 2010 Periods included: 8 Cross-sections included: 61 Total panel (unbalanced) observations: 381				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.655.883	2.064.696	1.286.331	0.1991
DIV(-1)	-1.511.299	7.926.778	-1.906.575	0.0573*
PROFIT	2.702.185	5.219.822	0.517678	0.6050
Year Effect	-0.000362	0.000282	-1.282.973	0.2003
Company Effect	0.008547	0.012402	0.689152	0.4912
R-squared	0.020594	Mean dependent var	0.647506	
Adjusted R-squared	0.010174	S.D. dependent var	4.220.043	
S.E. of regression	4.198.520	Durbin-Watson stat	1.684.897	
Sum squared resid	6.627.966			
F-statistic	1.976.494			
Prob(F-statistic)	0.097434			

* = Significant at a 10% level

** = Significant at a 5% level

*** = Significant at a 1% level

Regarding the output in table 3 only one conclusion is possible; none of the variables are significant at a five percent level and the adjusted R-square is very low. The model has no significant explanatory power whatsoever. This differs from the results by de Haan (1995). The R-square of his panel least squares regression is 0.35 and the only variable that was not significant was the year effect. Although the actual dividend in year t-1 is significant at a ten percent level, the model does not offer a good fit.

To examine if the dividend payout in the previous year and the profit of the current year are significant explanatory variables for the change in dividend

payout when company and year effects are fixed, a new regression is performed. Since this is a panel data model, we can fix the year and company effects. This new regression gives the following results.

Table 4: Regression output speed of adjustment 2

Dependent Variable: Delta Dividend Method: Panel Least Squares Sample (adjusted): 2003 2010 Periods included: 8 Cross-sections included: 61 Total panel (unbalanced) observations: 381				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.312.792	0.777172	2.975.909	0.0032***
DIV(-1)	-3.615.881	1.356.847	-2.664.914	0.0081***
PROFIT	-7.587.206	8.430.151	-0.900008	0.3688
Effects Specification				
Cross-section fixed (dummy variables) Period fixed (dummy variables)				
R-squared	0.279265	Mean dependent var	0.647506	
Adjusted R-squared	0.119359	S.D. dependent var	4.220.043	
S.E. of regression	3.960.192	Durbin-Watson stat	2.164.385	
Sum squared resid	4.877.451			
F-statistic	1.746.435			
Prob(F-statistic)	0.000764			

* = Significant at a 10% level

** = Significant at a 5% level

*** = Significant at a 1% level

The actual dividend in year t-1 is a significant variable. The adjusted R-square is still very low, with a value of 0.12. The coefficient is strongly negative, which suggests that a high dividend in the previous period leads to a low change in the actual dividend. However, the very low R-square of 0.12 indicates that this model is not a good fit. There are many other factors that influence the change in dividend payout, even when the model is controlled for year and company effects. Thus, there is no conclusive evidence that the amount of profits explain the change in dividend payout. The model in table 4 offers a higher adjusted R-square and the dividend payout is a significant variable.

However, the fit of the model is still very low, with an adjusted R-square of 0.12. It is clear that both models are not able to explain the speed of adjustment of the dividends.

6. Discussion

The present study replicated the study of de Haan (1995) on dividend policy of Dutch public companies. The results in the dividend payout section differ from the results by de Haan (1995). The agency theory is not fully supported, in contrast both the signalling and the transaction cost theory are. It is worth noting that more variables are significant in this research than in the de Haan (1995) paper. The adjusted R-square for the dividend payout ratio model is 0.67. De Haan (1995) for example finds an R-square of 0.62. The model as stated in equation (1) still offers a good explanation for the dividend payout ratio. Tests for heteroskedasticity, serial correlation and normality of the residuals confirm the validity of the model. Six variables in equation (1) are significant at a one percent level, one variable at a five percent level. One variable is not robust, taking the results from the forwards stepwise regression into account. Eleven dummy variables that test for industry effects are significant at a ten percent level, nine dummy variables are significant at a five percent level and six dummies are significant at a one percent level. The stepwise regression suggests that four dummy variables are robust. Interestingly, the variable growth is significant in the stepwise regression, but not in table 2. This leads to the conclusion that the output for this variable is not robust. Results also show that the dividend payout ratio did not change much over time. De Haan (1995) reported an average payout ratio of 32%. The sample in this research shows an average payout of 31%. No evidence is provided that the dividend payout ratio has decreased the last thirty years.

This thesis studies the dividend payout ratio of 91 companies. The sample therefore is smaller than the 113 companies studied by de Haan (1995), while the same criteria are used. It could be worth investigating what the reason is for the decrease of the sample in the Netherlands. A possible explanation could be found in acquisitions, as stated by DeAngelo et al (2004).

Regarding the speed of adjustment, the proposed panel data model neither offers a good explanation nor are the variables significant. When the model is adjusted and both time and company effects are fixed factors, the model in table 4 shows a higher adjusted R-square and one variable becomes significant at a five percent

level. However, with a value of 0.12 for the adjusted R-square, it is clear that this model does not offer a good fit to explain the speed of adjustment. It is surprising that a model with the dividend in the previous year and the profits as explanatory variables for the change in dividends has such a low explanatory power. It would be valuable to study which factors do influence the adjustment of dividends in further research. In this research, using the model for dividend payout ratio, it is possible to answer the main research question. Although the speed of adjustment is part of the dividend policy, this thesis cannot provide conclusive evidence regarding that subject.

7. Conclusion

What is the dividend policy of Dutch public companies?
This thesis provides empirical evidence that supports the signalling theory and the transaction cost theory. Dutch public firms increase dividend payout to signal positive future earnings growth. This statement is supported by the negative relation between the volatility of the profits and the dividend payout ratio and the positive relation between Tobin's Q and the dividend payout ratio. Transaction costs have a significant influence on the dividend payout ratio of Dutch public firms. Support for the transaction cost theory is provided by the negative relation between beta and the dividend payout ratio and the positive relation between the size variable and the dividend payout ratio. The agency theory is not fully supported, but the percentage of shares owned by insiders is negatively related to the dividend payout ratio, suggesting that one proxy for agency theory is significant. Furthermore, there appears to be an industry effect, although not all dummy variables are significant. Nine industry dummies out of 28 are significant. There is no evidence for the existence of a tax clientele effect, due to a negative relation between the percentage of shares owned by institutional investors and the dividend payout ratio. Comparing the average payout ratio in the sample in this thesis with the sample of de Haan (1995), the average payout ratio did not change over the last thirty years.
Concluding, the proposed model that should explain the speed of adjustment of dividend payout does not provide a good fit. The variables in the model are not significant and the adjusted R-square is low. Adjusting the model shows that the actual dividend payout in the previous period provides a significant explanatory variable for the change in dividend payout, however, the adjusted R-square remains low. Therefore, the conclusion is that this model, even when adjusted, does not offer a good explanation for the change in dividend payout for the sample.

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9. Appendix

Table 5: Regression output with dummy variables

Dependent Variable: PAYOUT Method: Least Squares Included observations: 91				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.072373	0.127929	0.565728	0.5740
BETA	-0.191480	0.050972	-3.756.540	0.0004***
GROWTH	0.081639	0.089094	0.916321	0.3636
INS	-0.353533	0.156358	-2.261.044	0.0279**
INTBUR	0.094763	0.011323	8.368.750	0.0000***
LARGESHARE	0.081232	0.083564	0.972090	0.3354
SIZE	0.031552	0.010254	3.076.892	0.0033***
VOL	-0.012461	0.002211	-5.635.963	0.0000***
TOBINSQ	0.055444	0.010708	5.177.902	0.0000***
INST	-0.214315	0.075165	-2.851.256	0.0062***
DUMSIC13	0.003323	0.003598	0.923715	0.3598
DUMSIC15	0.247028	0.135831	1.818.648	0.0746*
DUMSIC16	0.285467	0.122283	2.334.470	0.0234**
DUMSIC20	0.345475	0.121810	2.836.175	0.0065***
DUMSIC25	0.316836	0.222269	1.425.463	0.1599
DUMSIC26	0.687723	0.183752	3.742.665	0.0004***
DUMSIC27	0.346308	0.119389	2.900.678	0.0054***
DUMSIC28	0.273842	0.116190	2.356.840	0.0222**
DUMSIC30	0.096695	0.154926	0.624138	0.5352
DUMSIC32	0.264599	0.210342	1.257.949	0.2139
DUMSIC33	0.319019	0.183220	1.741.186	0.0875*
DUMSIC34	0.240875	0.189556	1.270.733	0.2094
DUMSIC35	0.123391	0.127506	0.967727	0.3376
DUMSIC36	0.169297	0.129845	1.303.833	0.1979
DUMSIC37	0.123399	0.138641	0.890059	0.3775
DUMSIC38	0.559297	0.141483	3.953.111	0.0002***
DUMSIC39	0.248921	0.191672	1.298.682	0.1997
DUMSIC44	0.151375	0.188090	0.804803	0.4245
DUMSIC45	0.299679	0.185084	1.619.149	0.1114
DUMSIC48	0.165117	0.144538	1.142.373	0.2584
DUMSIC50	0.345013	0.138508	2.490.927	0.0159**
DUMSIC51	0.202179	0.124313	1.626.369	0.1098
DUMSIC54	0.011176	0.182264	0.061319	0.9513
DUMSIC55	0.186442	0.184797	1.008.905	0.3176
DUMSIC57	0.397252	0.144991	2.739.837	0.0084***
DUMSIC73	0.390864	0.109983	3.553.846	0.0008***
DUMSIC79	0.150219	0.213162	0.704717	0.4841
DUMSIC87	0.068973	0.127212	0.542189	0.5900
R-squared	0.804365	Mean dependent var		0.310573
Adjusted R-squared	0.667790	S.D. dependent var		0.268061
S.E. of regression	0.154504	Durbin-Watson stat		1.974.315

Sum squared resid	1.265.195
F-statistic	5.889.535
Prob(F-statistic)	0.000000

* = Significant at a 10% level
** = Significant at a 5% level
*** = Significant at a 1% level

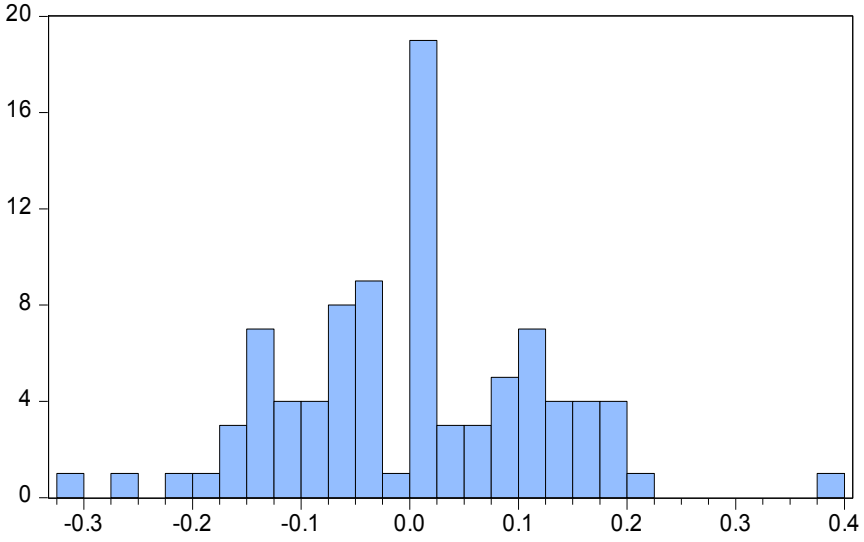
Table 6: White test

Heteroskedasticity Test: White			
F-statistic	0.390274	Prob. F(37,53)	0.9984
Obs*R-squared	1.948.474	Prob. Chi-Square(37)	0.9921
Scaled explained SS	8.081.248	Prob. Chi-Square(37)	10.000

Table 7: Breusch-Godfrey test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.125028	Prob. F(2,51)	0.8827
Obs*R-squared	0.444000	Prob. Chi-Square(2)	0.8009

Table 8: Normality histogram and statistics



Series: Residuals	
Sample 1 91	
Observations 91	
Mean	8.86e-17
Median	1.67e-16
Maximum	0.387270
Minimum	-0.324668
Std. Dev.	0.118565
Skewness	0.182386
Kurtosis	3.445372
Jarque-Bera	1.256613
Probability	0.533495

Table 9: Forwards stepwise regression output at 5% significance level

Dependent Variable: PAYOUT				
Method: Stepwise Regression				
Included observations: 91				
Number of always included regressors: 1				
Number of search regressors: 37				
Selection method: Stepwise forwards				
Stopping criterion: p-value forwards/backwards = 0.05/0.05				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
C	0.347175	0.064877	5.351.279	0.0000

INTBUR	0.090959	0.009656	9.420.349	0.0000
TOBINSQ	0.054729	0.009335	5.862.555	0.0000
BETA	-0.177277	0.039660	-4.469.930	0.0000
DUMSIC38	0.370025	0.082696	4.474.499	0.0000
DUMSIC26	0.467564	0.157901	2.961.128	0.0040
INS	-0.229559	0.093181	-2.463.595	0.0159
VOL	-0.012329	0.001929	-6.390.213	0.0000
DUMSIC73	0.162344	0.045549	3.564.125	0.0006
DUMSIC27	0.157077	0.068079	2.307.286	0.0237
GROWTH	0.023008	0.008422	2.732.034	0.0078
INST	-0.186500	0.062923	-2.963.965	0.0040

R-squared	0.705167	Mean dependent var	0.310573
Adjusted R-squared	0.664114	S.D. dependent var	0.268061
S.E. of regression	0.155357	Durbin-Watson stat	2.169.742
Sum squared resid	1.906.721		
F-statistic	1.717.712		
Prob(F-statistic)	0.000000		

Selection Summary
Added INTBUR
Added GROWTH
Added BETA
Added DUMSIC38
Added DUMSIC26
Added INS
Added LARGESHARE
Added VOL
Added TOBINSQ
Removed GROWTH
Removed LARGESHARE
Added DUMSIC73
Added DUMSIC27
Added DUMSIC20
Added INSTINV
Added GROWTH
Removed DUMSIC20

*Note: p-values and subsequent tests do not account for stepwise selection.