Market Reaction to Announcements of Dividend Increases: Is it Weakening With Time?

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ABSTRACT

This study examines the market's reaction to announcements of dividend increases. In particular, it considers the factors that affect the magnitude of abnormal returns during the days that surround announcements of dividend increases. The objective is to find whether the market reaction to dividend increases has weakened with the passage of time and whether market conditions affect the reaction. Eventually, this study is expected to reveal whether dividends continue to be important to investors.

This research is motivated by the findings of Fama and French (2001). They suggest that since 1978 firms have had a declining propensity to pay dividends. They propose that dividends are declining as a result of the ease by which investors can make homemade dividends through selling small portions of their holdings. They argue that recent market developments, particularly the introduction of negotiated commissions and discount brokers, have made homemade dividends easier and less costly. Their results may suggest that investors are now less interested to receive dividends than in the past. One objective of this study is to examine whether investor's preferences regarding dividend payments have changed over time. This is accomplished by measuring the abnormal returns following announcements of dividend increases. Benartzi, Michaely, and Thaler (1997) suggest that the reaction of the market to dividend increases is an acceptable method of determining the value of dividends to investors.

In addition, this study explores the theoretical factors that may affect dividend valuation. Previous studies, such as Allen, Bernardo and Welch (2000), suggest that the existence of debt holders and institutional investors reduce the potential for agency costs as these stakeholders monitor managers. In contrast, Jensen (1986) suggests that high

cash flows make it easier for managers to spend on perquisites and empire building. Thus, the potential for agency costs increases. Therefore, paying dividends when cash flows are high reduces the likelihood of agency costs. At the same time, Benartzi, Michaely and Thaler (1997) suggest that increasing dividends following higher cash flows signals management's expectation that future performance warrants a dividend increase. Consequently, the agency and signaling theories suggest that investors may react positively to dividend increases when cash flows are high.

Several observations are obtained from this study. First, investor reaction to dividend increases seems to have weakened over time. Second, the reaction is different when the increase is announced in a bear market rather than in a bull market. Third, the market reaction to dividend increases is less in firms that are more liquid. This finding may be interpreted as evidence that dividends are valued less in more liquid firms because it is easier for the investors of these firms to make homemade dividends. Fourth, the magnitude of the reaction is directly related to the increase in trading volume following the announcement.

Surprisingly, the evidence disputes the predictions of the agency cost theory of dividends. This theory states that dividends are valued because they decrease the amount of cash available to management, which in turn decreases the potential for waste. Given this theory, it is expected that firms with high debt loads already have agency costs decreased so the market reaction to their dividend increases would be less than other firms while firms with high free cash flows would have a greater market reaction to their dividend increases because of the large potential for waste on management's part. Instead, the results suggest that firms with high debt loads experience positive market

reaction following dividend increases while firms with large free cash flows experience negative reactions. It seems that the signaling theory of dividends is contributing heavily to this result.

Future research should be directed to investigate the possibility that share repurchases may be replacing dividends as a way to redistribute surplus cash to shareholders. In addition, future studies may focus on the signaling theory of dividends as useful tool to explain the dividend policies of corporations.

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CHAPTER 1

INTRODUCTION

This chapter links the objectives of this research to the current state of knowledge regarding dividends and the theory of the firm. It shows that previous studies do not consider investors' interest in receiving dividends or whether investors' attitude towards dividends is changing over time or varies with market conditions. Given this gap in the literature, the results of this study are likely to increase our knowledge of investors' behaviour towards dividends and whether investors' demand for dividend payments is decreasing over time.

The chapter starts with a brief summary of the research objectives. Section 1.2 summarizes the history of dividend payments that started over 400 years ago in Europe as payoffs from sea voyages. Section 1.3 suggests that the dividend irrelevance propositions of Modigliani and Miller (1961) do not necessarily apply in practice. Many empirical studies suggest that the value of a firm is positively related to the size of its dividend payments as suggested by the dividend discount model. The section goes on to summarize the recent developments in dividend theory and to describe the recent practices. Section 1.4 briefly reviews the literature that serves as the main motivation for this research. It suggests that dividend payments have been changing over time but previous research stops short of considering investors' reaction towards dividend payments. Section 1.5 provides a summary of the main findings of this thesis.

1.1 Research Questions

Extensive research, for example Fama and French (2001), DeAngelo, DeAngelo, and Skinner (2003), and Allen and Michaely (2003), has been done to explain why firms pay dividends, the appropriate dividend policy, and the alternative ways to distribute earnings to shareholders. They report that corporations have changed the ways by which they make distributions to shareholders and the importance they place on dividends.

In contrast, little research has been done to explain the behaviour of investors towards dividends. This study examines whether over time investors have changed their reaction to dividend increases. If the market reaction is weakening over time it means that the investors' demand for dividends is decreasing. Investors, corporate managers, and policy makers would be interested to know whether investors' demand for dividends has changed over time. In addition, this study investigates whether investors' reaction to dividend varies as a function of different market conditions. For example, corporate stakeholders and policy makers may be interested to know whether the reaction of investors to dividend increases during bear market conditions is different from the reaction during bull markets.

1.2 A Brief History of the Evolution of Dividends

Frankfurter and Wood (1997) provide a brief history of how the payment of dividends evolved over time. The first dividends were paid during the 16th century when Sea Captains in Holland and Great Britain began selling financial claims on their voyages. At the end of the voyage the ship along with all of its cargo were sold and the profits, if any, were then distributed proportionally to the different owners of the enterprise. These distributions were essentially liquidating dividends. As time passed these financial claims began trading among different investors, and sea captains with successful track records began to demand more for a financial

claim on their particular voyages. This system further evolved as people realized that the costs associated with start-up and total liquidation could be avoided if the Sea Captain committed to several voyages at a time and that a percentage of profits could be paid out each time the Captain returned to harbour.

In the years that followed these initial sea voyages, more sophisticated corporate charters were set up in other capital intensive industries such as mining, banking, insurance, utilities, and railroads. Adam Smith in the "Wealth of Nations" believed that managers of these different corporations were motivated to pay dividends in order to pacify and thus keep shareholders from fully monitoring management's activities. Over the years, economists developed models to relate the value of a corporation to the value of the dividends it pays. The common conclusion among financial practitioners and academics was that a firm could increase its value by increasing the amount of its dividends. This was a direct result of the Dividend Discount Model (DDM) which continues to be a prominent topic in entry level finance textbooks.[1] The DDM says that the value of any common share is a function of the future dividends expected to be received by the share and the required rate of return on the stock. This model is defined in the following formula:

$$P_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+r)^t} \qquad \text{Eq. 1}$$

where P_0 = the price of the stock today

D_t = the dividend to be received at the end of period t

r = the required rate of return

[1] For examples, see Ross, Westerfield, Jordan, and Roberts (2007), Fundamentals of Corporate Finance, fifth Canadian Edition.

The relation between dividends and the value of the firm as proposed by the DDM continued to dominate the thinking of financial professionals and academics until the publication of the dividend irrelevance theorem by Modigliani and Miller (1961). Their seminal work revolutionized the way theoreticians and practitioners view dividends and ushered the beginning of new era of research on the role of dividends.

1.3 Recent Theoretical Developments

Under conditions of perfect capital markets, Modigliani and Miller (1961) prove that a firm's value is independent of its dividend policy. Their definition of perfect capital markets means corporations and investors do not pay taxes, transaction costs are negligible, investors are rational, information is readily available at negligible costs, and investors are as informed as managers. Unfortunately markets are not perfect and previous studies suggest that the dividend policy continues to affect the value of common shares as suggested by the DDM. For example, Benartzi, Michaely, and Thaler (1997), show that a firm's stock price changes with changes in its dividend policy. Yet, the factors that affect this relation continue to be topics of debate and academic research. Propositions attempting to explain the dividend policy include arguments suggesting that (1) the dividend policy serves as a signal of future earnings growth, (2) investors feel that cash in hand is superior to an unrealized capital gain, (3) investors value dividends when the alternative ways to distribute money to shareholders are more costly, and (4) as a way to decrease the potential waste of resources by management.

In addition, research in the theory of dividends has considered the issues a firm faces when it decides on a dividend policy. These issues include (1) how much should be given to shareholders, (2) what should the dividend payout ratio be, (3) how much financial slack does the firm need to maintain, (4) is the payout level sustainable, (5) and what method of distribution

would shareholders prefer. These decisions have far reaching effects on a company's flexibility to pursue other activities such as investing in real assets and debt issuance. It is also important to note that these decisions must be made on a continual basis.

In summary, following the dividend irrelevance propositions of Modigliani and Miller (1961), many theories and justifications have been proposed to explain why firms continue to pay dividends and why investors continue to value them. These explanations focus on the following issues:

Information Asymmetry

An environment of information asymmetry arises when one party has more knowledge concerning a venture, a transaction, and/or a contract than another party. The literature on information asymmetry started with Akerlof (1970) who details the information asymmetries that exist in the used car market. In the context of corporate finance, it is widely accepted that a firm's managers have more information regarding the future performance of the firm than its shareholders do. Many studies, starting with Watts (1973), propose that management may use dividends to convey information to the market and to shareholders. Thus, dividend payments decrease the firm's information asymmetries.

Agency Problems

Jensen (1986) highlights this problem and notes that management has the incentive to redirect the firm's money from positive NPV projects to items that directly benefit management. Some examples of this type of misuse of funds are lavish perquisites, empire building (purchasing other companies for the sole purpose of managing a larger company), and excessive management compensation. Jensen (1986) suggests that paying dividends reduces the amount of excess cash that managers can spend in these ways, thereby reducing potential agency problems.

Institutional Constraints

Many institutions, trusts, and endowment funds have imposed constraints on the types of investments they are allowed to invest in. One such common constraint is to avoid low or non-dividend paying firms. Previous studies such as Allen, Bernardo, and Welch (2000) propose arguments, known as the dividend clientele theory, that justify payment of dividends in order to satisfy the needs of such investors.

Expropriation of Wealth

Some studies, for example Handjinicolaou and Kalay (1984), propose that shareholders may attempt to expropriate wealth from bondholders and creditors by paying dividends. This would primarily be a concern if a firm is likely to discontinue its operations in the near future. Long, Malitz, and Sefcik (1994) explore this proposition and find that managers do not use dividends to expropriate wealth from others.

Transaction Costs

Early studies such as Bhattacharya (1979) argue that some investors need periodic cash income from their investments. For such investors, the alternatives include receiving periodic dividends or selling small portions of their investments. However, selling securities incurs transaction costs. For some investors it may be more cost efficient to have management issue dividends to generate income instead of shareholders generating their own income by periodically selling small parts of their holdings. Fama and French (2001) argue that transaction costs have decreased over time. Therefore, the desirability for dividends may have decreased as some investors are now creating their own homemade dividend.

Behavioural Issues

Theories of human behaviour may explain the reasons why dividends continue to be desirable despite the arguments that they may be irrelevant. Behavioural finance studies argue that investors view capital gains and dividends distinctly and as a result they should not be considered perfect substitutes for each other. For example, Thaler (1983) describes how dividends can be viewed as a silver lining during down markets or as an added bonus during bull markets. Thus, investors may demand dividends even if there are more efficient and cost effective methods of distribution.

Tax Considerations

Allen and Michaely (2001) suggest that share repurchases are replacing dividend payments as a way to distribute earnings to shareholders. Theoretically, when a firm has excess cash and repurchases shares, the shareholders who keep their holding constant should benefit from the share appreciation that follows the repurchases. The capital gains that may be created can be realized by selling small portions of their holdings. Essentially, share repurchases create capital gains to investors while dividend payments create dividend income. Dividends are considered to be ordinary income by Tax Laws but investors may receive tax credits or may not pay taxes on dividends. In contrast, share repurchases create capital gains that are usually taxed at a rate lower than the rate on dividends. Furthermore, even if the tax rates are identical, share repurchases allow investors to delay the realization of capital gains hence the delay of tax payments. Overall, tax considerations may make some investors prefer dividend income (because of tax exemption status) while they make others prefer share repurchases because they reduce taxes and allow investors to delay the taxation of their returns.

1.4 Specific Research that Motivates this Study

Fama and French (2001) document changes in managerial behaviour towards dividends over the past 25 years. They find firms that pay dividends usually have specific characteristics that distinguish them from other firms. Once they control for these characteristics, they find that firms that posses them have a declining propensity to pay dividends. Furthermore, they report that these characteristics are becoming less common in firms who are now listing on stock exchanges.

DeAngelo, DeAngelo, and Skinner (2003) consider the same time period that is examined by Fama and French (2001) and find that the total payout of dividends in real dollars has actually increased. Combining their results with those of Fama and French (2001) leads to the conclusion that fewer firms are paying dividends, but those who do pay them are paying larger amounts. In addition, DeAngelo, DeAngelo, and Skinner (2003) consider the role of special dividends in the payout policies of corporations. They observe that the use of special dividends as a way to distribute earnings has been declining. They hypothesize that share repurchases may have replaced special dividends as a method of returning money to shareholders when the firm does not want to commit to a higher dividend level. However, they conclude that special dividends are used less often because they served as a substitute to regular dividends.

Allen and Michaely (2003) provide an extensive review of the payout policies of corporations including both share repurchases and dividend payments. They suggest that historically dividends have been the most important form of payout but share repurchases are becoming a more important part of a firm's payout policy. For example the average dividend and share repurchase payouts (payout is defined as dividends paid or expenditure on repurchases divided by the firm's earnings) in the 1970s were 38% and 3% respectively. In the 1980s the

average dividend payout increased to 58% while the average share repurchase payout increased 9 times to 27%. In addition, Allen and Michaely (2003) report the following observations:

1) Large, established corporations typically pay out a significant amount of their earnings in the form of dividends and repurchases, and the amount of total payout is increasing.
2) The proportion of dividend paying firms has been steadily declining and that firms who initiate payout policies are more likely to do so with share repurchases.
3) Individuals in high tax brackets receive a large percentage of cash dividends paid and these individuals pay substantial amounts of taxes on them. They find that for most of the years between 1973-1996 individuals received more than 50% of all dividends, but this percentage declined in the latter parts of their survey. For example, in 1988 individuals received 60% of all dividends paid. In 1996, this percentage declined to 35%.
4) Corporations smooth dividends relative to earnings, which is not surprising as Lintner (1956) came to the same conclusion. He found that management sets dividend policy first, and then adjusts other policies as needed. For example, if a firm was undertaking a large investment that needed more cash than was available, management wouldn't consider cutting the dividend but would instead look for other sources of capital to help fund the project.
5) Data supports the view that share repurchases are more volatile than dividends. Their sample, which runs from 1972-1998, suggests that on an annual basis aggregate dividends fell only twice during this period by an average of 3.25%. In contrast, annual aggregate share repurchases fell six times by an average of 29.46%.
6) The market reacts positively to firms that either increase their dividends or initiate a share repurchase. In contrast, the market reacts negatively to a firm that decreases its payout policy.

1.5 Summary Findings of this Thesis

The new ideas that are presented in this thesis are the possibility that investors are less concerned with dividends now than they once were, and that investors' reaction to dividend increase is different depending on market sentiment (ie bull vs. bear market). Evidence is found to support the idea that investor reaction to dividend increases is smaller in the later time periods. This supports the idea that dividends are no longer as important to investors. There is also evidence to support the idea that investors value dividends less in a bear market when compared to a bull market. These are important discoveries as it is the first time that a change in the reaction to a dividend increase has been noted. Reactions to dividend increases are used because Michaely Thaler and Womack (1997) find that these reactions can act as a proxy for dividend valuation, and as a result, the argument can be extended to the possibility that dividends are not valued as much as they once were, and that they are valued less in a bear market when compared to a bull market.

Also, in this study many of the relationships of agency theory are explored. Surprisingly, not a single predicted relationship holds. This means that other dividend theories (ie signalling) should be explored in future research.

1.6 Concluding Remarks

Dividends continue to be an important tool for the management of modern corporations. These days, the common practice for many corporations is to pay dividends periodically on a quarterly basis. The majority of dividend-paying corporations tend to maintain a constant level of dividends even when earnings are lower than current dividend levels. In such a case, management takes money from retained earnings or even borrows to keep the stream of dividends flowing. In studying the history of dividend policies, Frankfurter and Wood (1997)

state that dividends have become nothing more than "symbolic" or "token" distributions that are paid at the discretion of management, and that they do not serve any real economic purpose. They believe that this is a direct result of the separation between ownership and management and that paying dividends has become a custom in which management is continually buying shareholders' faith that future earnings will be forthcoming. Frankfurter and Wood (1997) conclude that dividend-payment patterns, more generally known as the dividend policies, are a "cultural phenomenon, influenced by customs, beliefs, regulations, public opinion, perceptions and hysteria, general economic conditions, and several other factors, all in perpetual change, impacting different firms differently." This study is an attempt to confirm this conclusion using the market reaction to announcements of dividend increases as an indicator of investors' interest in the size and stability of dividend payments.

CHAPTER 2

LITERATURE REVIEW

This chapter reviews the prior research on dividends. Specifically it discusses the theories that try to explain dividend behaviour of firms, and how firm behaviour regarding dividends and its payout policy has changed.

Section 2.1 reviews the models and evidence for the signalling hypothesis. Signalling theories try to explain dividends as a signal of private information about the firm that is not available in standard sources; such as news announcements and audited financial statements. The main conclusions about signalling theory is that dividends serve as a signal that past earnings increases are permanent and not transitory.

The second section deals with the models that describe dividends as a way to reduce agency costs. Agency costs are the result of managers making decisions that are to their benefit, instead of to the benefit of shareholders. Dividends reduce the potential of managers to waste money as they reduce the amount of resources at management's discretion.

Section 2.3 discusses the literature that corresponds to dividend clientele models. These models feel that dividends are paid in order to make firms attractive to certain clienteles. For example, some endowment charters state that a firm must pay out a certain percentage of its profits as dividends in order to be considered for an investment. On the other hand, some clienteles do not want dividends, as they would rather have the firm reinvest the cash to grow market share. Thus, there are different investors that seek out different types of investments based on dividend behaviour.

The fourth section, section 2.4, deals with literature regarding behavioural finance's explanation for dividends. Behavioural finance is a relatively new field of study that starts with

the assumptions that economic agents are not always rational, and that they do not always want to maximize their utility. This section deals with different theories that try to explain how dividends are used and valued by investors in ways that may not be value maximizing.

Section 2.5 discusses the relationship that exists between share repurchases and dividends. This is important as both are part of a firm's larger payout policy. This section shows that share repurchases can serve the same purpose as dividends; mainly, they can reduce agency costs and send private signals to the market. Share repurchases have the advantage over dividends in that they are considered to be a one-time payout, whereas the market expects an increased dividend to be maintained.

The final section, section 2.6, details the literature relating to changes in the pattern of dividend behaviour of firms. It details the results of papers that show that fewer firms are paying dividends, and that those that do pay dividends are paying larger ones. It also discusses the changes that have occurred to share repurchases and special dividends over time.

The primary purpose of this chapter is to fully introduce the literature relating to dividends. It is necessary to do this in order to introduce the hypotheses that follow in the next chapter.

2.1 Information Asymmetry and Signalling

The assumption that all participants in a market have equal knowledge of that said market would result in everyone having identical information sets. In this situation all shareholders, managers, creditors, analysts, and competitors would have equal access to a firm's financial results, research and development projects, operations, etc. This obviously is not the case in real markets. It would be difficult for management to add value to a firm in this situation because competitors could easily copy a firm's profitable strategies. Examples of secrets that management keeps are the Colonel's famous chicken recipe and Coca-Cola's exact mixture for its syrup. Profitability for these companies depends to a certain extent on maintaining information asymmetries. Without information asymmetries generic colas when compared to name brand colas would taste the same, cost less, and thereby dominate the market.

If management has to maintain information asymmetries in order to keep its firm profitable, management must find appropriate signals to let the market know about its quality. Akerlof (1970) shows that signals must be costly to mimic otherwise poor quality firms will copy them and a 'separating equilibrium' will not be established. A hypothesized separating equilibrium that has been studied is a firm's dividend policy. This theory states that high quality firms should pursue a dividend policy that is too costly for low quality firms to mimic.

The first model to attempt to show how dividends can act as a signalling device was proposed by Bhattacharya (1979). He proposed that managers signal their firm's quality to the market by pre-committing to a dividend policy. The means by which the funds are available to pay this dividend are known only to management. An assumption of this model is that if the firm cannot pay for dividends out of internally generated funds, it will turn to more costly outside financing in order to pay for the dividend. A firm that has higher predictability of cash

flows will have lower costs of paying a dividend (because it would less likely need outside financing) than a firm with unstable and unpredictable cash flows. This results in the low quality firm finding it too costly to mimic this signal. This model is criticized because firms are not contractually committed to pay dividends, especially pre-committed dividends. Firms may seek costly outside financing to pay a dividend, but are under no obligation to do so. This lack of obligation results in investors not placing any importance on pre-committed dividends.

A second model is proposed by John and Williams (1985). This model assumes that dividends or net new issues of shares reveal all private information about a firm not conveyed by corporate audits, financial statements, and other required disclosures. In this model firms paying higher dividends have more favourable inside information, and thus have higher stock prices. The optimal dividend policy involves dividend smoothing and higher dividends when the tax disadvantages of dividends decrease relative to capital gains taxes. This model also explains why firms would choose the costlier dividend policy over a relatively cheaper share repurchase program. It is the higher cost of the dividend policy that attracts firms to pay dividends; in essence, they are purposely incurring the cost because they can afford to do so.

This model also provides an explanation of why firms would pay dividends and simultaneously seek outside financing to fund new projects. This course of action is justified because paying a dividend raises the price of the stock, resulting in less dilution of old shareholders when new equity is raised. This results in the new shareholders paying the correct stock price.

A third dividend signalling model is proposed by Miller and Rock (1985). This model assumes that dividends and share repurchases are substitutes for each other and are part of a larger payout policy. Therefore, a firm can pay a dividend or repurchase shares and send the

same signal to the market. In this model, managers are assumed to have private information about future earnings that will finance future dividend payments and new investments. Larger dividends (or share repurchases) result in a firm rejecting positive NPV projects and under investing. Under investing is seen to be a cost that only better firms can incur because inferior firms cannot afford to pass up on such projects. The equilibrium level of payout policy is reached when it is high enough that low quality firms cannot reduce their investments enough to match it.

This model fails however, because it does not consider the differing tax treatments of dividends and capital gains (capital gains occur when shares are repurchased). Once the consequence of higher taxes on dividends is considered, the model would have a firm pay out everything as a share repurchase. As seen in the market, firms still pay dividends so this model does not adequately explain firm behaviour.

All three models are difficult to test. It is impossible to know if a firm is raising its dividend to mimic another firm, or if the dividend is raised to signal its own future profitability. These models also fail to answer what Fisher Black calls "The Dividend Puzzle" (1976). In his article, Black reviews the question as to why firms pay dividends and points out that for every argument there is an equally convincing counter-argument. He illustrates this by contrasting two firms, one that pays a dividend and a second that does not. The market treats the firm that pays a dividend positively because the dividend represents a return of the shareholders initial investment. However, the market also acts positively to a firm that does not pay a dividend because the firm might be signalling that it has many investment opportunities, and that paying a dividend would result in passing up on some of these. In the second scenario, the investor might receive the double benefit of capital appreciation greater than the dividend foregone and the

lower tax rate applied to capital gains. This illustrates how dividend payment can be interpreted depending on the investor's paradigm and the context in which it is paid.

If dividends are indeed sending a signal, what is the signal they are sending? What is the investing public supposed to infer about a firm's future if dividends are cut, omitted, raised, or initiated?

Watts (1973) was the first to try to test the hypothesis that dividend changes forecast future cash flows and earnings. His primary finding is that there is not a relation between unexpected dividend changes and future earnings announcements. He also finds that there are not any abnormal returns in the months surrounding the dividend announcements. Watts' (1973) study has limited application because it focuses on monthly returns, which makes it difficult to differentiate the effects of dividend changes and other information releases.

Healy and Palepu (1988) studied whether there is a significant change in a firm's earnings surrounding dividend omissions and initiations. Their study covers the period 1969-1980 and includes those firms who have not paid a dividend for 10 years (for dividend initiations) or those firms that have paid a dividend for 10 consecutive years (the dividend omission study). Their findings indicate that for dividend initiations, firms experience a permanent increase in earnings for the two years following and one year prior to the dividend initiation. For dividend omissions, firms are found to have a permanent decrease in earnings for the year of and the year following the omission. They conclude that dividend initiations/omissions signal future earnings, albeit that the signal is good for only 1 year with regards to omissions and 2 years with regards to initiations.

Lintner (1956) stresses that firms only increase dividends when management believes that earnings have permanently increased. Benartzi, Michaely, and Thaler (1997) test this and

try to determine if changes in dividends reflect past or future earnings increases. Their test is designed to find the relationship (if one exists) between dividend increases and unexpected future earnings. Unexpected future earnings are defined as the difference between the earnings that would have been predicted with all the relevant information except for the dividend increase and the actual earnings of a firm. This implies that firms that increase dividends will have positive unexpected earnings, and firms that decrease dividends will have negative unexpected earnings. The authors also hypothesize that the larger the dividend change, the larger the change in future earnings.

In their study, the only relationship that Benartzi et al. (1997) were able to find was that dividend changes reflected the permanency of previous earnings increases. They were unable to find a positive relationship between dividend changes and future earnings changes. This suggests that if firms are sending a signal about earnings, it's that the previous earnings increase is permanent and not transitory. This confirms the earlier work of Watts (1973) and Lintner (1956) who also found that dividend increases reflect previous earnings increases.

One of the things that has not been studied in regards to dividend and signalling theory is the possibility that other firm specific characteristics might either magnify or reduce the signal that dividends send. Some of these characteristics (which will be discussed in future sections in this chapter) might be a firm's debt load or the amount of institutional ownership in the firm. Also, if one subscribes to signalling theory, we do not know if the strength of the signal has declined over time. This is likely the case as investors have become more sophisticated and are more likely to know about a firm's prospects through other means.

2.2 Agency Costs

Management constantly makes decisions that affect different stakeholders of the firm. Management's decisions are dominated by shareholders' concerns as other stakeholders have much less influence. An agency relationship exists when one group is hired to make decisions on behalf of other groups. Due to divergent interests between groups, these decisions can be self-serving, or they can cater to the needs of one group at the expense of another.

The agency conflict discussed in this thesis is the relationship between managers and shareholders. The conflict arises between these two parties because management makes all of the value enhancing activities but they do not capture all of the benefits that arise from these activities. This motivates managers to pursue activities in which they do receive the full benefit of their actions. Easterbrook (1984) discusses this problem and points out two sources of agency costs: monitoring and risk aversion. Monitoring is essential because it helps to ensure that management acts in the best interests of shareholders and not other parties. Monitoring management is prohibitive to small shareholders because a shareholder bears the full cost of monitoring but only receives the benefits in proportion to his or her holdings.

The other agency cost he discusses is risk aversion on the part of managers. Investors (assuming they are well diversified) are only interested in non-diversifiable risk; however, managers have a more vested interest in the success of the firm and are concerned with the firm's total risk. This increased interest comes from the possibility of losing their job, having increased amounts of wealth tied up in the firm, prestige associated with managing the firm, the ability to consume perquisites, etc. The focus on total risk induces managers to choose lower risk projects at the expense of shareholders. Shareholders preference is for riskier ventures that will increase

their returns and further diversify their portfolios. Management can also change the risk profile of a firm by altering the firm's debt to equity ratio.

Easterbrook (1984) proposes that both the monitoring and risk aversion problems can be avoided if the firm seeks outside financing. Seeking outside financing mitigates the agency problem because new providers of capital are more effective in scrutinizing management. New shareholders demand information before investing, and management is forced to cater to these demands. Firms are forced through this monitoring process more often if they pay regular dividends because dividends decrease the amount of cash available to management.

Jensen (1986) discusses agency costs in relation to management's desire to make the firm larger, even if the firm invests sub-optimally to achieve this goal. Managers prefer to manage larger firms because doing so is correlated with more power and larger compensation packages. Management has the opportunity to invest sub-optimally if there are large amounts of free cash flows in the firm. He defines free cash flows as the amounts of excess cash that a firm has left-over after it has invested in all positive NPV projects. The greater the amounts of free cash flow, the greater the potential conflict that exists between management and shareholders. He argues that shareholders are better served if free cash flows are minimized through dividend payouts. He also concludes that leverage increasing activities have the same effect on management as the firm becomes committed to regular interest payments.

In order to decrease the amount of agency costs between managers and shareholders most executive compensation is now tied to firm performance. Managers are paid substantial bonuses if the firm meets certain targets, but more importantly managers receive a significant amount of their remuneration through stock option plans. Stock options allow the manager to benefit more from their value enhancing activities at the firm.

Lambert, Lanen, and Larker (1989) examine the initiation of stock option plans and changes in corporate dividend policy. A dividend payment reduces a firm's share price roughly by the amount of the dividend. Because most stock option plans are not dividend protected, they hypothesize that the initiation of a stock option plan encourages corporate executives to reduce dividends. Their results show that the initiation of stock option plans for senior corporate executives significantly lowers the amount of dividends paid by a firm. These results are important because they illustrate that management's use of dividends has evolved, and if it has evolved, it is a distinct possibility that the market's reaction to dividend changes has also evolved.

Lang and Litzenberger (1989) test the two competing free cash flow and signalling hypotheses. They propose that firms who have excess free cash flows have a tendency to over-invest, and that over-investment can be measured by Tobin's q-ratio[2]. In this study they divided their sample between firms whose q-ratios are either less than or greater than one. Firms who have q-ratios less than one are considered to be firms who are over-investing, and firms who have q-ratios greater than one are considered to be value-maximizing. Lang and Litzenberger (1989) propose that a firm with a q-ratio less than one (over-investing firm) that increases its dividend payout would be reducing its free cash flows, and therefore it should be met with a greater stock price movement when compared to firms whose q-ratios are greater than one. Consistent with their hypothesis they find that firms with q-ratios less than one have a significantly larger response to increases in dividend policy than firms with q-ratios greater than one.

The Lang and Litzenberger (1989) study has a problem in that they simultaneously test two hypotheses. The first hypothesis is that firms with low/high q-ratios have high/low free cash

[2] A firms' q-ratio is calculated by taking the ratio of market value of equity divided by book value of equity.

flows. An example of a firm that wouldn't fit this description would be Microsoft as it would be considered to have a high q-ratio and it also has huge amounts of free cash flow. The second hypothesis is that firms with these different q-ratios have different reactions to a change in dividend policy. What the Lang and Litzenberger (1989) paper really should report as its findings is that firms with lower growth prospects as measured by q-ratio have greater reactions to dividend increases than firms with larger growth prospects. In order to truly test the hypothesis that free cash flows are an important determinant of how the market reacts to dividend changes, the free cash flows for the firm should be calculated directly instead of being represented by the firm's q-ratio. Once this is done, a test between firms with high and low free cash flows could be performed to see if there is a difference in market valuation.

Lie (2000) studied the relationship between a firm's excess funds and firm's payout policy and found that dividend increasing firms had excess amounts of cash as compared to peer firms. This result is consistent with the idea that firms with the greatest potential for overinvestment decrease that potential by increasing their dividend.

2.3 Dividend Clientele Models

Dividend clientele models are based on the assumption that firms can attract certain investors by modifying their existing payout policy. A dividend clientele is defined as a set of investors who are attracted to stocks that have their preferred dividend policy. This is usually based on their tax and/or liquidity constraints. If a firm tries to attract shareholders that prefer capital gains the firm would lower dividend payments and increase share repurchases, or if the firm wanted to attract clientele that preferred dividends it would do the reverse.

Not very much empirical work or research has been devoted to this topical area. This can be partially attributable to a paper written by Black and Scholes (1974). In this paper they argue

that in equilibrium, a firm cannot change its share price by trying to appeal to a different dividend clientele. They argue this because a change in dividend policy has two offsetting effects: one clientele group now finds the stock more attractive while another dividend clientele group finds the stock less attractive. This results in a change in equilibrium, but the firm is still in equilibrium as it was before the dividend change, therefore the value of the firm remains unchanged.

That being said, dividend clienteles cannot be ignored. Many institutions face constraints (either self imposed or regulated) that require them to hold dividend-paying stocks. Mike O'Neill (CFO of Bank of America) has said, "We've got a lot of institutional investors, and a number of them continue to have dividend requirements that we just try to meet. Many of our institutional investors will not invest in a company that does not have at least a 2% dividend yield. . . We think there is a value to having a broad investor base."[3]

Allen, Bernardo, and Welch (2000) propose a dividend theory based on tax clienteles. This model assumes the following: 1) different investors are taxed differently and have different incentives to do their own due diligence; and 2) dividends are one way of attracting institutions. The first assumption illustrates the differences between institutions and other investors. Institutions such as pension funds, university endowment funds, and other non-profit groups are mostly tax exempt. The relative tax advantage of institutions as compared to other investors makes dividend paying firms a better purchase for them. Allen et al. (2000) propose that these institutions have greater incentives to research a firm than small investors do. Institutional holdings can act as a signal to the average investor of firm quality, and institutions can also decrease agency costs by selling large blocks of shares to corporate raiders and be actively involved with corporate governance.

[3] Journal of Applied Corporate Finance, Summer 1997, p. 57

Their second assumption is reasonable because many institutional charters specify that securities must pay a dividend in order to be considered for an institution's portfolio. This preference stems from the Prudent Man Rule, which states that a fiduciary must "observe how men of prudence, discretion, and intelligence manage to their own affairs, not in regard to speculation, but in regard to the permanent disposition of their funds, considering the probable income as well as the probable safety of the capital to be invested."[4]

Allen et al. (2000) specify two models in their paper. The first model is based on signalling. It concludes that high quality firms attract institutional investors by paying dividends, and that institutional ownership acts as a signal to uninformed investors. It also concludes that bad firms dislike attracting institutional investors (because their bad qualities might be revealed) and therefore do not pay dividends. There are obvious weaknesses with this theory as many top performing firms have not paid dividends while maintaining high institutional ownership. The second model is based on agency costs. In this model, dividends attract institutional investors who ensure that the firm will be run for the benefit of shareholders and not management. Both models rely on firms purchasing the benefit of institutional ownership through dividends.

There is conflicting research regarding the association between dividend policy and institutional ownership. Short, Zhang, and Keasey (2002) find a positive link between dividend policy and institutional ownership. They show that the dividend payout ratio is significantly higher for firms with more than 5% institutional ownership in the UK. The UK was chosen because dividends have greater tax advantages for institutions than they do in the US. Thus, the UK might give more pronounced results and be a better country to test for tax clientele affects. Dhaliwal, Erickson, and Trezevant (1998) also believe that dividends have a positive effect on

[4] The fundamental principle for professional money management, stated by Judge Samuel Putnum in 1830, quoted from Standards of Practice Handbook 1999 by the Association of Investment Management (AIMR)

institutional ownership as they examine institutional shareholdings around dividend initiation dates and found that 80% of firms experience increases in institutional shareholdings over the three to nine months following a dividend initiation.

Michaely Thaler and Womack (1995) try to identify clientele effects by looking at the volume that surrounds dividend initiations and omissions. They propose that if dividend initiations/omissions cause a shift in the clientele, that the common share turnover rate should increase surrounding these announcements. They find that the increase in volume from day -3 to +3 (day 0 being the event day) is minor and that there isn't any significant increase in volume outside of this event window. One plausible flaw in their methodology is that the shift in clientele is gradual without any noticeable increase in volume.

Another method to explore the clientele effect that they used was to look at the change in institutional holdings of stocks prior to and after an omission of a dividend. This is a smaller sample than the previous method because they were limited to the data available in the Standard and Poor's Stock Guide. The average institutional holdings (3 year average) was 30.0% prior to the omission, and the post 3 year average was 30.9%. This gives further evidence that the dividend omissions do not produce dramatic changes in ownership.

One thing that has not been studied with regards to institutional ownership and dividend policy is to see if investors place as much importance on a firm's dividend policy that have high institutional ownership as compared to firms that have low institutional ownership. We expect a difference in investors' attitude towards these two types of firms if institutional ownership acts as a signal of firm quality and an effective measure to mitigate agency problems. Specifically, one would expect that an investor would value a dividend more greatly from a firm that had lower institutional ownership as compared to a firm with high institutional ownership, ceteris paribus.

2.4 Behavioural Finance Explanations for Dividends

Much of economic and financial theory is based on the assumption that individuals act rationally and consider all available information in the decision making process. However, researchers have uncovered a surprisingly large amount of evidence that disputes this. Behavioural finance is a field of study which attempts to better understand this evidence and explain how emotions and cognitive limitations can explain these results. I will be addressing specifically how investor's behaviour towards risk and return may help to explain an investor's desire for cash dividends.

The first theory that needs to be addressed is "An Economic Theory of Self-Control" by Thaler and Shefrin (1981). In this theory they assume that an individual has two internalized conflicting agents: a farsighted planner and a myopic doer. The planner is concerned with lifetime utility, and the doer is only concerned with immediate consumption. The planner has to try and exert some sort of power over the doer so the doer does not consume all of the assets in the current period. Utility is maximized between the two conflicting agents when the loss of utility by decreasing current consumption is equal to the gain in utility by having extra future consumption available.

This theory of self control is built upon by Shefrin and Statman (1984) in which they describe situations where investors prefer to receive cash dividends rather than capital gains. Standard finance theory states that investors should be indifferent between capital gains and dividends in the absence of transaction costs and taxes. Shefrin and Statman (1984) find that money is not a homogeneous item, and that the source of and future use of money can help determine how it is used. They determine that individuals use many rules of thumb to assist

them in their financing decisions, and these rules of thumb do not necessarily imply maximizing consumption.

A rule of thumb that Shefrin and Statman (1984) propose that investors use is to spend or consume dividends and not touch the capital. This rule would stop the myopic doer from over consuming in the current period by selling too much. This rule also limits the amount of will power that the planner has to exert on the doer, along with the potential damage for not exerting enough will power. Another rule of thumb not discussed by Shefrin and Statman (1984) is the Prudent Man Rule already discussed.

Another relevant theory postulated by Kahneman and Tversky (1982) is the theory of regret. Kahneman and Tversky (1982) studied individual's reactions to the following two hypothetical settings:

1) You take $600 received as dividends (which could have been reinvested with no transaction costs) and use the money to purchase a television set; or
2) You sell $600 (with no transaction costs) worth of stock and use the proceeds to purchase a television set.

After the purchase of the TV, the stock rises significantly. If dividends and capital gains are perfect substitutes for each other, than there shouldn't be any difference in the levels of regret between the two cases. However, Kahneman and Tversky (1982) find that the stock sale option causes more regret. Shefrin and Statman (1984) argue that consumption from dividends may be preferred to consumption from capital for people who are averse to regret. This means that capital gains and dividends cannot be treated as perfect substitutes[5]. Regret aversion can cause

[5] In the following section on dividends and share repurchases are treated as perfect substitutes for. As shown by this research, this assumption does not always hold.

people to use the same rule of thumb that was discussed earlier under the theory of self control where investors consume out of dividends and won't sell any of the capital.

Thaler (1983) discusses how gains and losses are segregated. He believes that people like to 'savour' their gains, which leads to people keeping track of them separately so they can each be enjoyed individually. He likens it to wrapping Christmas presents separately in order to experience the pleasure of opening each gift individually. Suppose an investor purchases a stock and after the purchase the stock price goes down. Thaler (1983) proposes that the dividend is treated as a silver lining to the price drop and it helps to console the investor. If the stock goes up, the dividend serves as an added benefit to the price increase. In either case, the investor is able to get an extra benefit by having the dividend accounted for separately from the capital gain/loss.

It is important to realize that investors' perceptions of risk and return can change as time passes. These changes might occur because of experience, age, knowledge and a host of other reasons. Because the risk/return profile of the stock market is a function of all those who participate in it, as time passes, the aggregate view of this profile may change as investors will have new experiences and more knowledge. As this happens, it is possible that the market will alter how it reacts to a dividend increase.

2.5 Share Repurchases and Dividend Policy

The previous models and research for the most part discussed and treated dividend policy and share repurchases as two separate and distinct events; this however is not the case. Share repurchases and dividend policy are each part of a firm's larger payout policy, which can include one method at the exclusion of the other or pursue both methods simultaneously.

Lucas and McDonald (1998) solve this dilemma with a model that incorporates both dividends and share repurchases. This model describes an adverse selection process of share repurchases. This happens when a firm repurchases its shares at a premium to the current market price. Most literature treats this as a positive event, but the authors propose that this hurts non-tendering shareholders as it dilutes their holdings. The resulting equilibrium in their model results from minimizing the higher tax costs of dividends and the adverse selection costs of share repurchases. In this model firms in equilibrium with cash to distribute will pay a small dividend and use the remainder of the cash to repurchase shares. Firms send stronger signals with larger repurchases. The costly dividend reduces the dilution to current shareholders by decreasing the share price, and therefore the premium paid on the share repurchase. This decreases the cost of payout policy to the non-tendering shareholders, whom management should be most concerned with as they are the shareholders following the repurchase.

Brennan and Thakor (1990) also propose a model that considers both share repurchases and dividends. This model is based on information asymmetries that exist amongst the investors in the firm; specifically, some investors through their own due diligence have acquired more information about the firm than others. This information allows those investors to make better decisions when the firm decides to pursue a share repurchase. The informed investors will tender the stock when the repurchase price exceeds the stock's true value, and will keep their holdings when the tender price is less than this value. In either case, the uninformed investor is worse off when the firm uses a share repurchase to distribute excess cash. A dividend policy allows all investors to receive an equal or pro rata amount of the firm's profit and the informed investors are not able to take advantage of their superior information. As a result, the

uninformed investors prefer dividends to repurchases assuming that the tax burden of dividends is not too large, and the informed investor always prefers share repurchases.

In the previous section on signalling, a firm's dividend policy acted as a signal to uninformed investors. Because share repurchases and dividends are each part of a firms total payout policy, it is possible that share repurchases can signal the same information that dividends do about a firm's prospects. Comment and Jarrell (1991) propose that share repurchase programs that serve as the best signal are those that increase the amount of risk the firm's managers assume through the repurchase. Assuming that managers do not tender their shares during a repurchase period, they suggest that the manager's risk increases when: 1) the initial holdings of management are large; 2) the greater the offer premium over the current price; and 3) the larger fraction of equity sought in the offering.

There are three types of share repurchases that are used in the market: 1) Dutch-Auction; 2) Fixed-Price; and 3) Open-Market. In a Dutch auction repurchase a firm solicits offers from its shareholders, and then offers the lowest price needed in order to get the required number of shares sought in the offer. A fixed price offer has a fixed number of shares being sought at a fixed price. The offer price is higher than the current market price and is usually at a 20-25% premium. An open market program has the company buying the shares on the exchange for a variety of prices over an extended period of time. Because the methods of these repurchases are different, it is expected that they will give different signals to the market.

Comment and Jarrell (1991) study the effectiveness of the signals that the different repurchase methods may give. They propose that the fixed price tender offers will dominate both open market repurchases and Dutch auction offers. They hypothesize this because fixed price tender offers release more information (specific price and amount of shares) by corporate

insiders. Both Dutch auction tender and open market repurchases rely on the price discovery process of the market, and management never specifies what it thinks the stock is worth. False signalling can occur with fixed price offers when the premium offered over the current stock price is not maintained after the repurchase is completed. This cost represents a dividend paid to tendering shareholders (as they received more for the stock than what it was worth) that is paid by the non-tendering shareholders.

They find that each repurchase program is associated with above average returns on the announcement day. Abnormal returns are 11%, 8%, and 2% for the fixed price, Dutch auction, and open market repurchases respectively. This shows that the market values fixed price tender offers more than the other methods, and they propose this because it gives more information to the market than the other methods do. There is also evidence that the repurchase premium is larger (meaning a greater signal) when the recent performance of the stock has been poor. Comment and Jarrell (1991) note that most of the buy back activity is through Dutch auctions and open market transactions, and conclude that other market factors are important and help determine which repurchase method firms choose.

The primary benefit of a share repurchase over a dividend is that investors can defer taxes on their investments until they want to assume the tax burden. DeAngelo (1991) discusses this dilemma and assumes that tax deferral and consumption deferral are supplied goods. The implication for this model is that if firms adopt low payout policies to take advantage of tax deferral, the market will be over supplied with future consumption. This excess supply of future consumption causes the current market prices to react and brings the stock market back to equilibrium. This equilibrium is reached even if investors are allowed to borrow or lend to rearrange their personal consumption because such transactions wouldn't affect the aggregate

level of consumption. This model helps explain why firms do not exclusively use share repurchases in spite of its tax advantages.

Just as firms can use share repurchases instead of dividends as a signal, firms can also use share repurchases to mitigate agency costs. In order to study the differences between share repurchases and dividends, a number of studies have been performed that analyze the cash flows of firms surrounding these events. Lie (2000) finds that all firms who increase their payout policy in a given year have increased cash flows prior to the announcement. Firms that pay a special dividend or pursue a share repurchase program have incurred large, non recurring cash flows prior to the announcement and have cash flows that revert to the mean once the payout has been completed. Firms that increase their regular dividend have increases in operating cash flows that continue after the dividend has been increased. Jagannathan, Stephens, and Weisbach (2000) have similar findings but have two additional conclusions. They find that repurchasing firms have more volatile cash flows before and after the distribution, and also find that firms repurchase stock following poor stock market performance and increase dividends following good stock market performance.

Both Lie (2000) and Jagannathan et al. (2000) show that firms are able to maintain financial flexibility by distributing excess funds with a share repurchase or special dividend instead of increasing their regular dividend. This confirms the work of Lintner (1956) who proposed that firms only increase dividends once cash flows have permanently increased. Jagannathan et al. (2000) found that firms increase their dividends more during economic peaks and decrease them during economic downturns. They also found that repurchases account for most of the year-to-year variation in a firm's total payout.

Guay and Harford (2000) perform a similar analysis to both Lie (2000) and Jagannathan et al. (2000) but they also examined the stock price reaction to both share repurchases and dividend increases. Guay and Harford (2000) hypothesize that dividend increases will send a better signal to the market than share repurchases as dividends represent an increase to permanent earnings. Their hypothesis predicts that dividends and share repurchases give different signals regarding future cash flows. They find evidence to support this as the stock price reactions to announcements of dividend increases are significantly greater than the reactions to share repurchases. Also, in addition to previous studies that focused on comparing cash flows prior to and after a firm's distribution, they compare the cash flows of firms who change distributions to a control group that does not change its annual payout. They find that operating cash flows are similar between the control group and firms who engage in one time payouts (share repurchases and special dividends), and are different between the control group and firms that increase regular dividends.

As investors have begun to realize the advantages of using different forms of payout, it is likely that they have changed the way they value dividends both as a signal and as a way to decrease agency costs. That being said, dividends and share repurchases cannot be treated as perfect substitutes for each other as was outlined in section 2.4.

2.6 Firm's Dividend Behaviour Through Time

Fama and French (2001) studied dividend behaviour of firms from 1926-1999 and find that the tendency for a firm to pay dividends is on the decline. In 1978, the proportion of non-financial and non-utility firms that paid a dividend was 66.5%, and this has steadily declined to 20.8% in 1999.

Fama and French (2001) study this pattern and try to identify the cause of such a dramatic shift in the amount of firms paying dividends. They find through logit regressions that dividend-paying firms tend to share the following three common characteristics relative to non-dividend-paying firms: higher profitability, fewer investment opportunities, and larger size. They show that newly listed firms from 1978 onward tend to be smaller, unprofitable ones with many investment opportunities.

This does not explain all of the reduction though. They find that there is a lower propensity to pay dividends among all firms regardless of size, investment opportunities and profitability. There has been an increased number of share repurchases over this time period but it is argued that since share repurchases are primarily the territory of dividend payers, that this cannot explain the decline in the percentage of firms that pay dividends. They contend that the primary effect of increases in share repurchases is to increase the already high cash payouts of dividend payers.

They believe that some, but not all of the possible reasons for such a decline are: 1) lower transaction costs for selling stocks enabling investors to create home made dividends; 2) larger stock option holdings for managers who prefer capital gains to dividends; and 3) better corporate governance that lowers the importance of dividends in controlling potential agency conflicts.

A study over the same time period was performed by DeAngelo, DeAngelo, and Skinner (2003) who find that aggregate real dividends increased over the time period of the Fama and French (2001) study. At first this seems to contradict Fama and French (2001), but DeAngelo et al (2003) find that the reduction in dividend payers occurs primarily among firms who paid very small dividends, and that the increase in real dividends from the firms that pay large dividends dominates the effect of losing many firms that pay these small dividends. Combining the

findings of these two studies results in the conclusion that there has been an increase in the concentration of dividend payers.

Many people have assumed that share repurchases have displaced special dividends in a firm's corporate payout policy. DeAngelo, DeAngelo, and Skinner (2000) study special dividends over time and conclude that special dividends have disappeared because they were close substitutes for regular dividends, not because they were displaced by the increased use of share repurchases. They reach this conclusion for a number of reasons. First, they show that most firms who paid special dividends paid them on a regular basis. Firms who paid special dividends did so on an average of once every other year. Second, they also show that when firms reduced special dividends they simultaneously increased regular dividends. Third, their data shows that the disappearance of special dividends coincides with all firms adopting uniform dividend policies that pay quarterly. Finally, firms were more likely to increase their regular dividends once they stopped paying special dividends.

They believe that share repurchases did not displace special dividends because they cannot find any correlation between the decline in special dividends and the increased use of share repurchases. The decline in special dividends started prior to the rise of share repurchases, and if share repurchases replaced special dividends, DeAngelo et al. (2000) argue that replacement cannot explain the gap between the two events. Also, firms who once paid special dividends are no more inclined to start a share repurchase program than firms who never paid such a dividend.

One potential explanation of the change in firms' dividend behaviour is that fewer firms are paying dividends because investors do not want them to. This idea has not yet been addressed in the literature and is one of the hypotheses to be tested. Also, no one has studied

whether the market reacts to dividend increases differently between bull and bear markets. An analysis of this type using current data was not possible until recently because of the long bull market that started in 1983 and ended in approximately 2000. It is quite possible that dividends are treated differently during bear and bull markets as these varying market conditions present different paradigms in which to make judgments through.

CHAPTER 3

THEORETICAL ISSUES AND TESTABLE HYPOTHESES

This chapter introduces the hypotheses and discusses the motivation and the theoretical arguments that support each. In total there are eight hypotheses.

Hypothesis 1 deals with the possibility that the market reaction to dividend increases has changed over time in a consistent and noticeable pattern. It postulates that the reaction has weakened, and if true, it suggests that investors' demand for dividends has decreased over time. This is motivated by the observation of Fama and French (2001) that firms exhibit declining propensity to pay dividends.

Hypothesis 2 deals with the possibility that the market reaction to dividend increases varies depending on the conditions of the market. In particular, the possibility that investors treat dividends differently in bear markets than they do in bull markets is tested.

Hypotheses 3-8 examine respectively the relation between the market reaction to dividend increases and institutional ownership, debt load, free cash flow, liquidity, Tobin's q-ratio, and trading volume. Previous studies suggest these variables may explain the differences in the market reactions to dividend increases. Hypothesis 3 is motivated by the argument that high institutional ownership reduces agency costs and works as a signal of firm quality to the market. In the presence of institutional ownership, the role of dividends to act as a signalling device and reduce agency costs is likely dampened. So it is postulated that the size of institutional ownership helps explain cross-sectional differences in the impact of dividend increases.

Hypothesis 4 states that the level of debt in the capital structure can explain differences in the market reaction to dividend increases. In theory, debt holders monitor managers to ensure compliance with debt covenants. This monitoring may reduce agency costs.

Hypothesis 5 is motivated by the argument that free cash flows are positively related to agency costs. Dividend increases by firms that have large free cash flows would be a strong signal to the market that managers are not interested in consuming perquisites or empire building. Therefore, Hypothesis 5 postulates that the market reaction to dividend increases is more pronounced for firms with larger free cash flows.

Hypothesis 6 is motivated by the argument that the decline in the propensity of firms to pay dividends is due to decline in transaction costs and to the ease with which investors can create home-made dividends. It is believed that the more liquid a firm is, the easier it is to create a home-made dividend in it. This should result in a smaller market reaction to dividend increases for more liquid firms.

Hypothesis 7 deals with the role of the Tobin's q-ratio in explaining the market reaction to dividend increases. Traditionally, a high q-ratio is associated with firms that have high growth opportunities. Yet, previous studies have used the q-ratio to proxy for agency costs instead. In this study, agency costs are accounted for directly by computing the free cash flow for each firm. The q-ratio is then tested to see if it is still an important factor in determining the market's reaction to a dividend increase.

Hypothesis 8 tests whether the market reaction to dividend increases is related to the increase in trading volume following the announcements of the dividend increase. While the relation between volume and share price has been tested in dividend omission and deletion studies, it has never been tested for using a sample that focuses on dividend increases.

As a note, hypotheses 7 and 8 were developed as the research progressed on this thesis.

3.1 Market Reaction Over Time

Previous studies clearly suggest that the behaviour of firms in regard to dividends has changed over time. Fama and French (2001) show that firms in general have a decreasing propensity to pay dividends. DeAngelo, DeAngelo, and Skinner (2000, 2003) report that on average that firms who paid dividends in the past are now paying larger ones. In addition, they find that special dividends have disappeared.

There is little research regarding the possibility that investors may have changed their behaviour towards dividends. Some of the possible reasons for this change would be better corporate governance, more timely releases of new information, and better informed investors. These market improvements may have reduced the significance of dividends as a way to reduce agency costs or signal firm quality. If these functions are no longer needed, it is possible that the importance of dividends has declined.

Given this literature and reasoning, the following hypothesis is tested:

Hypothesis 1: The market reaction to dividend increases is declining over time

3.2 Market Reaction During Different Market Conditions

It is rational to expect that investors are concerned about total returns, the sum of capital gains return and dividend yield. Previous studies suggest there are several reasons why investors may react differently to dividend increases based on market conditions. Thaler (1983) suggests that investors may treat dividends as a silver lining when capital gains return is negative. On the other hand, when capital returns are positive he states that dividends may be treated by investors as an added bonus. Previous studies in behavioural finance, such as Shefrin and Statman (1984), propose that investors do not act consistently in all circumstances. They find that money is not a

homogenous item, and that its source can determine how the money is spent. They find that investors treat money differently if it is received as a capital gain or dividend.

If this is true, then it is possible that market conditions can help determine the value that investors place on different components of return.

It may also be the case that market participants place greater importance on the possibilities that dividends signal private information and reduce agency costs in bear markets. Signalling could take on a greater role in such a market as many firms see decreasing share prices without a corresponding decrease in future outlook. Also, agency costs could be seen to be greater in a bear market as there is a likely decreased amount of positive NPV projects to invest in.

This leads to the second hypothesis to be tested:

Hypothesis 2: The market reaction to dividend increases will be greater during bear markets than in bull markets.

3.3 Institutional Ownership

Allen, Bernard, and Welch (2000) propose a model in which dividends serve to attract institutional investors. These investors have a greater incentive and ability to research a firm's future cash flows than the marginal investor. They also have better abilities to monitor management which reduces the potential for waste. Allen et al. (2000) also contend that institutions serve as a signal to the average investor. As dividend theories propose that dividends serve to act as a signal and reduce agency costs, dividends are likely to be redundant in firms that have high institutional ownership.

If this is true, it would be expected that such firms would have smaller reactions to a dividend increase. This has not yet been tested. Previous tests on institutional ownership have

primarily focused on dividend initiations and omissions. For example Dhaliwal, Erickson and Trezevant (1998) find that institutional holdings increase after a firm initiates a dividend.

The relationship between a firm's institutional holdings and its increase in dividend leads to the third hypothesis:

Hypothesis 3: Firms with high institutional ownership will have smaller market reactions to dividend increases.

3.4 The Level of Debt

Jensen (1986) argues that debt holders reduce agency costs as they monitor managers to insure the firm is complying with debt covenants. Covenants are usually designed to restrict management's ability to take actions that may transfer value from bondholders to common shareholders. A restriction on dividend levels increases is often one of these covenants. Therefore, a dividend increase by a firm that has a high debt ratio indicates the firm has received approval from debt holders that it is capable of paying a higher dividend. This approval may act as a signal to the market, and if this is the case, the market should react in a positive way.

In contrast, interest payments may be viewed as a substitute for dividend payments in that they reduce the discretionary cash flows available to managers. According to this view, a firm that is highly indebted presents managers with fewer opportunities to consume perks and pursue empire building. If this argument is true, then shareholders will value a dividend increase less in firms with high debt levels because discretionary cash flows are already reduced. In this case, a dividend increase may be seen as of no value to shareholders. As a result, the reaction to a dividend increase may be insignificant or negative. This is called the agency effect.

These arguments lead to the fourth hypothesis:

Hypothesis 4: The market reaction to dividend increases is stronger for firms that have high debt ratios if the signal effect outweighs the agency effect. If the agency effect outweighs the signal effect, then it is expected that the market reaction will be negative to firms who increase their dividend.

3.5 The Level of Free Cash Flows

One of the major themes in the dividend literature is that dividends reduce the potential for agency costs by reducing the amount of cash available to management. Lang and Litzenberger (1989) find that firms with q-ratios less than one have a larger reaction to dividend increases than firms with q-ratios greater than one. They suggest that the market reactions are directly related to the amount of cash flows available to managers. Higher reactions should be associated with firms that have high cash flows. In their view, the levels of cash flows available to managers are inversely related to a firm's q-ratio.

In this study, free cash flows are calculated for each firm in the sample. The variable that represents cash flows is included in the regressions to test the hypothesis:

Hypothesis 5: Dividend increases that are announced by firms that have large amounts of free cash flows will generate stronger market reactions than dividend increases that are announced by firms that have small amounts of free cash flow.

3.6 Market Liquidity of Common Shares

This research question stems from Fama and French (2001). They argue that transaction costs have decreased over time and information is cheaper to acquire and readily available. They observe that the propensity to pay dividends dropped significantly in 1978 and they partially attribute this drop to the introduction of negotiated commissions three years earlier. They conclude that it is now easier for investors to periodically sell a small amount of their holdings to

create home-made dividends. Thus, investors may not need the quarterly dividend distributions to receive regular cash flows. It is proposed that it is easier to create these home-made dividends the more liquid a firm is. There is no prior research that investigates the relation between the liquidity of a firm's common shares and its dividend policy.

These arguments lead to the following hypothesis:

Hypothesis 6: Firms with greater liquidity will have smaller market reactions to a dividend increase than firms with low liquidity

3.7 The Firm's Q-ratio

Lang and Litzenberger (1989) find that firms with q-ratios less than one have greater reactions to dividend increases than firms whose q-ratios are greater than one. They argue that the q-ratio is inversely related to the level of free cash flows available to firms. Based on these arguments, they justify their conclusions on the basis that dividend increases associated with low (high) Tobin's q-ratios are observed because these firms have high (low) free cash flows.

In this thesis, free cash flows are calculated directly from the publicly available financial statements of the sample firms. The data shows no relationship between the firm's free cash flow and its q-ratio. This raises the question of whether the q-ratio is still an important factor in determining the market's reaction to a dividend increase. Traditionally, the Tobin's q-ratio is used as a proxy for the growth opportunities of the firm. These arguments lead to the following hypothesis:

Hypothesis 7: Dividend increases by firms that have low growth opportunities produce stronger market reaction than dividend increases by firms that have high growth opportunities.

3.8 The Change in Volume

Previous studies have been done on volume changes and dividends. The primary purpose of these studies is to identify clientele effects. In particular, Michaely, Thaler, and Womack (1995) try to determine if there are volume changes surrounding dividend initiations and omissions, which would indicate clienteles shifting into and out of those stocks. They find that there are only minor changes in volume surrounding the omission or deletion dates. Without significant results, they propose that the clientele effect may take place gradually and thus it would be undetectable using current techniques.

In this study, it is proposed that volume changes surrounding the dividend increases can explain some of the variations in the market's reaction to these increases. This leads to the hypothesis:

Hypothesis 8: The market's reaction to a dividend increase is positively associated with the change in volume following the announcement

CHAPTER 4

DATA AND METHODOLOGY

This chapter reviews the sample requirements and the methodology used to test the hypothesis. Section 4.1 describes the sample and the conditions under which a firm may be included in it. Section 4.2 explains the procedures that are followed to collect the data related to each firm in the sample. In particular, it explains how the firm's free cash flows, debt to equity ratio, the percentage of outstanding shares held by institutions, common share turnover, q-ratio, and volume changes are measured.

Section 4.3 describes what is meant by the market reaction to dividend increases and explains the procedure by which this reaction is measured. Essentially, the market reaction is defined as the percentage abnormal return divided by the percentage increase in dividends.

Section 4.4 specifies how the hypotheses are tested. Section 4.4.1 presents the Ordinary Least Squares (OLS) regression model that is used to test most of the hypotheses stated in Chapter 3. Section 4.4.2 describes the process by which the second hypothesis is tested. This hypothesis is concerned with the possibility that the market's reaction to an increase in dividends during a bull market is different from the reaction during a bear market. Section 4.4.3 gives the details of the Fama-Macbeth (1973) regression which is also used in the analysis. Section 4.5 briefly discusses the limitations borne from the methodology used and some underlying assumptions.

4.1 Sample Requirements

This thesis studies the behaviour of stocks in the United States surrounding announcements of dividend increases. The study covers the twenty-year period from 1985 to 2004 inclusive. This time period was chosen for two reasons. First, it coincides with the sample period of Fama and French (2001) who identified the firm's declining propensity to pay dividends. Second, some data required for this thesis are retrieved from the Compustat North American Database. This database provides information for the most recent 20 years.

In order to be included in the sample, a firm must:

1) Be listed on one of the NYSE, NASDAQ or AMEX exchanges,
2) Have daily return data available from CRSP;
3) Have increased its quarterly dividend by at least 10%;
4) Have paid no special dividends and made no quarterly dividend increases during the previous 6 months;
5) Not be a utility firm as determined by the firm's SIC code;
6) Be paying dividends in U.S. dollars without any withholding taxes on the dividend;
7) Have had no stock splits during the month that precedes the dividend increase announcement; and
8) Have the dividend declaration date and the increase of the dividend recorded in the annual publication of Moody's Annual Dividend Record from 1985-1998 and in Mergent's Annual Dividend Record[6] from 1999-2004.

The sample requirements listed above resulted in a total of 919 total firms being included with 2,303 different observations.

4.2 Data Related to the Independent Variables

[6] Moody's changed the name of its publications from Moody's to Mergent's in 1999

Information related to a number of variables is needed in order to carry out the analysis. The firm's free cash flow, debt to equity ratio, and liquidity are obtained from the Compustat North American Database. Information related to institutional holdings is obtained from the Thomson Financial Database.

Free Cash Flow

Free cash flows are important to a firm because they represent the resources that are available for discretionary use by management. Some of these uses could enhance shareholder value such as positive NPV projects, dividend payments, debt reduction, and share repurchases. However, it is also possible for management to spend discretionary money on negative NPV projects such as perquisites and pet projects. For this reason it is hypothesized that investors value dividends because it decreases the amount of money that managers may potentially waste. Lang and Litzenberger (1989) conclude that firms with larger free cash flows experience a larger abnormal return than firms with smaller free cash flows. In their methodology they divide their sample into firms with q-ratios above and below one, and assume that firms with q-ratios less than one have larger free cash flows. For this thesis, free cash flows are computed directly and then tested to see if the level of free cash flow has a significant relationship with the market's reaction to a dividend increase.

One of the problems associated with calculating free cash flow is that there is no single definition that is accepted by all financial professionals. Most definitions[7] result in a similar figure but there are slight differences in how this figure is calculated. For example, one definition might start with net income and another might start with operating income prior to depreciation expenses. The first definition will add back depreciation and the second will add

[7] For examples see "The Analysis and Use of Financial Statements" by White, Sondhi and Fried (1997) or "Investment Valuation" by Damodaran (1996).

income from non-recurring items. Eventually the two approaches produce similar results. The definition of free cash flow which is used in this thesis is:

$$FCF = NI + DEP - DIV - CAPX \pm \Delta NWC \pm DEF\ TAX \pm NET\ DEBT \qquad \text{Eq. 2}$$

where FCF - Free Cash Flow

NI - Net Income

DEP - Depreciation

DIV - Cash Dividends Paid to Shareholders

CAPX - Capital Expenditures

Δ NWC - Changes in Net Working Capital

DEF TAX - Deferred Taxes

NET DEBT - Net New Debt

Lie (2000) also tried to find a relationship between a firm's cash flow and abnormal returns when a firm increases its dividend but was not able to do so. He used a different measure of cash flow and abnormal returns. His definition of cash flow was called 'undistributed cash flow' which is defined as operating income before depreciation minus interest expenses, taxes and dividends. The definition presented here is more thorough as it includes all of Lie's (2000) variables plus the cash flows that result from debt, deferred taxes, capital expenditures and changes in networking capital. Lie's (2000) definition of the dependent variable abnormal return is also different. He used raw abnormal returns (as described in the next section) while the dependent variable used in this thesis is abnormal returns standardized by their dividend increase. Thus, the abnormal return for a 10% dividend increase in Lie (2000) was treated the same as an abnormal return associated with 50% dividend increase. The standardization is necessary because a larger increase in dividends should relate to a larger abnormal return.

Hopefully by making these changes I will be able to identify a relationship between dividend valuation and cash flows.

The net income figure is the starting point for this measure and it represents the income or loss of a firm for a period. It is determined as the sum of income from all sources minus all expenses and losses. Note that this net income measure includes the cash flows from extraordinary items and discontinued operations. Alternatively, these cash flows may be excluded to obtain the free cash flow from operations. For this thesis all cash flows that are available to a manager are considered important as the cash can be used improperly regardless of how it was obtained. The net income data used in this study are obtained directly from Compustat (mnemonic code is NI).

Depreciation is a non-cash expense that reduces the cash flows a firm may report as net income. It is technically cash set aside for the purpose of replenishing depreciable assets. Therefore, depreciation is added back to net income to obtain the actual amount of cash available to managers. The depreciation amount is obtained from the Compustat database (mnemonic code is DP).

The amount of cash dividends paid to shareholders is subtracted from net income to obtain free cash flow. It may be argued that cash paid as dividends should not be deducted as in theory dividend payments are discretionary and may be discontinued by management. However, in practice dividend payments are not entirely discretionary and freely determined by management. It is well documented (for example see Lintner 1956) that dividends are smoothed over time and rarely cut. In extreme cases when cash resources are not enough, management will find other sources of capital to pay dividends rather than reduce or suspend them. The amount of dividends paid is obtained from Compustat (mnemonic code is DV).

Capital expenditures are subtracted from net income to find free cash flow. This is done as capital requirements need to be made to maintain the firm's current productive capacity. There are two possible ways to estimate capital expenditures; these are historical cost depreciation and total capital expenditures made during a period. If capital expenditures for a period equalled depreciation then this would nullify the depreciation expense that was previously added back. As the depreciation expense is arbitrary, it would be nothing more than coincidence if it equalled the capital expenditures needed to maintain current capacity. The second alternative relies on the capital expenditures a firm identifies on the cash flow statements (Compustat mnemonic code is CAPX). This figure is generally regarded as the better choice and is therefore the method used here even though the discretionary capital expenditures are not distinguishable from necessary expenditures. Ideally, necessary capital expenditures are not included in this calculation because managers do not have a choice regarding these expenditures, and the free cash flow measure tries to identify cash flows that management can make choices with.

Changes in net working capital are needed to calculate free cash flow. Net working capital for any given year is defined as current assets minus current liabilities. Both of these are found directly from Compustat (mnemonic codes are ACT and LCT respectively). What is important for the measurement of free cash flow is the change in net working capital from the previous year. For example, an increase in current liabilities in one year while holding all else constant (except for a general asset account which matches the increase found in current liabilities) means that a firm has increased its assets through increasing liabilities. This is considered to be a source of or increase to cash. The change of net working capital for the years 1986-2004 is calculated by subtracting the previous year's working capital from the current year.

If this calculation yields a positive number (current assets increased or current liabilities decreased or both) this means that the firm has decreased its cash flows, and the opposite is true if this number is negative. This cannot be calculated for 1985 as the database does not extend past this year and hence the change from 1984 cannot be calculated. For 1985, the average of the change in net working capital for the following five years is taken and used as an estimate.

Deferred taxes are also needed to calculate free cash flow. They are obtained from the statement of cash flows and it arises because of the different amortization methods used for accounting and taxation purposes. To illustrate how this item arises, consider a company that elects to use an accelerated depreciation method for tax purposes and straight-line depreciation for accounting reports. Since depreciation is larger in the earlier years for tax purposes, there are two consequences: 1) a tax deferral or savings in early years; and 2) a tax catch-up or expense in later years. If a company experiences a tax deferral in a year this must be added to free cash flows because the company has an expense it deducted from net income that it did not outlay any cash for. The opposite is also true if a firm has to pay a tax catch-up in any year. Deferred taxes for a firm are reported as an annual item in the Compustat (mnemonic code of TXDC).

The firm's financing activities affect the amount of free cash available to managers. For a levered firm there is a possibility each year of retiring debt which would decrease the amount of cash available, and there is also the possibility that a firm might issue new debt which could increase the level of cash available[8]. Thus, a firm that has a net increase in its borrowings means that the firm's managers have more discretionary money on hand. If this number is negative it implies that a firm has retired more debt in a year than it has issued. This results in the firm's management having less discretionary cash to spend and therefore it needs to be subtracted from

[8] Issuing new debt might not increase cash on hand if it already has a specific purpose to be used for such as expanding operations. In this situation the debt raised (increase to FCF) would cancel out the capital expenditures (decrease to FCF).

the rest of the free cash flow calculation. Compustat has a mnemonic code of DLTR for the reduction in long term debt and DLTIS for the issuance of long term debt. Netting these two against each other gives us the last number needed to calculate free cash flow.

Once the free cash flow for each company has been determined, we need to know what the free cash flow per share is as this is what shareholders are ultimately concerned with; this is similar to shareholders being concerned with earnings per share and not with total earnings. The number of common shares outstanding is available from Compustat and has a mnemonic code of CSHO. Therefore, the free cash flow measure is divided by the number of common shares outstanding to get free cash flow per share.

Debt to Equity Ratio

One of the possible explanations for the decrease in firm's propensity to pay dividends is that interest payments have begun to reduce the importance of dividend payments as explained by Jensen (1986) because interest payments may decrease agency costs and act as a signal of a high quality firm (both of which are theoretical reasons of why firms pay dividends). The increase in debt load in the stock market is illustrated by the fact the average debt to equity ratio has risen in the Standard and Poor's 500 from 47.3 in 1985 to 79.1 in 2004. The debt to equity ratio is available from Compustat and has a mnemonic code of DCE. Debt is classified as such an a firm's balance sheet if it's principal is due in more than one year. Common equity includes total share capital and retained earnings.

Liquidity

Fama and French (2001) hypothesize that one of the possible reasons that fewer firms are paying dividends is that homemade dividends are easier to create, and these homemade dividends more adequately meet the needs of investors when compared to those that are paid by

the firm. It follows from this that home-made dividends should be easier to create in firms that are more liquid. For this thesis liquidity is measured by common share turnover; which is defined as the ratio of a firm's annual number of common shares traded to the amount of common shares outstanding. For example, a ratio of 2 would indicate that each share outstanding traded 2 times during the year. This leads to common share turnover being the third data point collected. This data is available from Compustat, with common shares outstanding and trading volume having mnemonic codes of CSHO and CSHTRF respectively.

Institutional Ownership

The fourth characteristic that needs to be gathered is the percentage of common shares outstanding that are owned by institutions, this is commonly referred to as institutional ownership. As discussed in the literature review, institutional ownership might act either as a signal of firm quality or a potential way to mitigate agency problems. Collecting this information will allow the relationship between institutional holdings and the markets reaction to dividend increases to be tested. The data for institutional holdings is available from the Thomson Financial Database.

Q-ratio

The q-ratio is defined as the market value of equity divided by the book value of equity. A higher q-ratio is interpreted to mean that managers have earned higher rates of return. The book value of equity is available from the Compustat (code of BVAL). The market value of equity is also available from Compustat (code of MKTVAL). The q-ratio is calculated by taking the ratio of these two numbers.

Trading Volume Surrounding the Dividend Increase

This data is gathered from the CRSP database. The increase in volume measure is defined as the excess volume that occurs after the dividend announcement has taken place when compared to volume over a similar time period prior to the announcement. This measure is also standardized by the average daily volume in order to get the abnormal volume on a percentage scale. Three different volume measures are used; 10, 5 and 2 days. The following steps are followed to obtain the variable that accounts for trading volume:

1) find the mean volume for the specified number of days prior to the dividend change;
2) find the mean volume for the specified number of days after the dividend change;
3) find the difference between these two volumes;
4) standardize this difference by the average volume for the time period.

4.3 Methodology

4.3.1 Determining the Market's Reaction to a Dividend Increase

Previous studies, such as Pettit (1972), Charest (1978), and Allen and Michaely (2003) consider the abnormal returns following announcements of dividend increases. Their methods are followed in this study.

In order to develop a measure of the market reaction, the first step is to calculate the abnormal return on the dividend declaration date. For this the traditional event study methodology by Brown and Warner (1985) is used. They suggest three ways to calculate an abnormal return. For this study the OLS Market Model is used. This method is chosen because Brown and Warner (1985) find that it outperforms the other models, and because it is the most common method referred to in the literature.

This model assumes that the return on a security can be estimated using the relationship between the individual security's return and the return on a market index. Mathematically the relationship looks like the following:

$$R_{i,t} = \alpha_i + \beta_i \times R_{m,t} + \varepsilon_{i,t} \qquad \text{Eq. 3}$$

where $R_{i,t}$ – the rate of return for the firm i at time t

α_i – the intercept coefficient

β_i – the coefficient representing the linear relationship between the firm i return and the return on a market index

$R_{m,t}$ – the rate of return on a market index

$\varepsilon_{i,t}$ – the unsystematic component of the firm i's return with the market return

The parameter estimates above are estimated by regressing the daily returns of each firm on the daily returns of the S&P 500 stock index. The estimation period of the model is from 250 days prior to 1 day prior to the event day (declaration date). These parameters are then used to calculate the abnormal return for the firm. The abnormal return is calculated as follows:

$$A_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i \times R_{m,t} \qquad \text{Eq. 4}$$

where $A_{i,t}$ – is the Abnormal Return of firm i at time t

$R_{i,t}$ – the rate of return for the firm i at time t

$\hat{\alpha}_i$ – an estimate of the intercept coefficient

$\hat{\beta}_i$ – an estimate of the coefficient representing the linear relationship between the firm i's return and the return on a market index

$R_{m,t}$ – the rate of return on a market index

The abnormal return then needs to be tested for significance. To do this, a t-statistic is calculated which also uses the methodology proposed by Brown and Warner (1985). They state that the null hypothesis to be calculated is that the mean excess return on the event day is equal to zero. The test statistic is the ratio of the event day mean excess return to its estimated standard deviation where the standard deviation is estimated from a time series of mean excess returns. Specifically this is done as follows:

$$t = \frac{\overline{A_t}}{S(\overline{A_t})} \text{ with T-1 degrees of freedom} \qquad \text{Eq. 5}$$

where $\overline{A_t} = \frac{1}{N}\sum_{i=1}^{N} A_{i,t}$

$$S(\overline{A_t}) = \sqrt{\frac{1}{T-1}\left[\sum_{i=t}^{T}\left(\overline{A_t} - \overline{\overline{A}}\right)^2\right]}$$

$$\overline{\overline{A}} = \frac{1}{T}\sum_{i=-1}^{T}\overline{A_t}$$

T - The number or pre event-days

N - The number of sample firms

Brown and Warner (1985) state that if the $\overline{A_t}$ are normal, independent, and identically distributed, that the test statistic will be distributed as a students t-distribution.

It is expected that most of the abnormal return will occur on the event (or declaration) day, but there is the possibility that the announcement effect of a dividend increase might be felt on the days surrounding it. The days prior may be important because it is possible that information regarding the dividend increase may already be known by some market participants. It may also be important to examine the days immediately following as it may take time for investors to fully incorporate the new information. As a result, the Cumulative Abnormal Return

(CAR) is also calculated to ensure that all of the announcement effect is captured. The CAR is a multi-day event study that uses the estimates in equation 3 to calculate the abnormal return surrounding the event day. Mathematically CAR looks like the following:

$$CAR_i = \sum_{t=-j}^{t=+k} A_{i,t} \qquad \text{Eq. 6}$$

where CAR_i – is the Cumulative Abnormal Return of firm i

- j – the number of days prior to the event day

+ k – the number of event days succeeding the event day

$A_{i,t}$ – the abnormal return for firm i on days – j through + k

The multi-day event periods for this study are 5 days (-2,+2) and 3 days (-1,+1).

Just as with the abnormal return calculation, the CAR needs to be tested for significance. To do this a similar t-statistic is calculated. This new t-statistic is calculated as follows:

$$t = \frac{CAR_i}{\sqrt{\sum_{t=-j}^{t=+k}\left[S\left(\overline{A_t}\right)\right]^2}} \text{ with T-1 degrees of freedom} \qquad \text{Eq. 7}$$

Because it can be expected that larger dividend increases will result in larger abnormal returns, once the abnormal return (or CAR) is calculated it needs to be standardized in order to facilitate comparison. Abnormal returns are standardized by dividing them by the percentage increase of the firm's dividend. This step creates a measure that allows comparability among all firms. Mathematically this measure looks like the following:

$$D_{i,t} = \frac{A_{i,t}(CAR)}{P_{i,t}} \qquad \text{Eq. 8}$$

where $A_{i,t}$ – is the Abnormal Return of firm i at time t or the CAR of one of the multi-day event studies

$P_{i,t}$ – percentage increase of firm i's dividend at time t

$D_{i,t}$ – the unit of measure that gives us the abnormal return per percentage increase in dividend for firm i

If this step was not done, then all abnormal returns would be treated the same regardless of dividend increase. For example, if two firms each had an abnormal return of 5% but one increased its dividend by 10% and the other by 20%, the raw abnormal return does not reflect the fact that the second firm increased its dividend by twice as much.

4.3.2 Testing to See if the Market's Reaction to a Dividend Increase is Declining with Time

In order to test the hypotheses stated in chapter 3 regression analysis is used. The first regression is a multi factor regression model with the abnormal return per unit of dividend increase (D_i from equation 8 with the time index suppressed) as the dependent variable with time and the other firm specific factors as explained in chapter 3 as the independent variables. The regression equation for this is defined as follows:

$$\hat{D}_i = \hat{\alpha} + \hat{\beta}_1 \mathrm{FCF_i} + \hat{\beta}_2 \mathrm{D/E_i} + \hat{\beta}_3 \mathrm{TURN_i} + \hat{\beta}_4 \mathrm{INS_i} + \hat{\beta}_5 \mathrm{Time} + \mathrm{e_i} \qquad \text{Eq. 9}$$

where $\hat{D}_i$ – an estimate of the abnormal return divided by percentage increase in dividend

$\hat{\alpha}$ – an estimate of the intercept coefficient

$\mathrm{FCF_i}$ – the free cash flow of the firm

$\hat{\beta}_1$ – an estimate of the slope coefficient for FCF; the expected sign of this coefficient is positive as firms with high FCF have greater agency costs,

and thus a dividend will reduce these agency costs and be valued more for firms who have more of these costs

D/E_i – the Debt to Equity ratio of the firm

$\hat{\beta}_2$ – an estimate of the slope coefficient for D/E; the expected sign of this coefficient is negative if the agency problem discussed for the FCF coefficient holds, if firm's with high debt loads are signalling future prospects than the expected sign of this coefficient is positive

$TURN_i$ – the common share turnover for the firm

$\hat{\beta}_3$ – an estimate of the slope coefficient for TURN; the expected sign of this coefficient is negative as homemade dividends (selling small portions of stock) is easier to do with firms that have greater liquidity

INS – the percentage institutional ownership of the firm's outstanding shares

$\hat{\beta}_4$ – an estimate of the slope coefficient for INS; it is expected that this coefficient will be negative as institutional holdings potentially reduce agency costs and act as a signal of firm quality which are both potential reasons for a firm to pay a dividend and thus paying a dividend is redundant

Time – a variable that represents the date of the dividend increase. Firms in the first year of the sample are given a value of zero, firms in the second year of the sample are given a value of one, etc.

$\hat{\beta}_5$ – an estimate of the slope coefficient for time; it is expected that this will be negative as investors have become more sophisticated and prefer other

forms of payouts and because there are better forms of corporate governance

e_i – the estimate of the unsystematic component

Other factors are added to this base model, particularly a firm's q-ratio and change in volume. As they were not part of the original ideas to be tested, they are not included in equation 9.

For this regression standard t-tests are used in order to determine significance.

As a summary, the following table shows the expected signs of the coefficients and the theories that predict these signs.

Table 1 – Expected signs of the coefficients

Coefficient	**Expected Sign**	**Theory**
Free Cash Flow	Positive	Agency Costs
Debt-to-Equity	Negative/Positive	Agency Costs/Signaling
Turnover	Negative	Easier to create home made dividends
Institutional Holdings	Negative	Signaling and Agency Costs
Time	Negative	Decreasing importance of dividends

4.3.3 Testing to see if there is a Difference in how the Market Reacts to a Dividend Increase in Bear vs. Bull Markets.

This section describes how to perform a test to see if the market's reaction to a dividend increase depends on the chance the dividend increase occurred in a bull or bear market. In order to do this a dummy variable needs to be introduced. Dummy variables are used when qualitative variables such as gender, geographic regions, or time periods are tested. In this case two different time periods are being tested; a bull and bear stock market. A question that needs to be answered is when did investors know that they were no longer in a bull market? There is no definitive answer for this and as a result some judgement needs to be made. In the year 2000 the Dow Jones Industrial Average (DJIA) hit an all time high of 11,723 in January, and two months

later in March the NASDAQ Composite Index hit its all time high of 5,133. After these points it is unclear of exactly when investors felt that the market dynamics had changed. Many felt that in September of that year the market would increase as it had in previous years. However that didn't happen and the stock market continued to decline throughout the year.

Because it is likely that most investors were uncertain if the market was in a bull or market phase for most of the year 2000, these observations are ignored in this analysis. This allows almost a full year form the highest point of the DJIA for investors to realize that the bull market was over. This results in the observations dated from the year 2001 onward given a value of one, and those observations from 1990 – 1999[9] were given a value of zero.

When the dummy variable is included the regression equation looks like the following:

$$\hat{D}_i = \hat{\alpha} + \hat{\beta}_1 \text{FCF}_i + \hat{\beta}_2 \text{D/E}_i + \hat{\beta}_3 \text{TURN}_i + \hat{\beta}_4 \text{INS}_i + \hat{\beta}_5 \text{DUM}_i + e_i \qquad \text{Eq.10}$$

where $\hat{\beta}_5$ – an estimate of the slope coefficient for DUM; it is expected that the sign will be positive as it is thought that investors will value more in times of market uncertainty

DUM_i – the dummy variable

All other variables have the same definition and expected sign as were described for equation 9.

Equation 10 is similar to equation 9 except that the dummy variable has replaced the variable that represented the year the dividend change took place; this was removed because including it would introduce collinearity into the model.

[9] Other definitions of the time before the market declined were tested as well. Similar results to those reported in Chapter 5 were found. These secondary results are not reported.

4.3.4 Fama-Macbeth Regression

A final methodology to test for firm specific variables is to use a Fama-Macbeth (1973) regression. This specification requires that the regression equation specified in equation 9 be performed for each year that data is available. Once these regressions are performed (20 in this sample), the coefficients are tested by determining if they are stable through time. Specifically the Fama-Macbeth regression looks like the following:

$$\hat{D}_{i,t} = \hat{\alpha}_t + \hat{\beta}_{1,t} \mathrm{FCF_{i,t}} + \hat{\beta}_{2,t} \mathrm{D/E_{i,t}} + \hat{\beta}_{3,t} \mathrm{TURN_{i,t}} + \hat{\beta}_{4,t} \mathrm{INS_{i,t}} + \mathrm{e_{i,t}} \qquad \text{Eq. 11}$$

where the subscript t ranges from 1985-2004 and the variables maintain the same definitions they did in equation 9.

Once the slope coefficients are estimated for each year, they are averaged which results in a Fama-Macbeth coefficient. In order to calculate the significance of a particular beta, each is treated as a time series and the following t-test is performed:

$$t = \frac{\overline{\beta_{i,t}}}{\sigma_{\overline{\beta_i}}} \quad \text{with n - 1 degrees of freedom} \qquad \text{Eq.12}$$

where $\overline{\beta_{i,t}}$ – the average beta over the sample period

$\sigma_{\overline{\beta_i}}$ – the standard deviation of the beta over the time period

n – the number of years of the sample covers

4.4 Limitations of Data and Methodology

The limitations found in this study are similar to those of other studies. The underlying assumption of these studies is that the abnormal return to a dividend increase is a proper measure of dividend worth. A second limitation is that only dividend increase announcements are used, this excludes other events such as dividend decrease announcements. Dividend decreases are generally not used as these events occur less frequently, and they usually occur with other

corporate news items such as lower than expected earnings. Thus it would be difficult (if not impossible) to determine how much of the market reaction is attributable to the dividend decrease and to the other corporate events.

Another limitation is that the relationship predicted is linear. This assumption seems to be appropriate as it is used in all of the cited works.

CHAPTER 5

EMPIRICAL RESULTS

This chapter gives the details of the results for the hypotheses that are stated in chapter 3. The first section of this chapter illustrates the descriptive statistics and also discusses the abnormal return calculations. It is found that most of the abnormal return is captured on the event day and thus the cumulative abnormal return is not carried forward.

The main research questions going into this project were to see if the market reacts differently to an increase in dividends through time, and to see if the market reaction is different depending on if the dividend increase occurs in a bear or bull market. Investigating the reaction through time is discussed in detail in section 5.2. Testing to see if the market reaction is different depending on market conditions is tested in section 5.3. Hypotheses 3 through 7 are tested in each section. The final hypothesis regarding the potential for a volume measure to increase the explanatory power of the model is tested for explicitly in section 5.3.

The main research questions have evidence to support them. First, there is evidence that the market reaction to a dividend increase is declining. This evidence comes from the consistent negative coefficient on the time variable in the different models tested in this chapter. This is important as it is the first time that such a decline has been documented. This may mean that investors do not have the same appetite for dividends as they once did.

The second question regarding market reaction during a bear or bull market also gave affirmative results. However, evidence shows that the market reaction is less in bear markets. This is opposite of what was expected. It was thought that the market reaction would be greater in bear markets as investors would more appreciate the increased dividend stream as capital gains are more uncertain. One possible reason for this observation is that during bear markets

capital is more scarce, and market participants want firms to hold on to capital for a variety of reasons; some of which may be to invest in positive NPV projects or to save for the proverbial rainy day. Another finding relating to the market reaction being less in the bear market is that the size of the firms who increased dividends is larger in this time period. This leaves the possibility that the reaction to a dividend increase is smaller because there is more known about larger firms, which reduces the need for both signalling and reducing agency problems.

Some other surprising results are that the relationships that agency theory predicts do not hold. This theory predicts that firms with the most potential agency conflicts should have a greater reaction to a dividend increase. What is surprising is that this relationship appears to be negative. The primary measure of agency costs is free cash flows. Three alternative measures are explored to further the understanding of this relationship. These are lagged free cash flows, cash flows from operations, and cash & cash equivalents. What is found is that all proxies are negative, and depending on the proxy used they are significant.

Also disputing agency theory are the results for the debt to equity coefficient. If agency theory is correct, this coefficient would be negative as firms with high debt loads have already decreased their agency conflicts. What instead was found is that the market reacted positively to such firms. This result is interpreted to mean that that firm's with high debt loads who increase their dividend are signalling to the market that they are a high quality firm in spite of these high debt levels.

The results of the free cash flow and debt to equity coefficients are interpreted to mean that the agency cost theory of dividends does not hold.

Also of interest is that the liquidity measure, common share turnover, is significantly negative. This means that there is a negative relationship between the liquidity of a stock and the

market's reaction to an increase to its dividend. This relationship is believed to be the result of it being easier to make a home made dividend in such firms, which means that market participants do not get as excited about these firms when they raise their dividends.

The final hypothesis relating to institutional holdings cannot be confirmed. It does not appear to have a relationship with dividends.

Relating to the two additional hypotheses that were added as the research progressed; it is confirmed that firms with q-ratios less than one have a greater response to a dividend increase than firms whose q-ratios are greater than one. This confirms the earlier work of Lang and Litzenberger (1989), but the fact that free cash flows are negatively related with market reaction contradicts their conclusions. It is most likely that their results are driven by the fact that firms with q-ratios below one are seen as having poor investment prospects, and that the market interprets a dividend increase in these firms as signalling better future performance.

The final hypothesis regarding the volume measure did not increase the explanatory power of the model. However, the volume measure itself is significant. This is important, as a change in volume surrounding a dividend increase may be indicative of a change in dividend clientele as suggested by Michaely, Thaler, and Womack (1995).

Also to report is that the Fama-Macbeth (1973) regression did not show any statistically significant results. This is not all that surprising as this method is usually used on more uniform events than abnormal returns. Some other models were also tried without much success. These models depended on lagged values of the variables and the percentage change from one year to the next. These last models are reported in section 5.3.

5.1 Preliminary Findings

This section presents preliminary results and descriptive statistics related to the variables.

Table 2 shows the abnormal returns surrounding announcements of dividend increases for each year in the 20-year period ending with 2004. In addition, it presents the results of performing the abnormal return and cumulative abnormal return analysis. Several observations can be made from this table. First, the last row shows that the abnormal return of the entire sample is positive and statistically significant for the event day while the cumulative abnormal returns are not statistically significant. This observation suggests that most of the abnormal return is generated on the announcement day. Second, Table 2 shows that abnormal returns are either not negative or not statistically significant for 11 of the 20 years considered in this study. In particular, the abnormal returns are not significant for any of the years in the six-year period ending with 2003. Furthermore, in 2004 the abnormal returns are statistically significant but contrary to expectations they are negative rather than positive. While far from conclusive, this suggests that the market's reaction to a dividend increase is not consistent throughout the years.

Table 2 - Mean Abnormal Return and Cumulative Abnormal Return for different years

Year	# of Firms	Mean Abnormal Return	T-statistic	Mean CAR (-2 - +2)	T-statistic	Mean CAR (-1 - +1)	T-statistic
1985	116	0.50%	3.39***	1.06%	3.14***	1.16%	4.41***
1986	84	0.34%	1.59	0.68%	1.44	0.60%	1.63
1987	115	0.07%	0.43	-0.50%	-1.26	-0.13%	-0.46
1988	147	0.30%	1.58	0.07%	0.16	0.58%	1.76
1989	156	0.31%	2.43**	0.01%	0.05	0.35%	1.61
1990	117	0.34%	2.09**	0.32%	0.87	0.47%	1.65
1991	88	0.29%	1.22	0.91%	1.70*	0.73%	1.75*
1992	114	0.83%	4.18***	0.95%	2.04**	0.97%	2.70***
1993	121	0.42%	2.08**	-0.11%	-0.24	0.01%	0.04
1994	152	0.41%	2.90***	0.36%	1.11	0.19%	0.75
1995	149	0.60%	4.13***	1.00%	3.11***	0.88%	3.53***
1996	158	0.32%	2.22**	0.37%	1.1	0.40%	1.58
1997	120	0.29%	1.96**	-0.07%	-0.19	0.08%	0.3
1998	124	-0.07%	-0.42	0.24%	0.62	-0.12%	-0.4
1999	79	0.38%	1.57	0.21%	0.37	0.13%	0.3
2000	83	0.24%	0.89	1.58%	2.64***	0.57%	1.22
2001	73	-0.05%	-0.18	0.57%	0.99	0.39%	0.86
2002	79	0.30%	1.35	0.66%	1.34	0.65%	1.69*
2003	121	-0.03%	-0.26	0.42%	1.5	-0.01%	-0.04
2004	107	-0.34%	-2.30**	-0.29%	-0.82	-0.45%	-1.71
Entire Sample	2303	0.28%	2.32**	0.38%	1.31	0.36%	1.64

***, **, and * denote respectively significance at 1%, 5%, and 10%

Table 3 shows the mean, the standard deviation, and the quartile rankings for the different variables that are used in the regression analysis. The abnormal return per unit of dividend increase variable is the dependent variable for the regressions. All variables are described in chapter 4.

Table 3 - Summary Statistics of the Explanatory Variables

	Mean	Standard Deviation	Quartiles			
			1	2	3	4
Percentage increase in Dividend	0.166	0.083	0.112	0.142	0.192	0.75
Abnormal return	0.003	0.02	-0.007	0.001	0.013	0.087
Abnormal return per unit of dividend increase	0.017	0.143	-0.049	0.011	0.08	0.592
Debt to equity	0.65	0.914	0.126	0.354	0.782	12.134
Common share turnover	0.634	0.436	0.333	0.535	0.823	3.025
Free cash flow	2.596	5.077	0.992	1.98	3.332	45.24
Q-ratio	2.373	1.777	1.316	1.827	2.741	15.48
Institutional holdings	0.443	0.213	0.281	0.46	0.6	1
10 day excess volume	0.648	7.578	-2.141	0	2.926	79.036
5 Day excess volume	0.551	4.652	-1.156	0.192	1.934	40.125
2 Day excess volume	0.33	2.963	-0.483	0.099	0.915	33.916

Table 4 shows the correlation between the explanatory variables used in the regression equations. The highest correlation is 45.77%, which is observed between common share turnover and institutional holdings. As suggested by Gujarati (2003), multicollinearity is not a problem if the correlation among the different variables is less than 80%. It has also been suggested that if the correlations are statistically significant that one of the offending variables should be dropped. The significance of the correlation coefficient is partly determined by the number of observations, and with a large sample such as this the correlation can be quite low and still be rendered to be significant. In particular, for a sample of this size anything with a correlation greater than 4.08% (in absolute value) is considered to be significant correlation. This would result in all of the variables being dropped because all have correlations greater than this. As a result, this rule is not used.

Table 4 – Correlation between the explanatory variables

	Debt to Equity	Share Turnover	Free Cash Flow	Q-ratio	Institutional Holdings
Debt to Equity	--	0.1341	0.0751	0.1326	0.0911
Share Turnover	0.1341	--	0.1630	0.0600	0.4577
Free Cash Flow	0.0751	0.1630	--	-0.1051	0.1159
Q-ratio	0.1326	0.0600	-0.1051	--	0.2350
Institutional Holdings	0.0911	0.4577	0.1159	0.2350	--

5.2.1 Investigating the Market's Reaction to Dividend Increases

This section tests Hypothesis 1 and Hypotheses 3-7. Regression analysis is utilized for this purpose. Abnormal return per unit of dividend increase is regressed against free cash flow, the debt to equity ratio, share turnover, institutional holdings, and the time variable. Table 5 summarizes the results of performing this analysis.

Table 5 – Identifying the factors that affect the market's reaction to a dividend increase

	Coefficient	T-statistic	P-Value
Intercept	0.0499	5.08***	0.000
Free Cash Flow	-0.0007	-1.47	0.143
Debt to Equity	0.0044	2.02**	0.043
Share Turnover	-0.0195	-2.31**	0.021
Institutional Holdings	-0.0111	-0.61	0.543
Time	-0.0014	-2.19**	0.029
R^2	0.03		
Adjusted R^2	0.03		
F-Value	4.19***		

***, **, and * denote respectively significance at 1%, 5%, and 10%

Table 5 shows that a firm's debt to equity ratio, share turnover, and the year the dividend took place have significant relationships to how investors value dividends. The most notable result of this table is the significantly negative relationship that exists between the market's reaction to a dividend increase and the year the dividend increase took place. The coefficient for the time variable is -0.14%, this results in a total decline of 2.66% of abnormal return over the

entire sample. This is important as it provides evidence that the market does not concern itself with dividend increases, and hence dividends, as much as it once did. It is not surprising to find this as Fama and French (2001) documented that firms have a lower propensity to pay dividends. Combining their results with those found here imply that a firm's decreased propensity to pay dividends may be the result of a change in investor demand. Some of the possible reasons as to why this pattern is found may be the improvements in corporate governance, more timely releases of company information, and more efficient methods of distributing profits. These changes may mean that dividends are no longer needed to signal a firm's quality or to reduce its agency costs.

Now turning the examination to the other variables there are a number of interesting observations. The first is that the slope coefficient on the debt to equity ratio is significantly positive, when it was expected to be negative. It was thought to be negative as dividends and interest payments both reduce the potential agency costs of a firm. Thus, if a firm has large interest payments, the increased dividend payment would be redundant as Jensen (1986) points out. What a positive coefficient suggests is that investors value dividends more for firms that have high debt loads. The most logical explanation for this, and previously not expressed in the literature, is that interest payments place cash flow constraints on a firm; and a firm that raises its dividend in spite of its already constrained cash flow is signalling to the market that it expects future cash flows to be high enough to maintain both the current debt load and the increased dividend stream. This suggestion supports the signalling theory at the expense of agency theory.

A firm's common share turnover is significantly negative. This is the first time that an attempt has been made to see if the market reacts differently to firms with different liquidity levels. This is important as it should be easier to sell stock (and thus the process of making a

homemade dividend is easier) when a firm is more liquid. The evidence from Table 5 shows this is true as the higher a firm's common share turnover, the lower the market's reaction to a dividend increase. The advantage to investors of being able to create their own dividend is that it allows the investor to time their consumption decisions and tax liabilities; whereas dividends force both of these events unilaterally on all shareholders.

The coefficients of institutional holdings and free cash flow measures are both negative but statistically insignificant. In particular, it is surprising to see that the free cash flow measure is negative when agency theory predicts it should be positive. If it was significant, it may contradict the conclusions of Lang and Litzenberger (1989). They suggest that a firm with substantial free cash flows will have tendency to over-invest by accepting marginal investment projects while increases in dividend payments will reduce the ability of managers to invest in such projects. Therefore, a dividend increase by a firm that has a high level of free cash flow should have a positive effect on share prices. As a result, further investigation is warranted.

It is important to remember that Lang and Litzenberger (1989) never computed a firm's free cash flow. They made their conclusions about a firm's free cash flow by looking at the relation between dividend increases and the firm's q-ratio. They tested to see if there was a statistically significant difference between firms whose q-ratios were greater than and less than one. They found that firms with q-ratios less than one had a statistically significant larger reaction to dividend increases. They concluded from this that firms with larger free cash flows (and hence greater agency costs) have greater responses to dividend changes. While it is possible that a relationship may exist between a firm's q-ratio and its free cash flows, it is important to point out that free cash flows were never calculated in Lang and Litzenberger's (1989) study. What if the assumption that the relationship between free cash flows and agency

costs that they postulate is not true? It is more appropriate to calculate the free cash flows of a firm and then test for the relationship. It is also important to recognize that the q-ratio traditionally measures a firm's growth prospects, not its agency conflicts.

In order to see if there is any correlation between free cash flows and the q-ratios for the firms in this sample their correlation coefficient was calculated. The result of this was surprising as the correlation was only 0.01466, which essentially means that there isn't any correlation. In order to test the robustness of this number I gathered the q-ratios and free cash flows for all of the firms who declared a dividend in 2004 and calculated the correlation coefficient for this second sample. This ended up being –0.00261 which confirms that the correlation between a firm's q-ratio and free cash flows is negligible. This means that the assumption that a relationship between free cash flows and q-ratios is not warranted.

In order to see if my sample is similar to Lang and Litzenberger's (1989) in that those firms' whose q-ratios are less than one have greater responses to increases in dividends a difference of means test was used. The results show that firms with q-ratios less than one had a significantly larger reaction to dividend increases. The t-statistic for this test is 2.08 which is statistically significant at the 5% level. This means that my sample has the similar characteristic to Lang and Litzenberger's (1989) in that firms with q-ratios less than one have a greater market response to an increase in dividends.

The fact that I get the same results as Lang and Litzenberger (1989), that q-ratios have essentially no correlation with free cash flows, and that a previous study by Lie[10] (2000) found no relationship between abnormal returns (not abnormal returns per unit of dividend increase) and his measure of 'undistributed cash flow' (not free cash flow per share), gives rise to the

[10] For a full comparison of Lie's (2000) measure and the one used in this thesis please refer to section 4.2

possibility that a negative relationship may exist between free cash flows of a firm and its dividend. This possibility is further examined in the next sub-section.

5.2.2 Exploring Other Measures of Free Cash Flow

As the proposed free cash flow measure is cumbersome to calculate and relies on many inputs, it may be possible that investors use a different or simpler measure to estimate potential agency costs. For this reason, I repeat the same analysis by using different measures of free cash flows. First, I repeat the analysis using lagged free cash flows. This is the same measure of free cash flows used previously except it is lagged by one year. A lag is important as investors may be dealing with old or stagnant information, and the lag allows for information to be incorporated fully. Old information may be relevant to the decision makers' reactions as the majority of dividend increases coincide with a firm's fiscal year end, and the current financial statements are not available generally for three months. It can be argued that the lag isn't necessary for the other variables (and illustrated later in this chapter in section 5.3) as they are much simpler to estimate because they have fewer inputs. Second, I use operating cash flows as the proxy for free cash flows. This is a simple measure as it is reported in the financial statements. This measure of cash flows may be more relevant as it is often considered the firm's sustainable cash flow. Third, I use cash plus cash equivalents as a simple measure of the potential agency costs. This may be relevant as it measures the amount of cash that a manager can mismanage without having to raise any more capital or earn any more profits. The final measure is taking the original measure of free cash flow per share and then dividing it by share price. This final measure incorporates the possibility that free cash flows are priced in the market, and thus the relationship can be better seen between dividends and cash flows once they are priced accordingly.

The same regression equation that is used to generate Table 5 is used in this analysis. Only the free cash flow variable changes. In an additional step, I add to the equation a dummy variable for the q-ratio. This dummy variable takes the value of 1 if the firm's q-ratio is greater than one and 0 otherwise. The q-ratio is added as a dichotomous variable rather than a continuous one in order to be consistent with the work of Land and Litzenberger (1989). In section 5.3 (a section that discusses other model specifications) it is analyzed as a continuous variable. The q-ratio is added because it was shown in the difference of means test that there was a significantly different response to an increase to a dividend depending on the firm's q-ratio. It is important to see if this relationship holds when the other variables are included.

Table 6 shows that the different proxies for free cash flow produce results consistent with the findings reported in Table 5. Specifically the coefficients are negative for the new free cash flow variables. In addition, they are significant at the 10% and 5% levels for the lagged free cash flows and for the cash and cash equivalents measure respectively. While the significance of the free cash flow measures can be debated as its significance depends on which measure is used, it is clear from Tables 5 and 6 that the evidence does not support the theoretical relationships that agency theory predicts. On the contrary, evidence presented in these tables seems to contradict the proposition that dividend increases should reduce the potential for agency conflicts.

Table 6 – Testing alternative proxies for the firm's free cash flow

	Coefficient	**T-statistic**	**P-Value**
Panel A – Free Cash Flow Lagged			
Intercept	0.0753	4.95***	0.000
Free Cash Flow Lagged	-0.0009	-1.73*	0.084
Debt to Equity	0.0047	1.93*	0.054
Share Turnover	-0.0208	-2.45**	0.014
Inst. Holdings	-0.0053	-0.28	0.780
Time	-0.0015	-2.28**	0.023
Q Ratio Dummy Variable	-0.0284	-2.04**	0.042
R^2	0.01		
Adjusted R^2	0.01		
F-Value	4.37***		
Panel B – Operating Cash Flows			
Intercept	0.0755	4.77***	0.000
Operating Cash Flows	-0.0006	-1.04	0.298
Debt to Equity	0.0045	1.93*	0.054
Share Turnover	-0.0222	-2.53**	0.011
Inst. Holdings	-0.0041	-0.02	0.8334
Time	-0.0015	-2.29**	0.022
Q Ratio Dummy Variable	-0.0259	-1.83*	0.067
R^2	0.01		
Adjusted R^2	0.01		
F-Value	3.91		

***, **, and * denote respectively significance at 1%, 5%, and 10%

Table 6 (Continued) – Testing alternative proxies for the firm's free cash flow

	Coefficient	T-statistic	P-Value
Panel C – Cash and Cash Equivalents			
Intercept	0.0771	5.13***	0.000
Cash and Cash Equivalents	-0.0002	-1.96*	0.050
Debt to Equity	0.0039	1.85**	0.028
Share Turnover	-0.0215	-2.54**	0.011
Inst. Holdings	-0.0058	-0.31	0.757
Time	-0.0014	-2.2**	0.028
Q Ratio Dummy Variable	-0.0278	-2.18**	0.029
R^2	0.01		
Adjusted R^2	0.01		
F-Value	4.52		
Panel D – FCF per share divided by Share Price			
Intercept	0.0729	4.91***	0.000
FCF per Share / Share Price	-2.8963	-1.26	0.209
Debt to Equity	0.0027	1.27	0.205
Share Turnover	-0.0243	-2.88**	0.004
Inst. Holdings	-0.0021	-0.011	0.911
Time	-0.0014	-2.08**	0.038
Q Ratio Dummy Variable	-0.0298	-2.19*	0.028
R^2	0.01		
Adjusted R^2	0.01		
F-Value	3.91		

***, **, and * denote respectively significance at 1%, 5%, and 10%

Another important insight gained from Table 6 is that the q-ratio is negative and significantly different from zero. This means that those firms whose q-ratios are less than one have larger reactions to dividend increases. This confirms the difference of means test and the results of Lang and Litzenberger (1989). A possible interpretation of this result is that investors interpret a dividend increase from a firm that has low investment prospects (as measured by a q-

ratio of less than one) as a signal of future performance, and this signal is in spite of the market's low expectations. If this is correct, undervalued firms could use this to their advantage by signalling their future prospects and thereby increase their value by increasing their dividend.

5.3 Other Model Specifications

A potential critique of all the results so far may be that the R^2 measures are small. While this is true, the R^2 reported in Tables 5 and 6 are similar in scale to those reported by other studies that have examined abnormal returns surrounding dividend changes. For example Lie (2000) reports having an adjusted R^2 of 0.04 for the two regressions he ran on his dividend initiation sample. It is also important to remember that the chance of finding significant variables by chance with such small R^2 values is extremely low which decreases the likelihood of finding spurious relationships. The purpose of this section is to test whether different model specifications can increase the R^2 values.

It is also important to look at the economic significance of these variables, just not the statistical significance. The coefficients on the variables are quite small. Remembering that by definition an abnormal return over one day is small, then it is not surprising that the coefficients describing it are of the same magnitude.

Examining the issues of multicollinearity will also be explored further here. In particular is the concern that the institutional ownership variable is highly correlated with other variables but does not appear to be significantly related to the dependent variable.

5.3.1 Multicollinearity

In order to deal with multicollinearity two methods will be chosen. First, the institutional variable will be dropped from the regression equation. If multicollinearity is a problem and an offending variable is dropped, then it is expected that there will be a dramatic shift in the

interpretation of the variables such as a variable changing its sign. The second method to deal with multicollinearity is to regress institutional ownership on the dependent variable (abnormal return/percentage increase in dividend), and then include the residual from the fitted relationship and observation as a proxy for institutional ownership. This leaves a variable that is related to institutional ownership and unrelated to the other independent variables

Table 7 Panel A shows the results of excluding the institutional holdings variable, Panel B shows the results of replacing the institutional holdings variable with the residual just described.

Table 7 – Testing multicollinearity problems in the model

	Coefficient	**T-statistic**	**P-Value**
Panel A – Removing institutional holdings variable			
Intercept	0.0686	4.92***	0.000
Free Cash Flow	-0.0004	-0.92	0.356
Debt to Equity	0.0032	1.59	0.112
Share Turnover	-0.0210	-2.86***	0.004
Time	-0.0013	-2.10**	0.035
Q Ratio Dummy Variable	-0.0265	-2.07**	0.039
R^2	0.01		
Adjusted R^2	0.01		
F-Value	4.44***		
Panel B – Using residual as proxy for institutional holdings			
Intercept	0.0739	5.04***	0.000
Free Cash Flow	-0.0007	-1.43	0.153
Debt to Equity	0.0042	1.94*	0.052
Share Turnover	-0.0214	-2.52**	0.0117
Time	-0.0014	-2.09**	0.037
Q Ratio Dummy Variable	-0.0295	-2.18**	0.029
Residual	-0.0023	-0.13	0.900
R^2	0.01		
Adjusted R^2	0.01		
F-Value	4.28***		

***, **, and * denote respectively significance at 1%, 5%, and 10%

As seen in Table 7 Panel A, the regression coefficients do not change very much from previous tables when the institutional holding variable is excluded in the regression. Their interpretations also do not change in Panel B when the residual is substituted into the regression. These are important observations as they indicate that multicollinearity is not a problem affecting the interpretation of the other variables.

5.3.2 Changing Model Specifications in Order to Increase Explanatory Power

Different Dependent Variable Measure

Similar studies in this area, such as Lie (2000), used unadjusted abnormal returns as their return measure instead of the abnormal return divided by the percentage dividend increase. It was hoped that the measure introduced here would be more precise as the abnormal return of a dividend increase is likely related to the size of the dividend increase. Specifically, all else equal, a larger dividend increase likely means a larger signal and a larger decrease in agency costs. However, dividing this abnormal return by the percentage in the dividend change may introduce too much noise in the dependent variable being used. As a result, a similar regression is performed that was reported in Table 5 except that the dependent variable has now changed to the raw abnormal return. These results are reported as Table 8.

Table 8 – Abnormal return as dependent variable

	Coefficient	**T-statistic**	**P-Value**
Intercept	0.0114	5.20***	0.0000
Free Cash Flow	-0.0002	-2.42**	0.0158
Debt to Equity	0.0009	2.78***	0.0054
Share Turnover	-0.0028	-2.29**	0.0223
Institutional Holdings	-0.0004	-0.13	0.8958
Time	-0.0045	-2.29**	0.0225
Q Ratio Dummy Variable	-0.4841	-2.58***	0.0100
R^2	0.02		
Adjusted R^2	0.01		
F-Value	5.60***		

***, **, and * denote respectively significance at 1%, 5%, and 10%

Table 8 illustrates that that the R^2 does not increase with the change in the dependent variable. The range of R^2 values in prior tables has been in the range of 0.01 - 0.03. One

variable of interest in this table is the free cash flow measure, which is now significant when it was not in Table 5. This provides more support for the possibility of the free cash flow measure having a statistically significant negative relationship.

Abnormal Trading Volume

Michaely, Thaler, and Womack (1995) studied the market reaction to events of dividend initiations and omissions. They argue that volume changes around these events indicate that investors are shifting in or out of a stock that experienced a change. Thus, abnormal volume surrounding dividend initiations and omissions is an indication of clientele effects. Consistent with Michaely, Thaler, and Womack (1995), an additional variable that measures the abnormal volume changes surrounding the dividend increase date is included in the regressions. The volume measure that is described in section 4.2 for the different time periods is used for this purpose. It is hoped that the additional information that the market provides with the change in volume will increase the explanatory power of the model while preserving the conclusions related to the other variables. The results of these regressions are presented in Table 9.

Table 9 – Including abnormal volume measure

	Coefficient	T-statistic	P-Value
Panel A – 10 day Measure			
Intercept	0.0715	4.56***	0.000
Free Cash Flow	-0.0007	-1.47	0.143
Debt to Equity	0.0041	1.89*	0.059
Share Turnover	-0.0211	-2.48**	0.013
Institutional Holdings	-0.002	-0.13	0.897
Q Ratio Dummy Variable	-0.0285	-2.08**	0.038
Time	-2.6180	-2.02**	0.043
10 Day Measure	0.0010	2.08**	0.038
R^2 (Adjusted R^2)	0.02 (0.01)		
F-Value	3.38***		
Panel B – 5 Day Measure			
Intercept	0.0714	4.55***	0.000
Free Cash Flow	-0.0007	-1.46	0.145
Debt to Equity	0.0041	1.90*	0.057
Share Turnover	-0.0216	-2.54**	0.011
Institutional Holdings	-0.0020	-0.11	0.914
Q Ratio Dummy Variable	-0.0295	-2.16**	0.031
Time	-2.5706	-1.99	0.046
5 Day Measure	0.0020	2.66***	0.008
R^2 (Adjusted R^2)	0.02 (0.01)		
F-value	3.38***		
Panel C – 2 Day Measure			
Intercept	0.0705	4.49***	0.000
Free Cash Flow	-0.0008	-1.51	0.131
Debt to Equity	0.0042	-1.90*	0.057
Share Turnover	-0.0219	-2.58***	0.010
Institutional Holdings	-0.0026	-0.14	0.891
Q Ratio Dummy Variable	-0.0281	-2.06**	0.039
Time	-2.4536	-1.90*	0.058
2 Day Measure	0.0044	3.73***	0.000
R^2 (Adjusted R^2)	0.02 (0.02)		
F-Value	3.62***		

***, **, and * denote respectively significance at 1%, 5%, and 10%

Table 9 illustrates that the change in volume variable is significant for all three time periods and the related t-statistic is increasing with shorter time periods. In addition, the explanatory power of the model increases marginally with the additional variable. This evidence shows that there is a relationship between volume changes and dividend increases and that the effects of the volume change is detectable for at least 10 days following the dividend increase.

Note that Michaely et al. (1995) did not find significant changes in volume when they looked at firms who initiated or omitted a dividend. The analysis here shows that the market reaction to announcements of dividend increases is positively affected by the changes in volume following the announcement. This provides some evidence that there might be some dividend clientele shifting. Yet, a full analysis of volume changes surrounding dividend increases is needed to confirm the existence of clientele effects.

Table 9 also shows that the conclusions regarding the other independent variables do not change with the inclusion of the change in volume variable.

Lagged Values and Percentage Increases in Variables

Another way to try to increase the R^2 of the regressions is to alter the definitions of the variables. The first method is to use lag values of the variables, and the second method is to use percentage increases in the variables from the previous years. The lagged model is based on the idea that investors are using old information to include in their analysis as current year data may not be available (also for this model the time variable is not lagged as it does not seam appropriate to do so). The percentage increase model is based on the possibility that investors are concerned with changes in the variables and not in their absolute levels. For this second model, the time variable, and the q-ratio dummy variable are not lagged. The results of these regressions are found in Table 10.

Table 10 – Lagged Values and Percentage Increase Values for independent variables

	Coefficient	T-statistic	P-Value
Panel A – Lagged Values			
Intercept	0.1038	3.55***	0.000
Free Cash Flow	-0.0024	-2.00**	0.046
Debt to Equity	0.0065	1.48	0.180
Share Turnover	-0.0144	-1.12	0.263
Institutional Holdings	-0.0120	-0.21	0.838
Q Ratio Dummy Variable	-0.0517	-0.76	0.447
Time	-0.0015	-0.76	0.447
R^2	0.01		
Adjusted R^2	0.01		
F-Value	1.92**		
Panel B – Percentage Increase			
Intercept	0.1000	3.75***	0.000
Free Cash Flow	0.0002	0.94	0.349
Debt to Equity	-0.0004	-0.99	0.321
Share Turnover	0.0036	0.33	0.739
Institutional Holdings	0.0005	0.94	0.349
Q Ratio Dummy Variable	-0.0591	-2.78***	0.006
Time	-0.0019	-0.98	0.328
R^2	0.01		
Adjusted R^2	0.01		
F-Value	1.91*		

***, **, and * denote respectively significance at 1%, 5%, and 10%

The primary aim of Table 10 was to try and increase the R^2 of the regression. As seen in this table, the R^2 is not increased for either panel A or B when compared to earlier results. Also in unreported results, the regressions were performed without including the time and the q-ratio dummy variables, as these were not transformed. The results of these unreported models were not materially different. As there was a time cost to gathering this data, the data was only collected for the years 1990-1999. As the only significant t-statistic for this table is the free cash

flow measure in Panel A, it appears that it is more appropriate to use current year data than either of these alternatives.

Q-ratio treated as a continuous variable

In order to try and further understand the value of the q-ratio in this modelling process, it is now introduced as a continuous variable rather than a dichotomous one. It was originally modelled as a dummy variable to follow the methodology of Lang and Litzenberger (1989) who found that dividend valuation was dependent on a firm's q-ratio being above or below unity. Table 11 shows the results of this regression.

Table 11 – Q-ratio as a continuous variable instead of a dummy variable

	Coefficient	T-statistic	P-value
Intercept	0.0505	5.07***	0.000
Free Cash Flow	-0.0008	-1.49	0.135
Debt to Equity	0.0045	2.05**	0.040
Share Turnover	-0.0197	-2.32**	0.021
Inst. Holdings	-0.0095	-0.50	0.614
Time	-0.0014	-2.17**	0.030
Q Ratio Continuous Variable	-0.0005	-0.36	0.717
R^2	0.01		
Adjusted R^2	0.01		
F-Value	3.50***		

***, **, and * denote respectively significance at 1%, 5%, and 10%

As seen in Table 11, treating the q-ratio as a continuous variable does not materially alter the values of the coefficients or their significance. It is important to see that while the q-ratio is still negative, it is no longer a significant variable. This gives evidence that the relationship for this variable is better modeled dichotomously, and that investors are more concerned with the q-ratio's relation to being above/below unity than its true value.

Fama-Macbeth Regression

A final model was performed using a Fama-Macbeth regression. Fama-Macbeth regressions rely on the stability of the coefficients being tested and it was hoped that this additional method would uphold the previous results presented throughout this chapter. The results of the Fama-Macbeth regression are found in Table 12.

Table 12 – Fama-Macbeth regression results

Year	Debt to Equity		Share Turnover		Institutional Holdings		Free Cash Flow			
	Slope	T-Stat	Slope	T-Stat	Slope	T-Stat	Slope	T-Stat	R^2	Adj. R^2
1985	-0.00752	-0.46	-0.03264	-0.83	0.07798	0.10	-0.00085	-0.43	0.0248	-0.0309
1986	0.00796	0.26	-0.01284	-0.20	0.01602	0.13	-0.01211	-1.92**	0.0648	-0.0020
1987	0.00649	0.11	-0.00092	-0.01	0.13789	0.97	0.00046	0.10	0.0133	-0.0332
1988	0.00274	0.79	-0.00711	-0.18	-0.04020	-0.47	0.00385	1.94**	0.0420	0.0554
1989	-0.00003	0.00	-0.02566	-1.18	0.10532	1.80*	0.00075	0.26	0.0296	-0.0030
1990	-0.00589	-0.50	0.01950	0.34	-0.02118	-0.17	0.00489	1.02	0.0132	-0.0338
1991	0.03576	1.54	-0.01746	-0.55	-0.10952	-1.10	-0.00175	-0.35	0.0796	0.0127
1992	-0.00754	-0.66	0.06520	1.22	-0.17556	-1.53	0.00031	0.11	0.0458	-0.0026
1993	0.02259	3.01**	-0.02835	-0.59	0.06332	0.67	-0.00085	-0.61	0.0942	0.0583
1994	-0.00191	-0.09	-0.02702	-0.82	-0.04835	-0.64	0.00214	0.47	0.0112	-0.1830
1995	-0.02804	-1.29	0.04380	1.62	-0.07396	-1.39	0.00100	0.40	0.0342	0.0047
1996	-0.00645	-0.47	-0.00540	-0.22	-0.03366	-0.54	-0.00151	-0.82	0.0161	-0.0132
1997	0.00886	0.44	0.00659	0.11	0.11510	0.16	-0.00451	-1.04	0.0153	-0.0241
1998	0.05331	2.38**	-0.02332	-0.44	0.11418	1.46	-0.00512	-1.34	0.0646	0.0272
1999	-0.00063	-0.02	-0.05329	-0.50	-0.02806	-0.20	-0.00142	-0.42	0.0166	-0.0459
2000	-0.01504	-0.69	0.02921	0.37	-0.05864	-0.41	-0.00029	-0.05	0.0095	-0.0463
2001	0.01701	1.59	0.03368	0.69	-0.03597	-0.49	0.00729	1.22	0.0740	0.0133
2002	-0.00870	-0.77	-0.07192	-1.68	0.06935	0.65	0.00285	0.69	0.0593	0.0040
2003	0.00728	1.58	0.00393	0.20	-0.01577	-0.32	-0.00202	0.00	0.0327	-0.0025
2004	0.00329	0.52	-0.09565	2.98**	-0.01614	-0.19	0.00091	0.78	0.1808	0.1460
Average	0.00418		-0.00998		0.00211		-0.00030			
Std. Dev.	0.01793		0.03847		0.08313		0.00405			
T- Stat	0.2330		-0.2595		0.0254		-0.0737			

***, **, and * denote respectively significance at 1%, 5%, and 10%

As Table 12 shows, not much can be garnered from the Fama-Macbeth regression. The Fama-Macbeth coefficients (reported as the average in Table 10) are not significant for any of the variables tested. It is easy to see why they are not significant as the Fama-Macbeth coefficients depend on stability, and the coefficients presented in Table 10 are not stable through the years and they often switch between being positive and negative.

5.4 The Impact of Market Conditions on the Reaction to Dividend Increases.

From 1983 to 2000 the stock market was in a bull market that some consider it to be the strongest one that the United States has ever seen. There were a few market drops along the way such as what has become known as Black Monday in October 1987 and the currency crises of the late 1990s. However, neither of these events caused too much disruption as the stock market increased on an annual basis for each calendar year during this time period. The decline that started in 2000 was different though as the market finished lower that year, and it closed at lower levels in both 2001 and 2002. It is possible that entering a bear market from such a prolonged bull market may affect the way the market reacts to a dividend increase.

In order to test this, the results of equation 10 (with the q-ratio dummy variable added as it has been shown to be significant) are presented in Table 13.

Table 13 – Results of testing for valuation differences between bear and bull markets

	Coefficient	T-statistic	P-Value
Intercept	0.0694	4.92***	0.000
Free Cash Flow	-0.0008	-1.60	0.110
Debt to Equity	0.0493	2.28**	0.023
Share Turnover	-0.0201	-2.36**	0.018
Institutional Holdings	0.0002	0.01	0.993
Q Ratio Dummy Variable	-0.0351	-2.56**	0.011
Crash Dummy Variable	-0.0284	-3.10***	0.002
R^2	0.02		
Adjusted R^2	0.01		
F-Value	5.65***		

***, **, and * denote respectively significance at 1%, 5%, and 10%

In examining Table 13, it is seen that the crash dummy variable is significantly negative. This is surprising as it indicates that the market responds less to a dividend increase in a bear market, when it was thought the reaction would be greater. The original argument presented in chapter 3 was that the market reaction would be greater for the following two reasons: first, the market would place greater emphasis on dividends when capital gains were less likely; and secondly it was thought that dividends would act as a greater signal when the market was in duress. However it is apparent that these arguments do not hold. A couple of new theories are brought forward to explain this surprising result.

The first explanation assumes that investors are rational economic agents. In this theory, investors are aware that raising a dividend places restrictions on future cash flows of a firm, as the firm will be reluctant to cut this dividend once it has been increased. These restrictions mean that firms will more likely need outside financing in order to invest in profitable projects. For the time period after the market started to decline, it could be argued that outside capital was more difficult to obtain. The logic that follows is that shareholders would prefer that firms hold

on to cash during times when capital is scarce, as the firm may need the capital more than shareholders need the dividend. This possibility is interesting because it actually goes against what agency theory would predict as it illustrates a situation where shareholders are willing to increase the amount of cash a firm has, and therefore its potential agency conflicts.

The second explanation relies on behavioural finance, specifically the theory proposed by Thaler (1983) and discussed in detail in section 2.4. In this theory, Thaler (1983) proposes that dividends are treated as a silver lining in periods of market decline, and treated as an added bonus during periods of market strength. If one subscribes to this theory, then Table 13 shows that the added bonus is worth more than the silver lining

Seeing that a change in market reaction occurs when the sample is divided up between those events that took place before and after the year 2000, another set of regressions is performed in order to see if the firm specific factors (thus ignoring the crash dummy and the year the dividend took place) are different between these two time periods. Table 14 shows the results of these regressions.

Table 14 - Showing the differences in valuation prior to and after the stock market crash

	Coefficient	**T-statistic**	**P-Value**
Panel A – 1990-1999			
Intercept	0.0921	3.46***	0.000
Free Cash Flow	-0.0011	-1.36	0.173
Debt to Equity	0.0080	1.97**	0.049
Share Turnover	-0.0088	-0.70	0.4867
Institutional Holdings	-0.0033	-0.13	0.899
Q Ratio Dummy Variable	-0.0450	-2.27**	0.023
R^2	0.02		
Adjusted R^2	0.01		
F-Value	2.05**		
Panel B – 2000-2004			
Intercept	0.0442	1.55	0.122
Free Cash Flow	-0.0004	-0.50	0.617
Debt to Equity	0.0040	1.15	0.250
Share Turnover	-0.0455	-2.90***	0.004
Institutional Holdings	0.0020	0.06	0.955
Q Ratio Dummy Variable	-0.0161	-0.58	0.563
R^2	0.06		
Adjusted R^2	0.05		
F-Value	4.44***		

***, **, and * denote respectively significance at 1%, 5%, and 10%

The most striking result of Table 14 is that prior to the market crash all of the coefficients except for those on institutional holdings and common share turnover were significant, and after the crash the only significant variable is common share turnover. It should not be surprising that investors are more aware of liquidity after the stock market crashed. What is not intuitive though is why the other variables are no longer significant. It would seem that there would be more investor scrutiny and hence greater market awareness of these variables in the second time period. In order to test to see if any of the variables are significantly different between the two periods, all the firm specific variables are interacted with the crash dummy. This allows us to

draw specific conclusions about the differences that exist between the two time periods. These results are found in Table 15.

Table 15 – Identifying factors that are different after the market crash

	Coefficient	T-statistic	P-Value
Intercept	0.0767	4.00***	0.000
Debt to Equity	0.0063	2.07**	0.039
Free Cash Flow	-0.0014	-2.14**	0.032
Inst. Holdings	0.0054	0.25	0.802
Share Turnover	-0.0079	-0.79	0.432
Q-ratio Dummy	-0.0401	-2.55**	0.011
Crash Dummy	-0.0167	-0.44	0.658
Crash * Debt to Equity	-0.0042	-0.82	0.413
Crash * Share Turnover	-0.0426	-2.07**	0.039
Crash * Inst. Holdings	-0.0010	-0.02	0.983
Crash * Free Cash Flow	0.0017	1.44	0.149
Crash * Q-ratio Dummy	0.0232	0.64	0.522
R^2	0.06		
Adjusted R^2	0.05		
F-Value	3.73***		

***, **, and * denote respectively significance at 1%, 5%, and 10%

Table 15 is interesting in that it shows that the liquidity measure, common share turnover, is not significant for the whole sample (as seen by not having a significant coefficient on the base variable) but it is after the market crash as evidenced by its significance when interacted with the crash dummy variable. As stated earlier, it is intuitive to understand why investors would pay more attention to liquidity after the stock market started to decline as positions may need to be sold quickly.

It is also interesting in this regression to see that the coefficients for the debt to equity and free cash flow are significant for the whole sample which is once again opposite to what agency

theory predicts. This provides more evidence that investors are not concerned with the potential agency costs of dividends as discussed in section 5.3.

As it has been shown that the market reacts differently to a dividend increase depending on the time period it took place in, it is worthwhile to look at the descriptive statistics of the independent variables for each time period. Table 16 shows the means for the two time periods, and it also reports the t-statistic from the standard difference of means test.

Table 16 – Summary statistics for the time periods 1990-1999 and 2001-2004

	1990-1999		2001-2004		Difference of means T-stat.	P-value
	Mean	Std. Dev.	Mean	Std. Dev.		
Debt to Equity	0.600	0.798	0.999	1.269	5.51***	0.000
Share Turnover	0.609	0.409	0.788	0.592	5.24***	0.000
Free Cash Flow	2.292	4.386	4.044	7.927	3.93***	0.000
Q-ratio	2.275	1.601	3.059	2.55	5.39***	0.000
Institutional Holdings	0.431	0.213	0.486	0.255	3.57***	0.000

***, **, and * denote respectively significance at 1%, 5%, and 10%

Table 16 shows that all of the variables are larger in the second time period. This is interesting as it may indicate that there was a shift in the firms who increased their dividend. Particularly, larger values of these variables indicate larger and more established firms. For example, it is common knowledge that more established firms attract more institutional ownership. In order to test the possibility that only larger firms increased their dividend in the second time period three different measures of size are gathered and then tested for using a difference of means test. The three size measures gathered are market value of equity, total assets, and sales. Different measures are gathered in order to ensure that the results are not biased according to the definition of firm size. These results are found in Table 17.

Table 17 – Examining the size of the firms for the time periods 1990-1999 and 2001-2004

	1990-1999		2001-2004		Difference of means T - stat.	P-value
	Mean	Std. Dev.	Mean	Std. Dev.		
Sales	4269	11804	5281	13996	1.23	0.210
Market Value	5475	14734	11337	37077	2.95***	0.003
Total Assets	10218	37227	25469	35409	2.54**	0.011

***, **, and * denote respectively significance at 1%, 5%, and 10%

The figures reported in Table 17 are in millions of dollars. The total assets and market value measures for firm size indicate that firms were larger in the second time period when compared to the first. This is important because large firms broadly speaking have a larger shareholder base and a larger analyst following. These facts result in more information being known about larger firms. As a result, the signalling theory of dividends would predict the smaller market reaction in the second time period as these firms have less to signal.

For both Tables 16 and 17, the result of being larger in the second time period could be the result of inflationary type pressures on these variables. As a result first time period was reduced to the years 1995-1999 and the analysis was repeated. In unreported results, shortening the time frame in the first period does not alter the significance of any of the variables in either Tables 16 and 17.

CHAPTER 6

SUMMARY FINDINGS AND FUTURE RESEARCH

Section 6.1 summarizes the findings of this thesis. The most important results were that evidence is found that the market reaction to a dividend increase is a decreasing function of time, and that this reaction is smaller in a bear market when compared to a bull market. In addition, the market reaction to a dividend increase is smaller for firms who have large free cash flows and greater liquidity while firms with high debt to equity ratios have larger reactions.

Section 6.2 discusses the directions for future research. These include exploring the market reaction to share repurchases and further exploring the signalling theory of dividends as evidence found in this study contradicts the predictions of agency theory.

6.1 Summary of the Findings

The following is a list of findings that were presented in this thesis as related to the stated hypothesis in chapter 3.

1) There is evidence that the market reaction to dividend increase has weakened over the period from 1984-2003. This is important as it is the first time in the literature that such a relationship has been documented. This result is most likely as a result of improved corporate governance, better and more timely financial statements, and more efficient methods of making distributions to shareholders (ie share repurchases). This means that the first hypothesis can be confirmed.
2) The market reaction to dividend increases is larger in bull markets than in bear markets. This is a surprising result as it was expected that the market's reaction would be greater in times when capital gain returns were more uncertain. A possible reason for this finding is that investors know that dividends place cash flow constraints on a firm as they are rarely cut or decreased by management. Knowing this, investors might rather have management hold on to the cash during difficult economic times as the capital might be needed to stay solvent or invest in positive NPV projects. This illustrates a possibility where investors want to increase the amount of cash available to managers, which contradicts the predictions of agency theory. Another possible reason is that larger firms increased their dividend in the second time period, and larger firms are less likely to need the signals that dividends may provide.
3) The third hypothesis stated that institutional ownership should play an important factor in dividend valuation because it should reduce agency costs and act as a signal

of firm quality, both of which are hypothetical functions of dividends. What was found is that institutional ownership does not play a role in how the market reacts to a dividend increase. In all time periods and in any partition of the sample I was not able to find any relationship between institutional holdings and dividends.

4) The debt to equity relationship was found to be positive, when agency theory predicts that it should be negative. It was expected to be negative because Jensen (1986) stated that interest payments would discipline management's spending similarly to dividend payments, and thus agency costs would already be reduced for firms that have high debt levels. What was found instead was that firms with high debt levels have dividends valued greater than firms with low debt levels. It is proposed that the positive relationship exists because investors interpret an increase in dividends to firms with high debt levels as a signal that the firm's cash flows are stable and large enough to maintain the higher dividend level indefinitely.

5) The fifth hypothesis tested in this thesis was in regards to a firm's free cash flows and its dividend policy. The agency theory of dividends proposes that the greater the free cash flows of a firm, the greater the market should react to a dividend increase as this increase would decrease the potential amount of agency conflicts. Rather than finding this, a significantly negative relationship was found to exist depending on the proxy used to measure free cash flows. The original measure of free cash flow as described in section 4.2 was found to be insignificant over the entire time period as reported in Table 4, but the lagged measure of free cash flow and the cash and cash equivalents measure were found to be significant in Table 5. In section 5.4 (which focused on testing for differences in valuation before and after the market crash)

Table 12 shows that the free cash flow measure was significant for the time period 1990-1999, and it was found to be significant in its base level in Table 13 after all the variables were interacted with the crash dummy variable. This evidence leads to the conclusion that agency theory does not hold, and in fact (similar to the debt to equity relationship) there is evidence to support that the opposite relationship is true. Even if one does not feel that the relationship is statistically significant (as significance is dependent on the time period and the proxy chosen) there is no evidence to support the hypothesized relationship between free cash flows and dividends.

6) A firm's liquidity is an important factor in how the market reacts to an increase in dividends. In addition, it becomes increasingly more important after the stock market started to decline. This confirms the sixth hypothesis, which states that firms with higher liquidity have less to gain from dividend increases.

7) The seventh hypothesis was confirmed. It means that the market's reaction to a dividend increase is more pronounced for firms whose q-ratio is less than one. This confirms the earlier work of Lang and Litzenberger (1989) as they also found this relationship. They assumed that firms with q-ratios less than unity (or less than one) were firms with high levels of free cash flows. From this they concluded that dividends were valued because they reduced agency problems. What was found in this study was that q-ratios had no correlation with the free cash flow measure, thus their assumption about free cash flows and q-ratios seems unfounded. Also, the relationships that agency theory predicts between the market's reaction to an increase to dividend and free cash flows & debt do not hold; and there is some evidence that the opposite relationship holds. With this information, it is most likely that the results

observed in regards to a firm's q-ratio are caused by the market interpreting the increased dividend to mean that these firms have better investment prospects than they were originally thought to have.

8) The final hypothesis tested was in regards to the changes in volume that occur around the dividend change. Michaely, Thaler, and Womack (1995) investigate volume changes surrounding dividend omissions and initiations and were not able to find any significant increases in volume. They did this in hopes to find evidence that there was change in dividend clientele by noticing a change in volume. The data presented here shows that the market reaction to dividend increases is positively related to the changes in volume over periods of 2, 5, and 10 days after the dividend increase. This may be the result of the firm changing its dividend clientele as Michaely et al. (1995) proposed.

6.2 Future Research

Future research into this area might focus on trying to determine if the market's reaction to share repurchases has also changed over a similar time period. If it is shown that the market reacts more now than it once did, then a payout substitution theory could be presented which would state that market has increased its desire for share repurchases at the expense of dividends. This theory would give evidence that the declining propensity of firms to pay a dividend is a result of changing investor tastes.

It would also be important to test whether firms that have high debt levels are signalling to the market about their future performance by increasing their dividends. It is proposed from the fact that the debt to equity coefficient has the opposite relationship that agency theory predicts, that the market may interpret a dividend increase from firms with high debt levels as a

signal of future performance. The signal being that the firm feels that future cash flows will be high enough for both already high debt levels and the new higher dividend. In order to test this properly the method developed by Benartzi, Michaely, and Thaler (1997) should be used. This method focused on the difference between actual income and the income that was projected by analysts. The difference rather than levels of income should be used because the increased dividend is supposed to be sending new information to the market that the market does not currently incorporate into share price.

Finally, the evidence from this thesis contradicts the agency theory of dividends. Therefore, the signalling theory of dividends should be given more attention as it may explain the behaviour of firms towards dividends and the market's reaction to dividend increases.

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