Specially Designated Dividends:

Signalling or Free Cash Flow?

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Abstract

This study jointly examines the signalling and free cash flow hypotheses as applied to announcement-period reactions around specially designated dividend (SDD) announcements. Results support the presence of both theories in the most recent era: 1990–2006. Specifically, significant positive relationships between returns and earnings changes for the year of SDD announcements and the year immediately following them are found. Separation based on proximity to regular dividend payments suggests the signalling strength is weak for SDDs paid in isolation, stronger when paid with a regular dividend and stronger again for those paid with a regular dividend increase. Signalling strength is also shown to be dominant within firms with a low Tobin's Q, consistent in part with the conditional signalling hypothesis. Analysis also suggests that the market's response is consistent with SDDs' function as a tool for the mitigation of potential agency problems. Larger market reactions are found for firms with poor investment opportunities (low Tobin's Q) coupled with large amounts of free cash flow.

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1. Introduction

This research examines whether the payment of specially designated dividends (SDDs) acts as a signal of future earnings changes and/or a tool for mitigation of agency costs of free cash flow. Extensive research has documented abnormal announcement-period reactions to SDDs, indicating the presence of an information component, and two explanations have been proposed in the literature. The signalling hypothesis posits that SDDs provide a signal to investors of the firm's future profitability as discussed in John and Williams (1985) and Miller and Rock (1985) in the context of regular dividends. The free cash flow hypothesis posits that the payment of SDDs alleviates agency conflicts between managers and shareholders via the disgorging of free cash (Easterbrook, 1984; Jensen, 1986). While the majority of the literature has considered each hypothesis in isolation or competing against the other, this paper examines the two theories simultaneously in order to determine their joint presence.

The signalling hypothesis has remained the leading explanation, particularly receiving strong support in the case of regular dividend changes (see Ofer and Siegel, 1987; Healy and Palepu, 1988; Aharony and Dotan, 1994). While SDDs have received considerably less attention within the literature, the signalling hypothesis has still received strong support (see Dann, 1981; Vermaelen, 1981; Brickley, 1983; Gombola and Liu 1999). In particular, Brickley (1983) documents improved earnings during the current year and the year immediately following an SDD announcement, and Gombola and Liu (1999) show an upward revision of earnings forecasts following an SDD announcement that results in a significant increase in the stock price. Brickley (1983) also documents firms declaring regular dividend increases have significantly larger earnings in the following year compared with those declaring SDDs, and weaker stock market reactions are associated with the announcement of SDDs. Although SDDs may provide weaker signals about future profitability due to their non-binding nature than regular dividend increases, there is evidence of the role of SDDS in signalling future earnings.

The free cash flow hypothesis has strong theoretical backing yet has received little empirical support in the field of SDDs. Lang and Litzenberger (1989) provides results in support of agency theory for regular dividend changes. They proxy for the level of agency costs of free

cash flow by separating firms based on Tobin's Q to denote overinvesting firms (Q<1) and value-maximisers (Q>1). A greater market reaction is found for distributions by low-Q firms, indicative of the more severe agency conflicts facings these firms. However, Howe, He and Kao (1992) extend the analysis to SDDs and find no significant difference in announcement effects across values of Q. They additionally test whether firms with greater free cash flows have higher announcement returns and find no additional explanatory power. This provides an empirical puzzle, as SDDs have comparable cash flow effects to regular dividend changes and by implication a similar reduction in agency costs. Subsequent analysis has found only weak support. Lie (2000) utilises cash levels as a measure of excess funds rather than cash flow and finds a significant relationship to announcement-returns. Additionally, this relationship is stronger for low-Q firms. Gombola and Liu (1999) find a differential reaction based on Q, but conclude in favour of the conditional signalling hypothesis; low-Q firms are not perceived as having good future prospects, so SDDs are less likely to be anticipated and lead to greater changes in investor expectation of future earnings. They find a significant upward revision of earnings forecasts for low-Q firms, but not for high Q firms.

The role and nature of SDDs has evolved over time, as evident in the differential results reported in the literature. De Angelo, De Angelo and Skinner (2000) document that SDDs have gradually disappeared over the last half century and are now a rare phenomenon, with the exception of large SDDs which have grown in incidence. The results support a movement toward agency-based life-cycle theories, but also indicate SDDs are intentionally used with a clearer purpose in modern times. This suggests results could be stronger particularly those attributable to free cash flow agency.

This study extends existing literature in several ways. First, it provides a re-assessment of hypotheses over the most recent era, utilising a sample of SDD announcements between 1990 and 2006 for US firms; the most recent US-based study of SDDs employs a sample that only reaches 1993. In analysis of the signalling hypothesis, previous studies looked only at the entire SDD sample, possibly misconstruing the signal, since the market's response could be generated from other regular dividend and regular dividend increase announcements which accompany many SDDs or follow in close succession. This research separates the full SDD sample into four subsamples: (i) SDDs paid in isolation, (ii) those paid concurrently with a

regular dividend, (iii) those paid concurrently with a regular dividend increase, and (iv) those with a regular dividend increase within the following two quarters. Some literature suggests that the non-binding nature of SDDs implies they should not contain a signal regarding future earnings and supports greater signalling strength in the case of regular dividend changes (Brickley, 1983).

In the analysis of the free cash flow hypothesis, previous literature proxies for the level of agency conflicts using a combination of Tobin's Q and cash flow or cash levels. In this study, I re-test this relationship utilising a slightly varied free cash flow measure that includes capital expenditures in order to aptly represent the free cash available to management with which to partake in agency. In an attempt to address the potential puzzle from the results of previous literature, I additionally look at the role of governance by incorporating a measure of entrenchment, as proxied by the G-Index (Gompers, Iishi and Metrick, 2003). Lie (2000) briefly examines the role of governance in the free cash flow hypothesis from the view of managerial ownership and surprisingly finds no evidence to indicate differential market reactions due to governance mechanisms. Lehn and Poulsen (1989) and Lang, Stulz and Walkling (1989), using leveraged buyouts (LBOs) and corporate acquisitions, show that absent the threat of displacement or sources of external monitoring, the value attributable to free cash flow remains within the company to the benefit of management. Firms with entrenched management are less likely to make an optional SDD payment, so investor expectation regarding SDD payout should be lower for these firms. This reduced level of investor expectation and increased agency conflicts is likely to have additional implications for market reactions upon announcement of SDDs.

The analysis of the signalling hypothesis is similar to that of Healy and Palepu (1988) adapted for the purposes of this study. The tests first examine the abnormal announcement-period returns surrounding SDD announcements compared across the subsamples. I find a significant positive abnormal reaction across the full sample consistent with previous literature. The largest market reaction surprisingly comes from SDDs paid in isolation; however, this is found to be predominantly attributable to the significantly greater size of SDDs paid in isolation.
Consistent with expectations, returns for SDDs paid with a regular dividend increase exceed SDDs paid with a regular dividend. SDDs paid with a regular dividend increase within the

following two quarters provide noisy results throughout the analysis due to the small sample size; this makes drawing strong inferences difficult. Next, changes in earnings before and after an SDD announcement are documented. Results indicate firms have significant increases in earnings from at least two years before and in the year of announcement, suggesting in part they can be predicted by changes in past and current earnings. Results also support significant increases for earnings in the year immediately following when utilising quarterly data. Upon separation, positive earnings changes following announcement are significantly more apparent for SDDs paid with a regular dividend increase. Lastly, I examine whether subsequent earnings changes are related to the information released at announcement, represented by the return. Significantly positive relationships for the year of and the year following (when using quarterly data) an announcement across all samples give strong support to a signal present in SDD announcements. Upon separation, and particularly when controlling for SDD size, it is evident that the signalling strength is weak for SDDs paid in isolation, stronger for SDDs paid with a regular dividend and strongest for SDDs paid with a regular dividend increase.

In the examination of the free cash flow hypothesis, I begin with univariate analysis, separating the firms based on Q ratio above and below unity to denote overinvestment. I find a strongly significant difference in average announcement-period abnormal returns between these samples, with far higher returns for low-Q firms. Next, further univariate analysis separates the sample based on Q ratio and free cash flow levels as per Howe et al. (1992). Once more, a strongly significant difference is identified. In order to ascertain whether agency variables have independent effects on abnormal announcement-period returns, I examine the relationship between returns and agency measures in a multivariate setting to control for other possible explanatory variables. In particular, regressions incorporate SDD size, representative of the wealth effect shown to be strongly significant to announcement returns in previous literature (Lie, 2000). Returns are negatively related to the dummy variable for Q but only at the 10% level across some models, giving weak support to the relationship to Q. However, I find a significant positive relationship to cash flow, and this relationship is stronger for firms with poor investment opportunities ($Q<1$). Surprisingly, when this analysis is repeated utilising cash levels as the measure of excess funds, results differ from Lie (2000). I find a stronger negative relationship between Q and returns, yet find cash levels unrelated, and this relationship does not change strength with separation based on Q. The analysis of the

influence of governance provides mixed results. I test this first by separating the sample according to level of agency costs (Q and free cash flow) and investigating the relationship between returns and a dummy variable for entrenched and non-entrenched management, and second by separating the sample based on entrenchment to analyse if relations between returns and agency variables differ across these samples. The limited nature of the data provides noisy results, and overall I cannot conclude that the market is more or less concerned about the mitigation of agency conflicts if the firm has entrenched or non-entrenched management.

Lastly, I conduct a brief analysis of the conditional signalling hypothesis. This is tested by separating the firms based on Q and repeating signalling analysis, examining the relationship between subsequent earnings and announcement-returns. I find the relationship significant for low-Q firms but only significant to current-year earnings for high-Q firms, consistent with the conditional signalling hypothesis. A differential reaction based on Q can be explained by the conditional signalling hypothesis, as SDDs paid by low-Q firms lead to greater changes in investor expectation of future earnings. However, it cannot explain a relationship between announcement-returns and free cash flow, particularly one which increases for low-Q firms. This indicates a market response due to agency conflicts. Therefore, the conditional signalling explanation is not favoured at the expense of agency costs of free cash flow.

Overall, findings in this study make several additions to previous literature. Evidence indicates SDDs act as a signal regarding future earnings changes regardless of surrounding regular dividend payments. However, the strength of this signal increases when accompanied by regular dividend payments and increases further when accompanied by regular dividend increases. This result is stronger than that shown in previous literature (Brickley, 1983; Gombola and Liu, 1999). The results also suggest that the market responds particularly favourably to SDD announcements when the announcing firm has potentially large agency problems, as indicated by poor investment opportunities coupled with large amounts of free cash flow. These agency problems may be mitigated by the disbursement of this free cash flow. These are largely the most supportive results established for free cash flow theory in the case of SDDs, consistent with original findings of Lang and Litzenberger (1989). Results support the notion that SDDs over the more recent era are used less frequently but with more

purpose, and investors recognise the potential reduction in agency costs and performance indication.

This study contributes significantly to our understanding of the role of signalling, free cash flow and corporate governance in explaining shareholder wealth effects of SDD announcements. I provide the first documented evidence of abnormal announcement-period stock price impacts purely due to an SDD; the first analysis to isolate the pure impact of SDDs by separating out contemporaneous regular dividend payments. I illustrate that over the most recent era SDDs do provide a signal for future earnings, previous literature shows highly inconclusive results. I show that the signal exists for an isolated SDD, however signal strength is the greatest when paid in conjunction with regular dividend increases. Previous evidence based on a full sample of SDDs may misconstrue the true 'signalling' power of SDDs. This analysis also provides the strongest evidence that over the most recent era announcement-period reactions are caused by the mitigation of agency costs of free cash flow. Results show market reactions for firms with potentially large agency conflicts, and high levels of free cash flow are the largest and significantly greater than the inverse. Furthermore, I demonstrate that the entrenchment level of management has inconclusive influence on market reactions based on agency conflicts. This result provides an opportunity for refinement in future literature.

Holistically, the major contribution of this research is to provide evidence for the first time that is jointly consistent with both the signalling and the free cash flow hypothesis. It appears abnormal market reactions are partially in response to a reduction in agency conflict. Moreover, the payment of SDDs (predominantly by low-Q firms) reflects a signal for improved current and future profitability. This information is being conveyed in SDD announcements and recognised by the market.

The remainder of this research is set out as follows: Section 2 summarises relevant prior research, Section 3 outlines the proposed analysis and Section 4 describes and justifies the hypotheses tests. Section 5 contains the methodology and results for testing the signalling hypothesis. Section 6 contains the methodology and results for testing the free cash flow hypothesis. Section 7 examines the conditional signalling hypothesis. Section 8 examines alternative variable specifications to examine the impact on results, and Section 9 presents a summary and conclusions.

2. Literature review and research motivation

The positive association between stock returns and SDD announcements is well documented (Gombola and Liu, 1999; Brickley, 1983; Howe et al., 1992). These studies indicate that the market is adjusting for some informational component in the announcement. The information content of dividends was first considered by Miller and Modigliani (1961). They examined reasons for firms to pay dividends under their proposition that dividends were irrelevant to firm value under perfect market conditions. Subsequent literature has offered two predominant competing hypotheses. First, the signalling hypothesis predicts that disbursements signal certain information about the prospective cash flows to the firm (Bhattacharya, 1979; John and Willaims, 1985; Miller and Rock, 1985). Under this hypothesis, an asymmetry exists where managers possess valuable information about future cash flows that is not available to the public. Second, the free cash flow hypothesis asserts that disbursements may alleviate agency problems between managers and shareholders (Easterbrook, 1984; Jensen, 1986; Lang and Litzenberger, 1989). According to this hypothesis, a cash disbursement reduces funds available to managers, thereby discouraging managers from partaking in value-destroying investments or other inefficient uses of cash flow in pursuit of personal benefits.

It is important to disassociate the different kinds of disbursements (viz. regular cash dividends, SDDs and repurchases) and consider their unique attributes and place in the literature. Regular dividends have been the topic of considerable study within the literature, especially concerning the signalling hypothesis (Ofer and Siegel, 1987; Healy and Palepu, 1988; Aharony and Dotan, 1994). In contrast, SDDs have received little attention in the literature, though they are commonly viewed as a temporary increase in payout, and hence possess less informational content. As noted by Brickley (1983), the differential labelling of special and regular dividends conveys a warning to stockholders that the 'special' payout is not as likely to be repeated as a 'regular' payout, highlighting the importance of research that accurately separates the effect of the two. Considered similar in nature to SDDs are repurchases.[1] Repurchases are also one-off cash disbursements and temporary in nature; however, they are

[1] In fact, there are several differences between SDDs and repurchases, but they are not relevant for the purposes of this review. For literature addressing these differences, see Fenn and Liang (2001), Asquith and Mullins (1986) and Grullon and Michaely (2002).

typically used more frequently than SDDs and have slightly different motivations. Towards the end of this literature review I revisit the similarities and potential differences between SDDs and repurchases in light of the competing hypothesis for the design and results of this study.

Baker, Mukherjee and Powell (2005) provide an analysis of the differential function of various cash disbursements. They conduct a survey of firms to determine the circumstances that favour one method over another. Their results show that having strong earnings or cash flows is the most important impetus for paying an SDD. This was also important for regular dividend increases, but paying regular dividends served as part of standard dividend policy. Repurchases were used instead of SDDs to improve performance measures and when management perceived market undervaluation. The respondents also stated that the stock market generally views an announcement of an unexpected SDD as conveying positive information about a firm's short-term earnings. An important implication of these results is that paying SDDs generally reflects only a temporary increase in excess cash.

Several studies have considered the association between regular dividends and earnings. Linter (1956) finds that managers consider past, current and future earnings when making dividend policy decisions. Healy and Palepu (1988) find supporting evidence in analysis of dividend initiations and omissions. They find significant increases in earnings for dividend-initiating firms from the year prior to two years after the announcement, as well as a positive association between announcement returns and earnings changes in the year of and year after announcement. Aharony and Dotan (1994) show a strong association between changes in quarterly dividends and subsequent unexpected earnings, which does not disappear with the inclusion of current unexpected earnings. There are, however, some papers which cast doubt on the signalling hypothesis for regular dividend changes (Bernartzi, Michaely and Thaler, 1997), but overall the evidence supports signalling in the context of regular dividends.

The signalling hypothesis was the first theory to emerge explaining the relation between stock market reactions and SDD announcements. However, a small body of literature provides evidence refuting its explanatory power, and some studies suggest that due to the nature of SDDs they should not contain a signal for future earnings.

Dann (1981) was among the first to examine the role of one-off disbursements in light of the signalling hypothesis. The author examines (cash tender offer) repurchases, and the effect on the value of common stock, debt and preferred stock. Two hypotheses are considered alongside the signalling hypothesis. First, the personal tax saving hypothesis, where personal tax savings are made on cash distributions by way of repurchases in lieu of dividend payments. The amount of this tax saving should be reflected in an increased stock price as a result of a repurchase. Second, the expropriation hypothesis, where unanticipated repurchases represent a wealth transfer from debt holders to stockholders. This would suggest that following a repurchase, the stock price increase should be accompanied by a decline in the market value of debt securities. These hypotheses are tested by considering repurchases over the years 1962–1976, in the US. Statistical tests prove significant positive abnormality in announcement returns. The data suggest that the complete impact of the repurchase announcement is contained within one trading day of the announcement.

Dann (1981) suggests the personal tax saving hypothesis is refuted, as the hypothesis suggests a permanent increase in stock price is generated by the perception of a change in the firm's payout policy as opposed to a one-off payment. The infrequency of repeated repurchases casts doubt on this hypothesis (86% of the sample firms undertook only one repurchase in the sample period). However, unstated was that frequent repurchases would eventually attract equal tax treatment to regular dividend payments. The expropriation hypothesis is refuted by the presence of non-negative returns to senior debt securities over the announcement period. Moreover, these returns are positively related to the size of the repurchase and the wealth gain realised by stockholders. Overall, the results are found to be consistent with the signalling hypothesis, although the specific nature of the information conveyed to investors is not readily apparent.

A similar and concurrent paper to Dann (1981) is Vermaelen (1981). This paper finds that for a comparable sample of US tender offer repurchases and open market repurchases, firms show (on average) a permanent share price increase as a result of a repurchase announcement. Vermaelen (1981) concludes that the signalling hypothesis seems to explain a large amount of the abnormal returns after a repurchase. In particular, the signalling hypothesis is found to be consistent with a number of individual findings. First, the market appears to set stock prices

around the announcement date according to the predictions of a signalling model (similar to that proposed by Spence, 1973); the model explains more than 60% of the variance of the abnormal returns. Most of the repurchasing firms are small and held largely by insiders, who commit themselves not to tender shares. Thus, the market is able to be convinced that managers will carry a significant part of the burden if the firm repurchases part of the shares at a premium above their true value. Firms also are found to start offering large premia for their own shares during a period of regulatory control on dividend increases.[2] The average information content of the repurchase offer is found to be four times larger during this period than the preceding period. Overall, the results are consistent with the hypothesis that firms offer premia for their own shares mainly in order to signal positive information, and that the market uses the premium, the targeted fraction of shares and the fraction of insider holdings as signals in order to price securities around the announcement date.

There are two important points to note concerning the methods of Dann (1981) and Vermaelen (1981). First, support for the signalling hypothesis is found, in large part, through the process of eliminating alternative hypotheses. The results are only consistent with the hypothesis–it is not explicitly tested. Second, these studies were performed before the free cash flow theory was proposed and thus, in hindsight, the consistency of the results with signalling theory is not remarkable.

In a more recent study, Brickley (1983) explicitly tests the information content of SDDs and also provides a comparison of SDDs and regular dividend changes' signalling strength. The author examines common stock returns and firm earnings around the announcement of SDDs for a sample of US firms. Market reactions are compared with a control group of regular dividend increases. Brickley is interested in whether there is different information content conveyed through SDDs compared with regular dividend increases. Specifically, SDDs may signal a temporary increase in the dividend that will not be repeated. Alternatively, they may signal a reduced likelihood of increased future payouts compared with a regular dividend increase. In order to focus on infrequent SDDs, the paper uses only SDDs which are the first to be announced in at least two years by the sample firms.

[2] The control period was from 1971 to 1974, when the Nixon Administration imposed a 4% limit on dividend increases.

The paper documents a significant, positive market reaction to the announcement of an SDD, suggesting that information content is present. Moreover, the size of the SDD relative to the announcement-period reaction suggests information beyond the value of the SDD is being conveyed. A larger market reaction to regular dividend increases than SDDs, after controlling for size, indicates that the former convey more positive information than the latter, as expected.

Brickley (1983) also examines dividend payouts in the year following the dividend announcements. First, dividend payouts following SDDs are compared with decisions not to change the dividend. SDDs are found to be more than a transitory increase in the dividend—payout following an SDD is 'above average'. Second, dividend payouts following SDDs are compared with regular dividend increases. Consistent with the differential market reactions, dividend payouts following regular dividend increases are shown to be higher than the payouts following SDDs.

Finally, earnings patterns are compared around the announcement of SDDs and regular dividend increases. The results reveal that both regular dividend increases and SDDs tend to be declared by firms that have experienced good earnings over the previous year. There is no significant difference in prior-year earnings between the two groups. Brickley's results also provide evidence for improved earnings during the year immediately following an SDD announcement, in support of the signalling hypothesis. However, the firms declaring regular dividend increases have significantly larger earnings in the following year compared with the firms declaring SDDs. Brickley's evidence indicates that investors treat SDDs as hedged managerial signals about future profitability; they are associated with weaker stock market reactions than regular dividend increases of comparable size.

De Angelo et al. (2000) find evidence to suggest that the signalling content in SDDs is typically small. The authors suggest that the historically prevalent practice of paying SDDs has largely failed the survival test, casting doubt on the overall importance of signalling motivations in explaining dividend policy in general. The paper documents that SDDs were once commonly paid by New York Stock Exchange (NYSE) firms but have gradually disappeared over the last half-century and are now a rare phenomenon. An exception is large

SDDs, whose sheer size automatically differentiates them from regular dividends. These are found to have grown in incidence.

The evidence suggests that the decline in SDDs reflects the principle that dividends are a useful signalling device only when they send a clear message to stockholders. Most firms used to pay SDDs as predictably as they paid regular dividends, therefore treating the two as close substitutes. When investors view SDDs and regular dividends as close substitutes, there is little advantage to labelling them differently. As a result, firms should eventually drop the practice of paying two different types of dividends and simply embed SDDs into regular dividends. The data offer considerable support for this assertion. De Angelo et al. (2000) highlights that the disappearance of SDDs is part of a general trend toward simple, homogeneous dividend policies in which firms converged on the now prevalent practice of paying exactly four regular dividends per year. It is conceivable that SDDs historically served as a signalling mechanism, but have been supplanted by more effective signalling technology.

More recent literature provides evidence in support of a version of the signalling hypothesis. Gombola and Liu (1999) distinguish between the signalling and free cash flow hypotheses in explaining the stock price reaction of SDDs. Addressing the two predominant theories simultaneously is crucial in determining the explanatory power of each. To test the signalling hypothesis directly, this paper examines changes in earnings forecasts after the announcement of an SDD. These forecasts are found to be revised upward following an announcement that results in a significant increase in the stock price. However, the authors find this relationship is only true for firms with low values of Tobin's Q (a proxy for poor investment opportunities). (The use of Q will be further elaborated on in the review of the free cash flow literature.) These results are consistent with the conditional signalling hypothesis. This hypothesis predicts a larger stock price reaction for low-Q firms. Since low-Q firms are not perceived as having good future prospects, SDDs are less likely to be anticipated and lead to greater changes in investor expectation of future earnings. This, in turn, causes a greater stock price reaction to the announcement, according to the hypothesis. The results also provide evidence against the free cash flow hypothesis, as discussed in the following Section.

Gombola and Liu (1999) also report a positive, significant relation between the change in earnings forecasts and the magnitude of the stock price reaction to the announcement. Interestingly, the signalling effect is found to exist only for current-year earnings but not for following year or five-year earnings growth. This adds further to the idea that the information content of SDDs is possibly transitory in nature as opposed to permanent.

With the juxtaposition of strong theoretical support, and mixed empirical support, signalling theory remains an intriguing area of study vis-à-vis announcement-period stock price reactions for SDDs. The literature converges on the fact that some form of signalling is present. The exact nature and magnitude of this signalling is less clear. By isolating SDD announcement effects from regular dividend announcements, this may provide clarity on the signalling hypothesis's application to SDDs.

The emergence of the signalling theory motivated wider considerations and advancement in the study of the informational content associated with SDDs. Incorporating agency cost theory was a natural progression of the literature. The free cash flow hypothesis (Jensen, 1986) is less extensively explored as an explanation for the positive price response surrounding discretionary payout announcements.

The first article to examine whether the free cash flow hypothesis had explanatory power was Lang and Litzenberger (1989). They analyse the differing average returns associated with large regular dividend changes to two separate groups, separated by Tobin's Q to proxy for the severity of the agency cost. They focus on a specific area of the free cash flow hypothesis—overinvestment.

In order to describe the overinvestment hypothesis and rationalise the use of Tobin's Q as an indicator, Lang and Litzenberger (1989) uses the Miller and Modigliani (1966) limited growth model, which models firm value as the existing assets' contribution to value plus the net present value of future investment opportunities. The hypothesis predicts that if managers are overinvesting (negative net present value [NPV] investment), an increase in the dividend will reduce the overinvestment, as they subsequently have less cash flows to waste. This will increase the market value of the firm by reducing overinvestment, increasing the present value

of future investment opportunities. In the same manner, a dividend decrease signals an increase in negative net present value investment. For value-maximising firms, the level of investment should be independent of dividends.

Assuming a firm's investments are scale-expanding and exhibit diminishing marginal efficiency of capital, a firm with inferior investment opportunities and greater agency problems of free cash flow ('overinvesting') will have an average Q of less than one. A value-maximising firm will have an average Q in excess of one. It also implies that high-Q firms have high growth opportunities, and low-Q firms have low growth opportunities. This allows the authors to separate their sample into 'overinvesting' firms and a mixed group of value maximisers and 'marginal' overinvestors. Dividend increases and decreases of greater than 10% are then examined, and their results show that the average announcement return is significantly higher for the overinvesting firms. The greater market reaction to cash distributions by low-Q firms is evidence of the more severe agency problems facings these firms, alleviated by disgorging cash.

This evidence is also consistent with the conditional cash flow signalling hypothesis, if investors anticipate large dividend increases for high-Q firms but not for low-Q firms. The authors undertake further tests in which the two hypotheses would give differing results. These involved separation of the dividend change data and analysing the relation between announcement of dividend changes and subsequent changes in analysts' earnings forecasts. They report that the median elasticity of the change in an analyst's earnings forecasts with respect to the dividend change is not significantly different from zero, thus concluding that their results support the free cash flow hypothesis.

The findings from Lang and Litzenberger (1989) spurred further interest on the free cash flow hypothesis in the expanded area of discretionary payouts to see if the same results held. Howe et al. (1992) provide a natural extension of Lang and Litzenberger's (1989) dividend results to tender offer share repurchases and SDDs. They attempt to determine whether Jensen's (1986) free cash flow hypothesis also has explanatory power for the market reaction to discretionary payouts. If they are used as a vehicle for distributing free cash flow to shareholders, then the stock price reaction should be larger for firms with greater free cash flow agency costs. The

same approach as Lang and Litzenberger (1989) is used, separating the sample into high-Q and low-Q firms. Their results, however, differ remarkably with Lang and Litzenberger's (1989) findings. SDDs and repurchases are comparable to regular dividends in their cash flow effects, so in the scope of Miller and Modigliani's limited growth model, the results should hold. However, they find no statistically significant difference in announcement effects across values of Q in any of the samples.

Howe et al. (1992) add a further test of the application of free cash flow theory, testing whether firms with greater free cash flows have higher announcement returns. A measure of cash flows is included in cross-sectional regressions, and they develop a low-Q, high cash flow sample and a high-Q, low cash flow sample. If the theory holds, the greatest difference in abnormal returns is expected between these groups. The cash flow measure provides no additional explanation and the difference between the two groups is insignificant. This provides stronger evidence that the free cash flow theory has insufficient power to explain excess returns for these non-recurring announcements. Their results are consistent with the signalling hypothesis, as the Q value appears to be an irrelevant factor. All firms might attempt to signal the market when their shares are undervalued through discretionary payouts.

The authors note their results provide an empirical puzzle, arguably the most important contribution of their study. If discretionary payouts have comparable cash flow effects to regular dividend changes and by implication a similar reduction in agency costs, why is there a differing market reaction? It is difficult to reconcile why Jensen's free cash flow theory applies to one and not the other. The authors do not address the issue but propose the explanation possibly lies in entrenchment, governance and the alignment of manager and shareholder incentives. They specifically mention repurchases, as they serve to increase entrenchment, which may counter the positive message concerning cash flow for entrenched low-Q firms. As agency costs increase with entrenchment, an encompassing measure of entrenchment and monitoring may be a more accurate proxy for agency cost.

A criticism of Howe et al. (1992) on further study has been that the sample size of their SDD announcements is small (N=60), which may explain the failure to detect differential reaction based on Q**.** Subsequent literature has for the most part not taken up the challenge set by Howe

et al. (1992). This study attempts to address the proposed puzzle, through the incorporation of entrenchment and governance measures.

These two papers still remain the most referenced in the literature surrounding SDDs and free cash flow. The majority of studies past this point consider the two theories in conjunction to see if either have explanatory power. Gombola and Liu (1999) provides support for the signalling hypothesis as previously mentioned; however, it also provides a notable addition to the free cash flow literature. They build on Lang and Litzenberger (1989) in what was briefly described earlier as the conditional signalling hypothesis. They state that the key to testing the difference between signalling and free cash flow rationales lies in earnings forecasts. Distributing free cash flow to shareholders, instead of investing in lower-return projects, should not necessarily improve earnings for the firm but rather improve shareholder wealth. Immediate upward revision of earnings forecasts should therefore not be produced by a reduction in agency costs, but rather as a result of signalling. The conditional signalling hypothesis predicts an upward revision of earnings expectations for low-Q firms, and little or no upward revision for high-Q firms. So, through a combination of stock price reaction predictions and earnings forecasts, the authors differentiate between the hypotheses.

The results of Lang and Litzenberger (1989) do not necessarily rule out a conditional signalling hypothesis (Howe et al., 1992 do not test the link). Using the same approach of sample separation based on Q values, Gombola and Liu (1999) find results consistent with Lang and Litzenberger (1989) and, on the surface, the free cash flow hypothesis. Stock price reaction to SDD announcements was found significantly greater for low-Q firms. This, however, is also consistent with the conditional signalling hypothesis. Their results find a significant upward revision of earnings forecasts for low-Q firms, but not for high-Q firms. According to the authors, this eliminates the free cash flow hypothesis as an explanation.

The evidence on the free cash flow hypothesis continues to be mixed, with new literature revealing conflicting results. Lie (2000) provides an investigation of the hypothesis using samples of SDDs, regular dividend increases and repurchases. He provides an important critique of the previous literature on the free cash flow hypothesis. Both studies on discretionary payouts (Howe et al., 1992) and regular dividend changes (Denis, Denis and

Sarin, 1994) employ the firm's cash flow as the only measure of excess funds. Lie's (2000) analysis adds a new aspect to the literature by examining the cash flows and cash levels in the years around the announcements to determine the need for the sample firms to disburse funds. He then relates the announcement-period returns to cash level and cash flow measures. This also provides a comparison between discretionary payouts and regular dividend changes.

Lie (2000) finds that all types of announcing firms have higher cash levels and flow than their industry medians. Firms announcing discretionary payouts have accumulated more cash prior to the event than firms that increase regular dividends, but they typically generate less cash flow both before and after the event. Consistent with Howe et al. (1992), he finds announcement-period returns for SDDs and repurchases to be unrelated to cash flows; however, the returns are positively related to cash levels. Upon separation of this sample as per Lang and Litzenberger (1989), this relationship was also found to be significantly stronger for low-Q firms, the proxy for firms with poor investment opportunities.

In addition, Lie (2000) finds that the reaction is significantly and positively tied to the size of the SDD. He finds a very strong relationship with the size of the SDD, highlighting that it must be controlled for when analysing the relationship to Q and free cash flow. Further, when separating the sample based on the size of the SDD, the positive relationship identified between returns, cash levels and Tobin's Q was only statistically significant for large SDDs. Regular dividends are generally smaller disbursements than SDDs, so this relationship to size tends to explain the lack of results for regular dividends. Announcement-period returns for regular dividend increases were found to be unrelated to either cash flows or cash levels. These results imply that large discretionary payouts effectively curb overinvestment, while the evidence for small payouts is inconclusive.

Lie (2000) is the only paper to briefly examine the role of governance under the free cash flow hypothesis. He does this primarily from the perspective of ownership, or alignment of interests, stating that if effective control mechanisms prevent managers from wasting excess funds, the relationship between the announcement reaction and the interaction of low-Q and cash level should be stronger for firms with poor control mechanisms. He uses four indicators of poor control mechanisms: insider holdings < 5%, insider holdings > 25%, outsiders on

board and blockholder presence. Interestingly, however, he finds no evidence to indicate that the market is less or more concerned about excess cash levels in the presence or absence of these governance mechanisms.

This evidence does not refute the signalling hypothesis, and Lie (2000) seems to be the first author who seems to acknowledge that the two explanations are not mutually exclusive. However, the observed link between the announcement reaction, investment opportunities (as proxied by Tobin's Q) and cash levels gives stronger support to agency theory. Signalling theory offers no clear prediction for the relation between the stock price reaction and cash levels.

The free cash flow explanation for discretionary payout announcement returns is an appealing theory, with strong logic from the field of agency conflicts. The evidence is somewhat mixed, but there is support of its explanatory power. The path of study appears less trodden than that of signalling, and further literature is likely to bring more conclusive findings on agency theory and its strength of explanation in this area. There appears to be room for refinement in the accuracy of the proxy for the severity of agency costs in the firms. The inclusion of governance measures in this proxy may shed new light on the ongoing discussion.

It is important to note that these two theories are not mutually exclusive, as mentioned in Lie (2000). The existence of one does not preclude the existence of the other, as many authors seem to suggest. To highlight the possible presence of both theories, I considered a current working paper analysing both theories in a modern context, outside of the US. Balachandran, Dempsey and Mahamuni (2009) assess the free cash flow and signalling hypothesis for SDDs in a modern environment under a different tax regime, drawing on the previous literature to date. The authors look particularly at evidence from UK firms under the partial imputation tax environment. They argue that since an imputation tax system reduces the tax burden on dividends to shareholders, it allows managers to use dividends to distribute cash more efficiently to reduce the agency costs of free cash flow, as well as providing a less costly mechanism for dividends as a signal. The two theories' explanatory power should therefore be more evident within the UK sample than the US sample.

The authors examine the stock price reaction and abnormal performance using control firms with similar prior operating performance and book-to-market ratios. Their results differ from the US studies in that they find strong support for both the signalling and free cash flow explanations in the many ways hypothesised by previous literature. They find significant increases in earnings for firms with high growth opportunities (high-Q firms) and insignificant abnormal performance for low-Q firms. This relationship is opposite to that predicted by the conditional signalling hypothesis, and contrasts the results found by Gombola and Liu (1999). They also find the market reaction to be significantly larger for low-Q firms and firms with higher pre-announcement free cash flow. In addition, their results support the conclusion of Lie (2000), with a significant positive relationship to the size of the SDD. While the UK tax system has encouraged these actions, their results show that in payment of SDDs, high-growth firms are engaging in signalling future operating performance and low growth firms are disbursing excess cash flows.

As this study will provide an analysis over the most recent time period possible, I revisit the results of De Angelo et al. (2000), which highlights the fact that the function and propensity to pay SDDs and regular dividends has evolved over time. They show that the historically prevalent practice of paying SDDs has largely failed the survival test. During the 1940s, 61.7% of dividend-paying NYSE firms paid at least one SDD, while only 4.9% did so during the first half of the 1990s. They also show a substantial reduction in the fraction of total cash dividends that SDDs represent. The typical practice of SDD payment was far more predictable, now large SDDs seem to be the only specials that have survived to an appreciable degree. A negative relationship is found between institutional ownership and the probability a firm continues to pay SDDs, giving support for the notion of a clientele effect. The relationship indicates that as institutional ownership grew over time, the common substitution between special and regular dividends was more visible.

Denis and Osobov (2008) discuss the changes in propensity to pay regular dividends. They find the proportion of dividend payers has declined over the past two decades but that aggregate real dividends have increased. The majority of this decline can be attributed to changing firm characteristics as the expected percentage of payers declined. Regular dividends

are now highly concentrated among large, profitable payers. They also find a strong positive relationship between the level of retained earnings and payment likelihood.

Both De Angelo et al (2000) and Denis and Osobov (2008) indicate a movement toward agency based life-cycle theories due to a decline in regularity and increase in size. While the propensity to pay regular dividends has also decreased, this trend is far more pronounced for SDDs. De Angelo et al.'s (2000) conclusions imply a challenge to signalling theory for SDDs. The fact that special dividends once flourished, but have largely failed to survive, is less consistent with the view that these signals serve an economically important function consistent through time, and the more consistent argument to this trend is their use for the disbursement of free cash.

In this paper, I look to add to the free cash flow literature by incorporating a measure of the strength of governance. An appealing argument pertaining to the influence of governance is one most aptly described by John and Knyazeva (2006). They directly analyse the implications of free cash flow agency for payout policy from the perspective of pre-commitment. They propose that as quality of governance limits the potential for suboptimal managerial behaviour, the agency costs and therefore cash distributions required to mitigate them are lower, hence governance and cash distributions can be thought of as substitutes in addressing agency conflicts. Their results support this conclusion. In terms of total cash distributions and dividend payments, they find that the level and likelihood decreases with the quality of governance. They also separate the sample into low free cash flow and high free cash flow subsamples, measured by growth opportunities and cash flow. They find the relationship between governance and payout to be insignificant for the low free cash flow subsample and highly significant for the high free cash flow subsample. This reinforces the connection to free cash flow agency.

This theory has strong application for regular dividend policy due to its pre-commitment nature, binding management over time. It provides a disciplinary role to management, as they are required to maintain current and future dividend payments. The analysis of SDDs is somewhat different, since this is a case of a one-off cash disbursement which is not mandatory. Hence, there has to be a strong motivation for some managers to retain cash and,

more importantly, to have a strong enough disciplining device in place to force others to disgorge that cash when ideally they would want to do otherwise. Managers would prefer to retain excess free cash flow in order to cushion poor performance and pursue personal interests. Therefore, this problem is different from the papers that examine dividend policy as a substitute disciplining mechanism.

This is also evident within John and Knyazeva (2006), as they analyse the composition of payout and the relationship between governance and repurchases. Albeit repurchases may have a slightly different role to SDDs as a takeover defence, they are analogous in their optional one-off nature. In terms of composition, the authors find that firms with weaker governance are more likely to pre-commit to a dividend policy and that the likelihood of a dividend-only policy versus a repurchases policy decreases with governance. This shows that a binding regular dividend policy serves a different purpose (governance substitute) than an optional payout. They also find that strong external governance leads to a higher incidence and likelihood of repurchases, as well as a greater share of repurchases within total cash distributions.

The current research is more aligned to Jensen's (1986) free cash flow argument. The hypothesis refers to how the buildup of cash acts as a drag on firm value, particularly in firms where managers are immune from displacement. Present such a threat, managers follow the optimal policy and release the hidden value. Accordingly, upon announcement of a hostile takeover, the value of targets that have large agency costs of free cash flow increases. In application to payout, this suggests that improved governance results in increased likelihood and level of payout.

Lehn and Poulsen (1989) test this hypothesis directly using a sample of leveraged buyouts between 1980 and 1987. They find a major source of stockholder gains in LBOs to be the mitigation of agency problems associated with free cash flow. Their results show that firms that have large amounts of free cash flow (ratio of undistributed cash flow to equity value) are more likely to go private. These firms become targets of hostile takeover attempts, so in the presence of this external threat, managers have a strong incentive to pre-empt the hostile takeover bid by paying out the excess cash flow, or in the extreme, as premiums in an LBO.

Their results are found to be strongest during the period where the threat of hostile takeover was greatest. They show that in the absence of an external threat, firms do not pay out the free cash flow. The threat is an important impetus for going-private transactions, paying out the free cash flow in the form of premiums. These firms with higher free cash flow that do go private are also shown to pay significantly larger premiums to stockholders.

Lehn and Poulsen's conclusions have direct implications for this research based on SDD payments. Within the sample of firms making SDD payments are those with elevated levels of free cash flow. Analogous to the LBO firms, they may not be expected to pay out the excess cash absent the threat of displacement or sources of monitoring. This level of investor expectation may have implications for market reactions upon announcement of SDDs.

Lang et al. (1989) provide an analysis of bidder and target returns in the area of corporate acquisition, giving further evidence to the notion that high free cash flow firms can be potential takeover targets and are sources of stored or hidden value. They use a sample of successful tender offers and separate the bidders based on Tobin's Q to proxy for the severity of agency costs of free cash flow. High free cash flow firms should pay out cash flow to shareholders rather than make acquisitions that decrease shareholder wealth. So, when these firms do instead make tender offer announcements, the market recognises the misuse of cash. The authors find the highest takeover gain occurs when the target is a high free cash flow firm and when these firms are bidders; on average, the transaction generates negative returns for shareholders. Lang, Stulz and Walkling (1991) use a similar approach to show that shareholder wealth effect is inversely related to cash flow. Their results show an increase in free cash flow equal to 1% of a bidder's total assets is associated with a decrease in the bidder's gain from the takeover equal to approximately 1% of the value of the bidder's common stock.

The results of their studies primarily reinforce the free cash flow hypothesis in terms of management partaking in negative NPV investment. However, it shows the presence of hidden value, and absent the occurrence of the hostile takeovers that were analysed, this value remains within the company to the benefit of management. When these threats occur, management can pay out the excess cash, removing the source of value for the takeover threat, or alternatively the takeover occurs and shareholders realise the gains. When this source of

governance is not apparent, the motivation to make an optional payment is not present, and investor expectation is low.

Denis (1990) directly investigates the use of special payouts to shareholders through repurchases or SDDs as a defensive adjustment policy in response to hostile corporate control activity. In share repurchases, managers may choose not to sell their shares in the repurchase offer, and for the sample of SDDs studied, the author finds managers typically receive additional shares instead of cash. Hence, both types of payouts can result in the concentration of manager voting power. They find that these (optional) alterations in payout policy contribute to an overall defensive strategy through which a high percentage of target firms maintain their independence. Interestingly, they show that SDD announcements lead to an increase in wealth for the target shareholders, even in excess of that presented by the hostile bidders. This shows the significant value to shareholders contained in an SDD, which is retained within a poorly governed company. The evidence shows the market for corporate control is an effective disciplinary force and motivates the payment of SDDs. Absent this force and other measures of governance, management would prefer to retain the cash for personal value.

Fluck (1999) investigates the implications when management has the ability to divert or manipulate the cash flows and when it is costly for equity holders to verify or prove any managerial wrongdoing. Under these conditions (poor governance), the author finds management controls the distribution of equity ownership. They form the ownership distribution between entrenched management block holdings and dispersed outsiders, so as to maximise private benefits against the risk of potential control challenges. Among other conclusions, Fluck finds that managers who are subject to more effective external monitoring make higher payouts, and that repurchases occur when disciplinary pressure from outside shareholders is highest and when they are most effective in reducing the disciplinary pressure.

The literature shows that absent strong governance, most importantly the threat of displacement, managers lack the motivation to make an optional payment, such as an SDD. Implicitly, it can be seen that when these firms with weak governance do make an SDD payment, the level of investor expectation is low, and the market is likely to react accordingly.

This analysis focuses on SDDs, however the analysis could also be extended to repurchases. SDDs and repurchases are both discretionary and one-off in nature, so usually evoke similar market responses. They are considered slightly different in form and motivation but render similar effects.

Many papers analyse the two concurrently, particularly with respect to free cash flow. Howe et al. (1992) aim to examine the effect of infrequent or one-time cash distributions, within this category they treat SDDs and repurchases similarly, due to their nature (one-off and infrequent) and cash flow effects. They find that the average returns are generally lower for the SDD subsamples, and repurchases are generally larger in size, however both groups and combined samples yield similar results. In fact, a significant portion of their analysis is completed on a combined sample of SDDs and repurchases, testing the effects of infrequent announcements. Gombola and Liu (1999) in their analysis of signalling state that an SDD can be considered as a substitute. Simply a cash-disbursement to shareholders by means of an SDD rather than a stock repurchase. With particular regard to the signalling hypothesis they conclude that SDDs and repurchases are different in form but similar in signalling effects.

John and Knyazeva (2006) findings strongly support the relationship between payment likelihood and external governance. They conclude that managers faced with a high takeover threat (external monitoring) are more likely to repurchase. Hence, the motivation of payment and associated level of market expectation is similar between SDDs and repurchases.

Lie (2000) examines both SDDs and repurchases and treats them as virtually identical in effect. He states that both evoke similar reactions due to their nature; like SDDs, repurchases are one-time disbursements of cash. Consequently, both should be used to disburse nonrecurring accumulations of excess funds. His results support this view, finding a positive relationship between the market reaction and excess funds for repurchases and large SDDs, and concludes they render similar effects in curbing overinvestment. He also utilises a grouped sample for comparison against regular dividends and finds results to be supportive of similar reactions. His only caveat to the similarity is that there is an alternative interpretation for the evidence based on repurchases; managers may view a share repurchase as an alternative to real investments. If so, they are likely to repurchase shares when they perceive them to be

undervalued by the market. However he concludes that defensive repurchases do not explain the findings, since the results are similar if defensive repurchases are excluded.

The potential variation could come within results based on governance and entrenchment. While SDDs are primarily a discretionary cash disbursement, repurchases also serve the purpose of further entrenching management, decreasing external governance. Howe et al. (1992) provide a discussion with particular mention of repurchases. They posit that as repurchases serve to increase entrenchment, this counters the positive message concerning the disgorging of cash flow for entrenched low-Q firms. Investors realize that it may become more difficult to reinstitute value-maximizing strategies because of the improved position of incumbent management and additionally, repurchased shares are frequently used to increase management's ownership position. However, differential results between SDDs and repurchases consistent with this greater countering effect were not observed. Where this negating entrenchment effect may have a differential impact is within governance analysis. The countering effect is likely to be largest for firms with currently entrenched management, weakening the hypothesised greater market reaction for firms with high agency costs of free cash flow and entrenched management. Therefore governance and agency cost of free cash flow results could potentially be weaker if extended to repurchases.

With respect to signalling design, this study's main addition is to attempt to isolate the 'signal' contained within SDDs by analysing abnormal market reactions for SDD subsamples based on proximity to regular dividend increases. However, while SDDs are commonly paid concurrently with regular dividends and regular dividend increases, this practice is less common for repurchases. The sample separation is therefore less relevant if the analysis was to be extended to repurchases.

I contend that my basic results would not change given the two forms of payouts have the same core discretionary nature and usually evoke similar market responses. This is demonstrated by the literature that examined both of these forms of payout in the same study. Similar further research with respect to repurchases could potentially provide marginal differences in results.

Extensive research has examined the impact of SDDs in the US, and two explanations have been proposed. The evolution of these two theories provides an interesting review. The most apparent conclusion is that results are by no means conclusive, and there is significant room for clarifying results under both theories. The signalling hypothesis has been the leading explanation since the beginning of the literature and has received some support. Many believe the nature of the hypothesis dictates that a signal should not be contained in an SDD. Accurate isolation of the SDD-announcement impact may shed more clarity. The free cash flow hypothesis has received mixed evidence with weaker support, but it has strong theoretical support. The literature gives strong evidence to the notion that the level of governance provides motivation for SDD payment, so the incorporation of this in light of investor expectation may bring more conclusive results than previous studies.

While previous literature has achieved mixed evidence, it is apparent that both theories could have relevance in explaining announcement returns for SDDs. Many factors surround these announcements, which is evident in the conflicting results. Significant evidence suggests the nature of SDDs has changed over time. This research should enable a better understanding of the specific nature of the information component of SDD announcements across the most recent time period.

3. Proposed research

The positive abnormal stock returns surrounding announcements of SDDs has been well documented throughout the literature, indicating the market is responding to new information. Essentially, two hypotheses—signalling (the SDD signals earnings prospects) and the agency costs of free cash flow (the SDD reduces agency costs through more efficient use of funds)—have frequently been employed to explain this phenomenon with inconclusive results.

In this research, I analyse both these hypotheses in their application to SDDs paid by US firms over the most recent period possible: 1990–2006. The nature of SDD payments appears to have changed over time, and much of the previous literature seems to have been limited by sample size. Even the most recent literature reviewed (Lie, 2000) has a sample of SDDs between 1978 and 1993, only three years of sample overlap. The sample of Gombola and Liu (1999) and Howe et al. (1992) has no overlap with the sample for this research. Many studies, such as De Angelo et al. (2000), have shown an overall decline in the incidence of SDDs, but an increase in large payments. Trends such as these appear to support the free cash flow hypothesis, or at minimum a change in the role SDDs play. Hence, even simple re-examination of the hypotheses over the most recent period possible with a different sample may yield results inconsistent with previous literature. In particular, it provides an opportunity to further examine the explanatory power of the agency costs of free cash flow as a possible explanation for the stock price reaction at announcement of SDDs.

With respect to the signalling hypothesis, I contend that past studies examining the signalling role of SDDs may have lacked precision in isolating the SDD's effect or 'signal'. In order to test the strength of the signalling hypothesis with regards to SDDs, in this research I separate the full SDD sample into four subsamples: (i) SDDs paid in isolation, (ii) those paid concurrently with a regular dividend, (iii) those paid concurrently with a regular dividend increase and (iv) with a regular dividend increase within the following two quarters. Previous studies have only looked at the entire SDD sample, possibly misconstruing the signal since the market's response could be generated from other regular dividend and regular dividend-increase announcements which accompany many SDD announcements. The methodology

employed for testing the signalling hypothesis will be similar to Healy and Palepu (1988), adapted for the purposes of this research.

With respect to the free cash flow hypothesis, previous literature proxied for the level of agency conflict using Tobin's Q ('overinvesting' firms) and cash flow (potential for agency), and some incorporated cash levels. Combining low Q and high cash flow implies greater agency costs of free cash flow. I will re-test this relationship, controlling for possible explanatory variables to the stock price reaction and with a slightly varied definition of free cash flow.

The results of Howe et al. (1992) provide somewhat of an empirical puzzle, as dividend changes and SDDs represent the same cash flow effects. In an attempt to address the potential puzzle, I additionally look at the role of governance from the view of entrenchment. Lie (2000) is the only paper to briefly look at the role of governance in the free cash flow hypothesis. He analyses this from the view of managerial ownership and surprisingly finds no conclusive results. Adding an encompassing measure of entrenchment may be a more accurate proxy for agency cost, especially with respect to the market forming expectations regarding the propensity to pay out excess cash. This is achieved through the use of the G-Index (Gompers et al., 2003) a comprehensive measure of entrenchment. When there is no threat of takeover, or reduced threat of displacement, managers would prefer to retain excess free cash flow in order to cushion poor performance and pursue personal interests. Firms with entrenched management, or management subject to less effective external monitoring, are less likely to make the payment, so investor expectation regarding SDD payout should be significantly lower for these firms. By additionally accounting for what motivates managers to pay out cash in the form of an SDD, and investor expectation, this may lead to more definitive results in the analysis of the free cash flow hypothesis.

4. Hypotheses

This analysis focuses on SDDs, however I contend that the hypotheses to follow and the subsequent analysis could also be extended to repurchases. Previous literature has analysed both SDDs and repurchases concurrently and grouped them as a single sample of one-off cash disbursements. Results also demonstrate similar effects in both areas of signalling and free cash flow (Howe et al., 1992; Lie, 2000; Gombola and Liu, 1999; John and Knyazeva, 2006). The two forms of payouts have the same core discretionary nature and usually evoke similar market responses and relationships.

The literature has provided substantial evidence that the market is reacting to an informational component upon SDD announcement (Gombola and Liu, 1999; Brickley, 1983; Lie, 2000; Howe et al., 1992). This component possibly regards earnings prospects or more efficient use of funds. Past studies examining the signalling role of SDDs, however, do not distinguish between pure SDDs and SDDs accompanied with regular dividend payments and/or increases**.** Every paper reviewed has found significantly positive announcement-period abnormal returns, and hence sample separation based on proximity to regular dividend payments is not expected to remove the significance completely in any particular sample. However, the size of the market reaction could differ across these subsamples of SDDs. Similarly, separation based on Q is also not expected to yield non-significance, evident in the results of Lie (2000) and Howe et al. (1992), given the pervasive nature of the market reaction. SDDs are also largely unpredicted payouts, representing a greater surprise than other dividend payouts. While significant information leakage or investor recognition of impending payment is expected, the majority of the market reaction to the announcement should be contained within a narrow window (Dann, 1981; Lie, 2000).

H1: The announcement-period reaction for SDD announcements will be positive and significant across all subsamples.

While the majority of papers to date seem to treat the signalling and free cash flow hypotheses as mutually exclusive, I contend that it is highly possible that the announcement-period stock

price response is simultaneously consistent with both these hypotheses. In addition, the literature has highlighted the change in payment frequency and nature of SDDs in recent years (De Angelo et al., 2000; Gombola and Liu, 1999; Balachandran et al., 2009). Moreover, many SDDs are now embedded in regular dividends (De Angelo et al., 2000).This may mean results over the more recent time frame yield different results. I think it is necessary to re-examine the original hypotheses proposed by both the free cash flow and signalling theories, as analysis over the more recent, larger sample may provide unique conclusions when compared with earlier literature.

The underlying intuition of signalling theory is the information asymmetry between managers and shareholders and that unexpected changes in dividends convey information regarding the firm's future earnings prospects. SDDs are commonly viewed as a temporary increase in payout, and it can be said that investors treat them as hedged or guarded managerial signals about future profitability (Brickley, 1983). Although they may be weaker signals than regular dividend increases, there is evidence of the role of SDDS in signalling future earnings and the associated market response upon announcement (Brickley, 1983; Gombola and Liu, 1999; Dann, 1981).

H2: Earnings changes during and following the announcement of SDDs will be significantly positively related to the announcement-period reaction, consistent with the signalling hypothesis.

Constructing samples of SDDs that are separated based on their proximity to regular dividend changes may result in the size of the market reaction and its relation to earnings changes being significantly different. There is evidence for the role of signalling in SDDs as discussed in relation to hypothesis H2 (Brickley, 1983). However, it is possible this signal is significantly enhanced by regular dividend increases that surround many SDD announcements. Comparing literature based on distributions, the explanatory power of the signalling hypothesis is stronger for changes in regular dividends than for SDDs (Brickley, 1983; Healy and Palepu, 1988; Aharony and Dotan, 1994). Healy and Palepu (1988) find strong evidence of signalling for at least the year of and year after announcement for dividend-initiating firms. Aharony and Dotan (1994) show a strong association between changes in quarterly dividends and

subsequent unexpected earnings, which does not disappear with the inclusion of current unexpected earnings. Brickley (1983), in particular, compares regular dividends and SDDs and shows that firms declaring regular dividend increases experience significantly larger earnings in the year after the dividend increase than firms declaring SDDs of similar size. He also shows SDDs to be associated with weaker stock market reactions than regular dividend increases of comparable size.

Regular dividend increases are binding on managers for subsequent periods and hence are more costly and consequently reliable signals, whereas it seems SDDs are treated as guarded managerial signals about future profitability (Brickley, 1983). It follows that SDDs paid in isolation should be used to disburse non-recurring accumulations of funds, as they are one-off payments with no associated change in the continual payment of quarterly dividends. SDDs along with regular dividend increases are more likely to be used in disbursement of recurring accumulations, as management is likely to view positive earnings changes as more permanent. Utilising the same logic, firms paying SDDs and then subsequently paying an increased regular dividend within the following two quarters may experience significantly improved earnings in the following years. Hence, the relationship between the SDD-announcement return and future earnings may be strong and more consistent with signalling for these samples with surrounding regular dividend increases. I expect the relationship between the market return and subsequent earnings changes to be small or possibly insignificant for SDDs paid in isolation due to their non-binding nature. Similarly, I expect the relationship to be stronger for SDDs accompanied with non-increasing regular dividends compared with those paid in isolation.

H3: The relationship between future earnings changes and the announcement-period reaction will be the strongest (most positive) when an SDD is paid in conjunction with a regular dividend increase, smaller when a regular dividend increase follows an SDD, smaller again when in conjunction with a non-increasing regular dividend and smallest when paid in isolation.

Literature analysing both the signalling hypothesis (Brickley, 1983) and the free cash flow hypothesis (Lie, 2000) have found a strongly significant positive relationship between the size

of the SDD and the announcement-period return. The size of the SDD directly influences the stock price reaction representing the wealth effect to shareholders (level of unanticipated payout). Additionally, the amount of information conveyed is possibly related to the size of the SDD payment under the signalling and free cash flow hypotheses. Brickley (1983) controls for the size of the distribution in order to analyse signalling content. Lie (2000) concludes that large SDDs effectively curb overinvestment, while evidence is inconclusive for small SDDs. The positive relationship between returns and cash levels (which is stronger for low-Q firms) is found to be statistically significant only for large SDDs.

H4: The announcement-period reaction to SDDs will be positively related to the size of the SDD.

Throughout the literature addressing the free cash flow hypothesis, Tobin's Q is used to proxy for the presence or absence of agency conflicts. Tobin's Q represents the NPV of current investments and future growth opportunities, divided by the replacement cost of assets. A value of Q below unity therefore indicates negative NPV investment, which the market expects to continue, reducing firm value. Hence, Tobin's Q lower than one represents overinvestment and the presence of elevated levels of agency conflict (Lang and Litzenberger, 1989). Lang and Stulz (1994) display the link between Q, investment and firm value. By comparing diversified and focused firms, they conclude that over-diversified firms are valued lower, with a significantly lower Q to focused firms. Lang et al. (1989) show that when low-Q bidders make acquisitions, shareholder wealth is decreased on average. Similarly, low-Q targets generate the greatest increase in shareholder wealth. This highlights the greater levels of agency costs in low-Q firms and also the firm value stored within.

Tobin's Q is essentially a measure of a firm's perceived investment opportunity set. Hence, a ratio below 1 indicates low growth opportunities, whereby distribution of excess cash would be the value-maximising decision. A cash distribution by firms with Q ratios below 1 therefore reduces overinvestment, as subsequently less cash flows are available to waste (Lang and Litzenberger, 1989; Lie, 2000). Theory suggests low-Q firms should experience greater market reactions to SDD announcements due to the more severe agency problems facing these firms, potentially alleviated by disgorging cash. Some literature provides evidence of a

significant difference between high-Q and low-Q SDD-announcement returns (Gombola and Liu, 1999; Balachandran et al., 2009), while some do not (Howe et al., 1992). I re-test this hypothesis over the more recent sample of SDDs.

H5: The announcement-period reaction to SDDs will be negatively related with a firm's Q ratio consistent with the free cash flow hypothesis.

Similarly, agency theory suggests that the severity of agency conflict will increase with the level of free cash flow. In the original free cash flow theory outlined by Jensen, he states that free cash flow is cash flow in excess of that required to fund all projects that have positive NPVs when discounted at the relevant cost of capital. Hence, conflicts of interest between shareholders and managers are especially severe when the organisation generates substantial free cash flow. The buildup of cash acts as a drag on firm value (Jensen, 1986). He shows that debt (as an alternative agency-mitigating tool to dividend payout) is most important for maximising firm value in firms with high levels of free cash flow and low growth opportunities. These firms taking on additional debt have the greatest positive market responses, increasing firm value. Lang et al. (1991) reconfirm this relationship, showing that shareholder wealth is significantly inversely related to cash flow for bidding firms in takeovers. This reiterates the drag on firm value and link to inefficient investment when free cash flow levels are high.

Firms with high free cash flow will have more funds available for management to use in value-destroying investment or other inefficient uses of cash flow in pursuit of personal benefits. As disbursements reduce this free cash flow, they alleviate these agency problems between managers and shareholders. The greatest reduction comes from those firms with high levels of free cash flow (Easterbrook, 1984; Jensen, 1986; Lang and Litzenberger, 1989). Therefore, market reactions to SDD announcements should be larger for firms with higher free cash flow due to the greater reduction in agency costs and increase in firm value. With regards to SDD payments, little evidence has been found in support of this free cash flow relationship (Howe et al., 1992; Lie, 2000). I re-test this hypothesis utilising a slightly varied definition of free cash flow, additionally incorporating capital expenditures. This measure encompasses all free cash flow available to management for inefficient use.

H6: The announcement-period reaction to SDDs will be positively related to a firm's pre-announcement free cash flow, and this relationship will be stronger for firms with a low Q ratio consistent with the agency costs of free cash flow hypothesis.

The majority of the literature has utilised free cash flow as the only measure of excess funds. However, Lie (2000) utilises cash levels and finds a positive relationship to announcement returns, and this relationship is significantly stronger for low-Q firms. Cash levels can also be an important consideration for agency costs, as they present an opportunity for agency costs and overinvestment. Moreover, firms could experience large cash levels without free cash flows, generated from operating cash flows in the past or extraordinary events, such as asset sales. Upon analysis based on cash levels, I expect results consistent with agency theory and the findings of Lie (2000), and hence test the following hypothesis:

H7: The announcement-period reaction to SDDs will be positively related to a firm's pre-announcement cash level, and this relationship will be stronger for firms with a low Q ratio consistent with the agency costs of free cash flow hypothesis.

I hypothesise that the entrenchment of management may be an influential factor in the explanation of announcement-period returns. Lie (2000) hypothesises a similar relationship between governance mechanisms (based in managerial ownership) and the market reaction with respect to agency conflicts. However, he finds that no definitive conclusions can be made. To further address the possible puzzle outlined in Howe et al. (1992), strength of corporate governance from the perspective of managerial entrenchment is analysed. If management is entrenched, they may not be expected to pay out the excess cash absent the threat of displacement or sources of monitoring, preferring to retain the cash for the cushioning of poor performance and other personal benefits.

In order to proxy for the entrenchment level of management, I employ a comprehensive measure of this attribute, as proposed by Gompers et al. (2003), the G-index. The G index is a discrete measure of the number of anti-takeover amendments, structures and policies the firm has in place. Further literature supports the use of this measure; John and Knyazeva (2006) employs the G-Index as their entrenchment measure, and results are robust to alternative

entrenchment measures. Similarly Cremers and Nair (2005) utilise the G- Index and corroborate results by constructing an alternative takeover protection index.

Lehn and Poulsen (1989) show that the presence of an external threat is a large motivation for LBOs when large amounts of free cash flows exist. This free cash would otherwise remain within the firm. Also, the largest amount of value stored within the firm (as indicated by the premiums paid) exists in firms with the highest levels of free cash flow. Similarly, Lang et al. (1989) show the largest shareholder gains from acquisitions occur when the target has high free cash flow, indicating large amounts of value retained in the firm. Surrounding literature also finds that managers who are subject to more effective external monitoring are more likely to disburse funds and make higher payouts (Denis, 1990; Fluck, 1999). Hence, firms with entrenched management are likely to have reduced levels of investor expectation surrounding the payment of an SDD, and also increased mitigation of agency conflicts. I therefore expect such firms to experience a greater reaction upon announcement of SDDs. Without the presence of agency costs, the entrenchment of management may not be an influential factor in explaining announcement-period returns.

H8: The announcement-period reaction to SDDs will be positively related to the entrenchment level of management in the presence of high agency costs of free cash flow.

5. Signalling[3]

5.1 Data and samples

The primary sample contains all SDD announcements between 1990 and 2006 for US firms recorded in the Center for Research in Security Prices (CRSP) database. The sample includes every cash distribution announcement marked as 'year-end or final' (distribution code 1262) or 'special or extra' (1272). Daily stock return and market returns surrounding SDD announcements were sourced from CRSP. Firms were eliminated if these data were not available. Annual earnings data surrounding the announcement were obtained from Compustat Annual Industrial and Research (Compustat) files. Limited by the connectivity of these databases, initial eliminations from the sample were made if they were not listed on Compustat and if data on total assets were unavailable.[4] This left the sample size at 2014 SDD announcements. In order to preserve sample size, subsequent reductions in sample size were completed based on the analysis at hand. For example, sample size surrounding earnings change data fluctuates based on the availability of earnings data for the relevant time periods.

From this sample of SDD payments, four subsamples were created: (i) Firms paying SDDs in isolation, 965 (ii) Firms paying SDDs concurrently with a regular dividend, 793 (iii) Firms paying SDDs concurrently with a regular dividend increase, 228 and (iv) Firms paying SDDs with a regular dividend increase within the following two quarters, 28. These were created by examining regular quarterly dividends (1232) of the same firms recorded in CRSP. Summary statistics of the sample and subsamples are shown in Table 1.

[Insert Table 1 here]

Results show that SDD payments are spread relatively evenly over the sample years, and the four subsamples follow a similar pattern. Interestingly, the least number of SDDs seem to have

[3] The methodology employed in the analysis of the signalling hypothesis is similar to Healy and Palepu (1988), adapted for the purposes of this particular research.
[4] Analysis was also completed removing utility firms (SIC code 4000-4999), but no material differences occurred.

been paid in the late 1990s consistent with De Angelo et al. (2000), with the number of SDDs increasing post 2000.

5.2 Abnormal returns surrounding the SDD announcement

Abnormal returns surrounding the SDD announcement were calculated using the market-adjusted method. Market-adjusted returns are calculated as the difference between a firm's daily return, R_{it}, and daily return on the CRSP value-weighted market portfolio, R_{mt}:

$$AR_{it} = R_{it} - R_{mt} \quad (1)$$

These daily abnormal returns are then summed over different event windows to calculate cumulative abnormal returns (CAR):

$$CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it} \quad (2)$$

Table 2 provides the CAR results for the full sample and all subsamples. They are calculated over five event windows pre- and post- an SDD announcement.

[Insert Table 2 here]

The event window of particular interest is the three-day announcement-period return (t-1 to t+1) which surrounds the SDD announcement. Abnormal returns at the announcement should provide an indication regarding the level of information present in SDD announcements. Across the full sample, Table 2 shows a strongly significant CAR of approximately 2.7% for SDD announcements confirming hypothesis H1 and the notion that information is conveyed within an SDD announcement. The magnitude of this return is in line with that reported in Brickley (1983) and Gombola and Liu (1999) but smaller than in some previous literature. Similarly, Lie (2000) and Howe et al. (1992) find an announcement-period abnormal return of approximately 3.5%. However, Howe et al. (1992) analysed a small sample of 60 firms. This sample may have contained larger distributions compared with the larger sample in my study,

which may contain a greater number of smaller distributions. Moreover, over the more recent time period investors may be more informed and have greater access to information surrounding firms, so the payment of SDDs may represent less of a surprise on average.

Abnormal returns for firms prior to the SDD announcement (t-60 to t-2) and post announcement (t+2 to t+10) were also analysed in order to ascertain whether the market anticipated the impending SDD or change in the prospects of the firm, and whether the SDD continued to provide positive returns after the announcement period. Over the full sample, significantly positive abnormal returns were found pre- and post-announcement suggesting the market does recognise the information present in an SDD before and after announcement; however, the majority of the market reaction is contained within the three-day announcement-period event window. The relationship holds for the most part across the subsamples; however, it appears the market reaction to SDDs paid with a regular dividend increase is more predominantly contained within the three-day event window with less market recognition pre-announcement.

SDDs paid with a regular dividend increase within the following two quarters appear to be an obscure case. The payment fails to invoke any significant abnormal returns across the various event windows, including the three-day announcement window, and hence is inconsistent with hypothesis H1 and H3. The sample size is unfortunately small at a maximum of 28, which could mean the tests do not have sufficient power and a differential reaction could not be detected. A larger sample is most likely needed to detect the factors involved for this subsample. Throughout the holding periods, the abnormal return is small, far smaller than other subsamples, suggesting reduced or no information is present in the announcement.

It is possible that the market recognises that the more important dividend change is to come in subsequent periods, and the SDD represents a stalling mechanism for management until they can commit to an increased regular dividend. However, the very small sample indicates that the increase of the regular dividend following SDD payments is quite infrequent. Hence, if the market does anticipate a regular dividend increase to follow, they would attach a very low probability of this occurring. It follows then that the market response is not a positive abnormal reaction as in the case of a high probability of occurrence. This explains the small

reaction. The payments effectively then represent SDDs paid in isolation. However, as explained in the following paragraph, SDDs paid in isolation are typically very large, whereas these payments are typically quite small and unaccompanied by regular dividend payments, as management knows they are looking to increase the regular dividend within the following two quarters. This leads to the disparity between announcement returns. This also indicates that the sample is unlikely to demonstrate results consistent with signalling, as little information is being conveyed at announcement. The subsequent regular dividend change, however, could provide a signal.

Analysis of the announcement-period returns after separation based on proximity to regular dividends provides somewhat puzzling results. The average CAR for SDDs paid with regular dividend increases is 2.4%, for SDDs paid with a regular dividend it is 1.4% and for SDDs paid in isolation it is 4.0%. Consistent with the hypothesised relationship, those SDDs paid with regular dividend increases generate greater announcement-period reactions than those with a regular dividend, indicating a portion of the market reaction is generated from concurrent regular dividend announcements, which is evidently greater for dividend increases. However, the greatest market reaction comes from SDDs paid in isolation, which on the surface suggests a greater level of information content. If SDDs paid in isolation do somehow display a stronger signal for future earnings changes, this will be addressed in the following sections. A few other possible explanations exist for this result. If the mitigation of agency costs is a strong factor in announcement-period returns, it is quite likely that SDDs paid in isolation are addressing this issue more so than the other subsamples. Optional payouts of cash such as SDDs, that for all means and purposes are not part of a quarterly dividend programme, are quite likely to be due to a buildup of free cash flow and/or when little investment opportunities for the cash exist. There is also a significant possibility that firms paying SDDs in isolation do not pay regular quarterly dividends at all; this would mean that the payment of an SDD would come as a far greater surprise and contain large amounts of information regarding the firm, whether that be in regards to its future prospects or the mitigation of agency costs.

An assessment of other explanatory variables yields a final possible explanation. As stated in hypothesis H4, several papers have shown a significant relationship between the size of the

SDD and the announcement-period return; this relationship is also supported in later analysis. The announcement-period reaction will also reflect the wealth effect (captured by the size of the payout). Brickley (1983), when comparing SDDs and regular dividend changes, finds significant relationships only when controlling for the size of the payment, as the size of SDDs typically far exceeds that of regular dividend payments. Therefore, I examine whether the size of the SDD was substantially different between the subsamples and whether this influenced the announcement-period returns.

The SIZE variable is utilised in later analysis and is defined as the ratio of the SDD to stock price the day prior to announcement. Table 3 displays summary statistics of the size of the SDD across the four subsamples. In order to test statistically whether a size difference exists, I test for a statistical difference in means between SDDs paid with a regular dividend and the remainder of the sample.

[Insert Table 3 here]

Results strongly support the comparative influence of the size variable on announcement returns. Mean SIZE ratio for SDDs in isolation is 0.0951, which is almost five times larger than the other samples with a size ratio of 0.0222 for SDDs with a regular dividend, 0.0232 for SDDs with a regular dividend increase and 0.0221 for SDDs with a regular dividend increase within the following two quarters. The difference in means between the size of SDDs in isolation and the remainder of the sample is strongly significant at the 1% level. This relationship is almost certainly driving the larger abnormal returns for SDDs in isolation and also supports the notion that the motivation for SDDs paid in isolation is more likely to be the mitigation of agency costs, due to the sheer size differential between the one-off disbursements. The cross sectional association between SIZE and announcement-period abnormal return will be tested later with respect to agency costs of free cash flow. To ascertain whether the variable has any influence on signalling analysis, the final regression will be repeated in Section 5.4 including a size variable.

Finally, what must be noted is that the reaction generated from this sample is ‘purely’ due to the payment of the SDD. Other studies do not seem to have cleaned the SDD announcements

of other contemporaneous distributions. Hence, this may effectively be the first documented evidence regarding announcement-period stock price impacts purely due to an SDD.

5.3 Earnings changes surrounding the SDD announcement

The next stage in examination of the signalling hypothesis is to analyse whether the SDD announcement conveys information about future earnings, related to hypotheses 2 and 3. In order to ascertain whether firms paying SDDs show systematic earnings patterns, earnings changes are calculated for five years before (-5 to -1), the year of (year 0) and the three years after (1 to 3) the announcement of SDDs.[5] To aggregate results across firms, earnings changes were expressed as a percentage of the market capitalisation[6] of the stock at the fiscal year-end prior to the SDD announcement, MV_i:[7]

$$\Delta E_{it} = (E_{it} - E_{it-1})/MV_i \,, \tag{3}$$

where E_{it} is earnings before extraordinary items for firm *i* in year *t*. This analysis uses the argument that annual earnings changes follow a random walk (Ball and Brown, 1968; Ball and Watts, 1972); therefore, average earnings changes for a random sample are expected to be zero and abnormal earnings changes is the differential to zero. The distribution of earnings changes were winzorised at the 5th and 95th percentile to prevent undue influence from outliers.

Table 4(i) presents summary statistics for the mean standardised earnings changes for years -5 to 3 for the full sample. Tables 4(ii)–4(v) present summary statistics for the various subsamples. All means were tested for statistical difference from zero. Previous literature has shown the strongest motivation for paying an SDD is recent profitability. Additionally, SDDs represent an optional one-off payment. Hence, positive earnings changes leading up to the announcement are expected. In order to investigate whether SDDs possibly contain signals regarding future profitability, earnings changes following the announcement are observed.

[5] Year 0 is defined as the first fiscal year whose annual earnings are announced after the SDD announcement.
[6] Calculated as number of shares outstanding multiplied by closing price at fiscal year-end (Compustat items).
[7] Calculation of standardised earnings changes follows Bernartzi, Michaely and Thaler (1997).

[Insert Table 4(i) here]
[Insert Table 4(ii) here]
[Insert Table 4(iii) here]
[Insert Table 4(iv) here]
[Insert Table 4(v) here]

For the full sample, earnings changes are positive and significant for years -3, -2, -1 and 0 relative to the year of the SDD announcement, with year 1 weakly positive and significant at the 10% level. Year -5 is negatively significant. Years -2 to 1 mean earnings changes are 1.1%, 1.3%, 1.9% and 0.3%, respectively. This is consistent with previous literature showing SDDs are paid by firms who experience significantly positive earnings changes leading up to the announcement, possibly reversed from earlier earnings declines (year -5). The result of significant positive earnings during the year of announcement also supports previous literature. Combined with slightly positive earnings changes for the year following an SDD announcement, this suggests an SDD may provide indication of current and future profitability (H2, H3). However, the positive earnings change for year 1 is small, and, as hypothesised, these earnings changes could be driven by those firms who pay SDDs with regular dividend increases.

Upon separation based on proximity to regular dividends, SDDs paid in isolation exhibit significantly negative earnings changes for years -5 and -4 and significantly positive earnings changes for years -2,-1 and 0 relative to the SDD announcement. SDDs paid with a regular dividend exhibit significantly positive earnings changes for years -3, -2, -1 and 0 relative to the SDD announcement. SDDs paid with a regular dividend increase exhibit significantly positive earnings changes for years -2,-1, 0 and 1 relative to the SDD announcement. SDDs paid with a regular dividend increase within the following two quarters provide rather unfortunate results again. The earnings change relationship supports the idea proposed in the previous section that positive earnings changes surround and follow the SDD, but the market is not reacting to the SDD announcement. In fact, mean earnings changes are positive and of very similar magnitude to SDDs paid with a regular dividend increase, even larger for the year following announcement, as would be expected due to the regular dividend increase. However, the small sample size means statistical tests lack power and standard errors are large, these positive

mean earnings changes are only statistically significant for years -2 and 0 at the 10% level, and so no definitive conclusions can be made.

The majority of results for earnings changes support the hypothesised relationship between subsamples. SDDs paid in isolation have stronger past profitability with large positive earnings changes for the years leading up and during the payment of an SDD, and positive earnings changes following announcement are predominantly from the sample of SDDs paid with regular dividend increases, suggesting greater future profitability.

A limitation of the above results is that they are based on annually reported earnings data, whereas SDD announcements occur at anytime throughout the year. Part of the year 0 earnings from Table 4 may therefore have been reported in quarterly earnings announcements occurring before the SDD announcement. To examine the influence of the fiscal-year earnings data, the above tests are replicated using quarterly data. Earnings changes are constructed for years -1 and 0 using quarterly earnings for the eight quarters prior and four quarters post SDD announcement. Year 0 implies earnings changes announced strictly after the SDD announcement. As above, these earnings changes are standardised by the market capitalisation of the stock at the fiscal year-end prior to announcement.

Table 5 presents summary statistics for the mean annualised quarterly earnings changes for years -1 and 0 for the full sample and all subsamples; each panel displays a sample respectively. These means were tested for statistical difference from zero as per the annual data. Year 0 earnings in this table are announced strictly after the SDD announcement, unlike in Table 4.

[Insert Table 5 here]

For the full sample, the mean standardised earnings changes are 1.8% and 0.8% in years -1 and 0, respectively, both strongly significant. In contrast to the fiscal-year earnings, the earnings change in the year before the SDD announcement is larger than the change in year 0. This indicates that fiscal-year findings understate earnings changes before the SDD announcement and overstate changes following the announcement. This relationship is

consistent with that observed in Healy and Palepu (1988). The relationship holds across the various subsamples. However, SDDs paid in conjunction with regular dividend increases within the following two quarters now lose any significance for positive earnings changes for year -1 and 0, with the size of year 0 earnings change significantly reduced, highlighting the temperamental data surrounding this sample. The most notable difference to a subsample was to SDDs paid in isolation, whose year 0 earnings change was 2.3% using annual data and 0.9% using quarterly data. This data relationship may have influence on the apparent strength of signalling, so must be reviewed when analysing the relationship between announcement-period returns and earnings changes, particularly in subsample comparison.

5.4 Relationship between SDD announcement information and earnings changes

In this section I test whether a relationship exists between the post-announcement earnings changes and the information contained in the SDD announcement, expressed by the market reaction (H2). It is also of considerable interest whether this relationship differs between the subsamples based on the SDDs' proximity to regular dividend payments (H3). If SDD announcements contain a signal regarding future earnings, a positive relationship between announcement returns and subsequent earnings changes will exist. Regression analysis is used to test this relationship for annual earnings changes in years 0 to 4 and annualised quarterly earnings changes in year 0. Tables 4 and 5 illustrate that the earnings changes of firms surrounding SDD announcement deviated from a random walk. In addition, previous studies have shown prior earnings changes may be used to forecast subsequent earnings changes. The standardised earnings change in year *t-1* is therefore included as an independent variable in the regression model for year *t*.

The following cross-sectional regression model is estimated for each year following announcement across the various samples:

$$\Delta E_{it} = \beta_0 + \beta_1 AR_i + \beta_2 \Delta E_{it-1} + \varepsilon_{it} , \quad (4)$$

where ΔE_{it} is the standardised earnings change for firm *i* in year *t*, and AR_i is the market-adjusted cumulative abnormal return over the three-day announcement window (-1 to +1).

The coefficient of primary interest is β_1 which captures the presence of a relationship between the SDD-announcement returns and subsequent earnings changes. If SDD announcements convey information about future earnings, this coefficient will be significantly positive. If prior earnings changes can be used to forecast subsequent earnings changes, the β_2 coefficient will be non-zero. The results of the regression using annual data are reported in Table 6; each panel displays a sample respectively.

[Insert Table 6 here]

The results of Table 6 provide strong evidence in support of signalling theory. Panel A displays the estimated coefficients and significance level for the full sample of SDDs. The β_1 coefficient for year 0 is positive and significant as expected, taking the value of 0.084 with an associated t-statistic of 4.56. Additionally, the year 1 coefficient is also positive and significant at the 1% level, with an estimated value of 0.087 and an associated t-statistic of 4.43. This evidence is consistent with hypothesis H2 and suggests that SDD announcements convey information about firms' earning prospects in the year of and the year following the announcement. Coefficients for years 2 to 4 are insignificant, indicating that no information on earnings changes past year 1 is conveyed. This evidence is stronger than previous literature, where results found evidence of signalling for the year of announcement and only weak support for the year following. This indicates that SDDs do not just signal for earnings that are transitory in nature, but suggest future profitability also.

Panels B–E display the results for the subsamples of interest for hypothesis H3. All subsamples except SDDs paid with a regular dividend increase within the following two quarters display positive and significant coefficients for year 0. This indicates that the majority of SDDs regardless of proximity to regular dividends convey positive information about current-year earnings prospects. These coefficients (β_1) are 0.045, 0.22 and 0.18 for SDDs in isolation, with a regular dividend and with a regular dividend increase, respectively. With regards to year 1 earnings, SDDs in isolation is the only sample with a significant positive coefficient of 0.099. The remaining samples only illustrate a significant relationship to year 0 earnings change. These results are interesting and puzzling at the same time. First, year 0 coefficients are broadly in line with hypothesis H3, with a stronger positive relationship for

those SDDs paid with regular dividends than those paid in isolation, suggesting greater signal strength. Oddly, however, SDDs paid with a regular dividend illustrate a stronger coefficient than SDDs paid with a regular dividend increase, whereas a regular dividend increase has been shown in previous literature to far exceed regular dividend payments in its relative signalling strength. Second, the sample containing a more long-lasting signal for future earnings changes is the sample hypothesised to contain the weakest signalling results.

As explained earlier, the earnings change data were rather susceptible to the use of fiscal and quarterly data, and this influence varied between subsamples. This may be influencing the relationships observed in the previous analysis, particularly between subsamples. Therefore, analysis based on quarterly data may yield more revealing results. Additionally, the size of the SDD may have an influence which will be investigated with quarterly data.

Following earlier analysis based on quarterly data, the relationship for year 0 earnings change is replicated using annualised quarterly earnings for years -1 to 0. Year 0 earnings in this case correspond to earnings announced strictly after the SDD announcement, representing a more direct test of the signalling power of SDDs. Table 7 displays the results of this regression. Table 8 will additionally control for size.

[Insert Table 7 here]

The coefficient estimate (β_1) is 0.08 for the full sample and statistically significant at the 1% level, providing further support for hypothesis H2; SDD announcements provide information about subsequent earnings. Strikingly, panels B–E illustrate statistically significant positive coefficients for all subsamples at the 1% level, including SDDs paid with a regular dividend increase within the following two quarters, significant at the 5% level. The β_1 coefficient estimates for the samples are 0.065, 0.114, 0.186 and 0.67 for SDDs in isolation, with a regular dividend, with a regular dividend increase and with a regular dividend increase within the following two quarters, respectively. This relationship from quarterly data based on earnings strictly after SDD announcement provides more intuitive results in support of hypothesis H3. While all samples contain a signal for future earnings, the strength of this

signal is weakest for SDDs paid in isolation, stronger for SDDs paid with a regular dividend and stronger again for SDDs paid with a regular dividend increase.

Interestingly, the largest coefficient comes from the sample which up till now has displayed no significance. It does suggest that while announcement-period abnormal returns are positive but small, there is a link to subsequent earnings changes. This relationship to future earnings is likely to be due to the large positive earnings changes that occur slightly later than other samples, more concurrent with the regular dividend increase that follows.

Another interesting statistic is the β_2 coefficient. The value of this between subsamples highlights the differing behaviour of earnings changes surrounding announcement. As mentioned earlier, this coefficient represents the relationship to previous earnings changes. According to the earnings-drift argument, the coefficient would take a positive value; earnings would continue to increase (decrease) if the previous change was an increase (decrease). Panel A of Table 7 shows the full sample of SDDs contains a strongly significant negative coefficient of -0.093 for the earnings change announcement of the preceding year (-1). Similar negative earnings-drift coefficients were reported by Healy and Palepu (1988) following dividend initiations and omissions. It seems that an SDD announcement usually occurs when the majority of significant positive earnings changes have already occurred, in which case earnings are poised for reversal. This relationship is consistent with previous literature on SDDs, suggesting a less permanent surge in recent profitability.

Analysing this coefficient across subsamples, the negative coefficient seems driven by the sample of SDDs in isolation with a significant negative coefficient of -0.153; this coefficient increases through the subsamples. The coefficients are as follows: SDDs paid with a regular dividend, -0.089 significant at 10%; SDDs paid with a regular dividend increase, 0.38 significant at 1%; and SDDs paid with a regular dividend increase within the following two quarters, insignificant at 0.76. This indicates that SDDs in isolation and to a lesser extent SDDs paid with a non-increasing regular dividend are those where large positive earnings changes have occurred, and the SDD is paid when the earnings are about to reverse downward. However, positive earnings changes for SDDs paid with a regular increase continue to occur longer into the future. Revisiting Table 6, this relationship is supported with significant

negative coefficients for earnings changes in every year (0–3) post announcement for SDDs in isolation, and SDDs paid with a regular increase only have a negative coefficient once year 3 is reached. This supports the notion that SDDs in isolation are utilised to disburse non-recurring accumulations of funds, while SDDs with regular dividend increases are more likely to be used in disbursement of longer-lasting accumulations.

As mentioned earlier, it also must be investigated whether the drastically different size of SDDs in isolation is influencing results. In an attempt to control for the wealth effect, I include the size variable in the previous regression. While this is unlikely to have a strong relation to earnings changes, it may influence the association between announcement-period returns and future earnings changes. The regression therefore takes the following form:

$$\Delta E_{it} = \beta_0 + \beta_1 AR_i + \beta_2 \Delta E_{it-1} + \beta_3 SIZE_i + \varepsilon_{it} \quad (5)$$

This regression is estimated for the year 0 earnings change using annualised quarterly earnings data as per Table 7. The results of this regression are displayed in Table 8.

[Insert Table 8 here]

The majority of the hypothesised relationship (H3) is now more evident when controlling for size. As expected, the size coefficient is not significant throughout all panels related to subsamples; however, there is some influence on the relationship between announcement-period returns and earnings changes (β_1). The coefficients for SDDs with a regular dividend and SDDs with a regular dividend increase are increased or largely unchanged, going from 0.114 to 0.126 and 0.186 to 0.184, respectively, reflecting that the strength of the signal related to future earnings in these samples is unaffected by the size of the SDD if not reduced. The coefficient for SDDs with a regular dividend increase within the following two quarters decrease considerably from 0.67 to 0.496 and lose significance. This highlights the unstable results based on this sample; hence no definitive conclusions can realistically be drawn. For the full sample, the coefficient decreases from 0.081 to 0.0755; as expected this decrease is largely driven by the decrease from SDDs in isolation. When controlling for size, the β_1

coefficient reduces from 0.065 to 0.053, and the coefficient is now only significantly different from zero at the 10% level.

This indicates the strength of signalling present in SDDs in isolation was previously overestimated. While the sample still illustrates a relationship between announcement-period returns and subsequent earnings changes, this relationship is weak and reconfirms hypothesis H3; the strength of signalling is weakest for SDDs paid in isolation, stronger for SDDs paid with a regular dividend and stronger again for SDDs paid with a regular dividend increase.

6. Agency costs of free cash flow

6.1 Data

The sample size for the analysis of the agency costs of free cash flow differs slightly to that of the signalling analysis due to data constraints. All firm-level data and variables were sourced from Compustat. Beginning with the sample of 2014 SDD announcements, observations were eliminated if insufficient Compustat data were available to calculate the value of Tobin's Q and free cash flow for the firm. This reduced the total sample size to 1457, which remains constant throughout the initial analysis. Table 9 provides descriptive statistics of the sample, including variables used in the subsequent analysis. Variables (excluding total assets, market value of equity, Q and SDD size) were winzorised at the 5^{th} and 95^{th} percentile to prevent undue influence from outliers.

[Insert Table 9 here]

Across the sample, the average SDD size is 6.14% as a proportion of the stock price the day before the announcement. The average firm size as measured by mean total assets is approximately $4 billion and the mean long-term debt ratio is 13.73%. Tobin's Q, which is central to the following analysis, has an average of 1.11 and a median of 0.79, allowing adequate data points either side of 1. The average of free cash flow as a percentage of total assets is 0.37%, with a median of 0.79%, where cash level as a percentage of total assets averages 17.85%, with a median of 8.71%. With regards to performance measures, return on assets averages 6.98% and return on equity 12.86%.

Data on the Gompers, Iishi and Metric (2003) Index (G index) as a measure of the entrenchment of management is sourced from the Investor Responsibility Research Center (IRRC) database. The availability of these data is limited; data begin in 1996 and cover a small portion of my SDD firm sample. For this analysis, observations were eliminated if G index data were unavailable. This reduces the sample size to 220.

6.2 Differential Abnormal returns based on a firm's Q ratio

As outlined in the review of earlier studies based on the agency costs of free cash flow, a Tobin's Q ratio of less than unity can imply overinvestment by a firm. Tobin's Q is defined as the ratio of the market value of a firm's assets to the asset's replacement value. Therefore, a value above 1 implies the market value of assets invested in by management is greater than the cost of financing those assets. This leads to a greater incentive to continue this value-producing investment instead of distributing cash. Likewise, a value below 1 leads to a lesser incentive to invest, as negative NPV investment (overinvestment) has occurred and could continue. Tobin's Q is essentially a measure of the firm's perceived investment opportunity set, hence a ratio below 1 is also an indication of low growth opportunities, whereby distribution of excess cash would be the value-maximising decision. If abnormal returns surrounding SDD announcements reflect benefits from alleviation of agency costs, this reaction should be greater for low-Q firms due to the more severe agency costs facing these firms.

Each firm's Q ratio was calculated using the method outlined in Chung and Pruitt (1994).[8] This follows the methodology of previous literature, as the measure is shown to be very highly correlated with the more data-intensive measures of Lindenberg and Ross' (1981).[9] It is calculated as follows:

$$Q_i = (MV_i + PS_i + DEBT_i)/TA_i \,, \tag{6}$$

where MV_i is the market capitalisation of the firm, calculated as the product of firm *i*'s share price and the number of common shares outstanding. PS_i is the liquidating value of firm *i*'s preferred stock. $DEBT_i$ is the value of firm *i*'s short-term liabilities net of its short-term assets, plus the book value of the firm's long-term debt. TA is the book value of the total assets of firm *i*. All items are as of the fiscal year-end prior to SDD announcement.

[8] Alternative measures of Q were also calculated with no material influence. As a secondary measure, primarily illustrating growth opportunities, MV/BV was used, the results of which are contained in Robustness, Section 8.2.

[9] For further details and functionality results see "A simple approximation of Tobin's Q" (Chung and Pruitt, 1994), full reference contained in References, Section 9.

In order to ascertain if a firm's Q ratio has a significant effect on the announcement return (H5), I first conduct a univariate analysis by dividing the sample based on a Q ratio greater than or less that one[10]. Table 10 displays these results.

[Insert Table 10 here]

Results in Table 10 show that across the full sample, the announcement-period stock price reaction is a strongly significant 3.05%. This return is slightly higher than that reported in the signalling analysis due to the restricted sample and is consistent with findings reported in previous literature. When the sample is divided according to whether the firm making an announcement had a Q ratio greater than or less than one, results contrast with those of Howe et al. (1992) and Lie (2000) and give support to the explanatory power of agency theory. Average announcement-period returns are 3.75% for firms with a Q ratio less than one and 1.86% for firms with a Q ratio above 1, both significantly different from zero at the 1% level. The difference between the means is large and statistically significant at 1%, confirming hypothesis H5. This result supports the findings of Lang and Litzenberger (1989) for dividend changes and Gombola and Liu (1999) for SDDs.

6.3 Differential abnormal returns based on a firm's Q ratio and free cash flow

As initially stated in Howe et al. (1992), the role of free cash flow available to management is an important consideration in the agency cost explanation due to the opportunity for inefficient uses of cash. In order to confirm the explanatory power of the free cash flow hypothesis, a relationship to free cash flow must also be tested, as it can be argued that a differential reaction purely based on Q may not necessarily suggest consistency with agency theory. The measure of free cash flow available to the firm is altered slightly from the measure used in the majority of previous literature. Standard practice in the literature is to compute free cash flow as outlined in Lehn and Poulsen (1989). This measure is an appropriate measure of free cash flow when examining investment decisions such as mergers and acquisitions, as was the

[10] For separation based on median, see Robustness, Section 8.1

subject of their research. My research essentially uses the same definition[11] but additionally subtracts capital expenditures. This reflects an encompassing measure of 'free' cash flow with respect to that which is available to management to use incorrectly, in the eyes of the shareholders. To aggregate results across firms, free cash flow is standardised by total assets. Free cash flow is calculated as follows:

$$FCF_i = (INC_i - TAX_i - INTEXP_i - PFDIV_i - COMDIV_i - CAPEX_i)/TA_i\,, \qquad (7)$$

where INC is operating income before depreciation, or EBITDA. TAX is total income taxes, minus changes in deferred taxes from the previous year to the current year. INTEXP is gross interest expense on short- and long-term debt. PFDIV is total dollar amount of preferred dividends. COMDIV is the total dollar amount of common dividends. CAPEX is capital expenditures and TA is total assets. All items are as of the fiscal year-end prior to SDD announcement.

Following the previous separation based on Q, two new samples are created and tested for statistical difference (H6). The sample of firms with a Q ratio below unity and free cash flow level above the median is expected to have the highest agency costs of free cash flow. Those expected to have minimal agency costs of free cash flow would have a Q ratio above unity and free cash flow level below the median. Since agency theory predicts a positive relation between the stock price reaction and free cash flow for low-Q firms, and no relation for high-Q firms, this test is important to ascertain whether agency theory can explain the previous results. Table 11 displays the results of this univariate analysis based on Q and free cash flow levels.

[Insert Table 11 here]

The results continue to support the notion that the mitigation of agency costs of free cash flow contribute to the abnormal market reaction to SDD announcements. Average announcement-period returns are 3.56% for the low-Q, high free cash flow sample, and 2.07% for the high-Q,

[11] For results based on the original measure, see Robustness, Section 8.3

low free cash flow sample, both significantly different from zero at the 1% level. The difference between the means is large and statistically significant at 5%, confirming hypothesis H6. This result could be driven primarily by the effect of the firms' Q ratio, as the difference between the groups is only marginally smaller than separation based on Q. However, primarily this result supports a differential market reaction due to agency costs of free cash flow. This result is in contrast to the findings of Howe et al. (1992). It is likely that over the more recent time period, SDDs have played a stronger role in mitigating agency costs of free cash flow.

6.4 Multivariate analysis of the determinants of abnormal returns

Analysis up to this point has led to rather raw conclusions. While lending support to the agency theory, it is possible that the interpretation of these results could be slightly premature. In particular, Lie (2000) shows a strongly significant relationship between the size of the SDD and the announcement return, and that low-Q firms could be paying larger SDDs. While this still may be more consistent with the agency costs of free cash flow hypothesis, it shows that regressions should control for the size of the SDD. Earlier analysis regarding the signalling hypothesis also indicated a significant influence of SDD size on announcement-period reactions. In order to test for the independent effect of agency variables on abnormal announcement-period returns (H5, H6), I attempt to control for other possible explanatory variable in cross-sectional regressions. The analysis also provides an assessment of the relationship between SDD size and the announcement return (H4).

The independent variables utilised are as follows:
SIZE: the ratio of the SDD to stock price the day prior to announcement, as the magnitude of the SDD has been shown to be positively related to announcement-period returns.
DQ: A dummy variable, which equals 1 if Q is greater than 1 and zero otherwise. This allows differential effects based on Q to be identified.
FCF: Free cash flow as defined earlier, this will identify whether free cash flow has an independent effect on announcement-period returns.
DQ*FCF: an interaction variable, the value of the coefficient of this variable represents how the coefficient between DQ and announcement-period return changes with increasing levels of

free cash flow. The significance of this term will provide strong support for the explanatory power of free cash flow theory, as it indicates the relationship between Q and announcement returns alters with the level of free cash flow.

LTA: the natural logarithm of the total assets as at the end of the fiscal year prior to announcement. Previous literature (Lie, 2000; Balachandran et al., 2009) has shown that firm size is negatively related to announcement-period returns. This measure of firm size can be interpreted to represent the degree of information asymmetry (analyst coverage and information disclosure) and level of surprise surrounding announcement.

LTD/TA: Long-term debt ratio as at the end of the fiscal year prior to announcement. As debt obligations have been shown to reduce agency costs by disciplining management, this represents an additional agency mitigation variable.

ROE: Return on equity, calculated as income before extraordinary items divided by shareholders equity as at the fiscal year-end prior to announcement.

ROA: Return on assets, calculated as income before extraordinary items divided by total assets as at the fiscal year-end prior to announcement. Both ROE and ROA are included as measures of firm performance.

First, in order to test that SDD size is strongly positively related to announcement-period returns (H4) a simple regression is run:

$$AR_i = \beta_0 + \beta_1 SIZE_i \tag{8}$$

The full cross-sectional regression then takes the following form:

$$AR_i = \beta_0 + \beta_1 SIZE_i + \beta_2 DQ + \beta_3 FCF_i + \beta_4 (DQ_i * FCF_i) + \beta_5 LTA_i + \beta_6 \frac{LTD}{TA}_i + \beta_7 ROE_i + \beta_8 ROA_i \tag{9}$$

Within these variables is some collinearity, particularly due to the numerous variables containing total assets. The variables most notably correlated with other variables are ROA, LTA and LTD/TA. The regressions that follow therefore contain multiple versions of the above regression. Model 1 is the simple size regression expressed in equation (8), Model 2

contains purely the size variable and the three agency variables (first four variables in equation (9)) in order to identify whether an agency relationship exists, and Model 9 is the full regression from equation (9). Models 3–8 are a range of versions of the full cross-sectional model removing potentially collinear variables and some which do not contain any explanatory power. This set of regression results is displayed in Table 12.

[Insert Table 12 here]

Model 1 indicates a very strong positive relationship between the announcement-period return and the size of the dividend, confirming hypothesis H4. This coefficient is 0.2822 and is significant at the 1% level. Additionally, this coefficient and its significance remain relatively constant across all other models. This illustrates a reaction due to the wealth effect for shareholders and reinforces the need to control for the size of the SDD.

When controlling for size it appears Q as an independent effect loses a significant amount of the drastic influence suggested by the univariate analysis. Model 2 contains the agency variables while controlling for size, this indicates a negative coefficient of -0.0079 for DQ significant at the 10% level, suggesting the abnormal reaction to an SDD announcement from a high-Q firm will on average be 0.79% less than an equivalent announcement from a low-Q firm. This coefficient remains relatively stable across the models, ranging from -0.0095 to -0.0071; however, for three of the models including Model 9, the dummy variable does not retain significance at the 10% level. This indicates that when controlling for other factors, there is weak support for hypothesis H5, a significant relationship between announcement-period reaction and Q. Previous literature has not found a significant relationship to Q for SDD announcements when employing multivariate analysis. This result is therefore a stronger result regarding the explanatory power of Q.

The influence of free cash flow appears to be better represented in multivariate analysis. The coefficient is positive and significant at the 5% level across every model, ranging from 0.0797 to 0.0919; the Model 9 coefficient for free cash flow is 0.0918. This confirms the first part of hypothesis H6: free cash flow has an independent effect on announcement-period returns. This result is stronger than that reported in previous literature regarding SDDs. This may be due to

a more representative measure of free cash flow with respect to funds available with which to partake in agency and/or that the announcement-period reactions over the more recent time frame are more responsive to firms free cash flow levels. The coefficients indicate that the announcement-period return for a firm with 1% higher free cash flow (per dollar of assets) compared with a similar firm will on average be approximately 0.09% greater.

Arguably the greatest support for the free cash flow hypothesis comes from the coefficients for the interaction term: DQ*FCF. The coefficient is significantly negative across all models at the 5% level, except for Model 9, where it is significant at the 10% level. Model 9 controls for other possible factors yet statistical significance is reduced, due most likely to multicollinearity. The coefficient values range between -0.1139 and -0.1379 across the models. This result confirms hypothesis H6, i.e. the announcement-period reaction to SDDs is positively related with a firm's pre-announcement free cash flow, and this relationship is stronger for firms with a low Q ratio. DQ by itself is negative, suggesting high-Q firms experience smaller reactions compared with low-Q firms. The coefficient on the interaction term then indicates that this difference is far greater for firms with increasing levels of free cash flow. Overall, these results suggest that the market responds particularly favourably to SDD announcements when the announcing firm has potentially large agency problems, as indicated by poor investment opportunities coupled with large amounts of free cash flow. These agency problems may be mitigated by the disbursement of this free cash flow.

A supplementary result is that the size of the firm (LTA) has a strongly significant negative coefficient when included in the regressions (Model 4 and Model 9). This indicates that firms with less information asymmetry (greater analyst coverage and information disclosure), and hence surprise contained within the announcement, have less price reaction to the SDD announcement. No other variable contains explanatory power with regards to announcement-period returns. Both performance measures (ROA, ROE) and the long-term debt ratio change sign either side of zero over different models. Due to the presence of multicollinearity, conclusions based on Model 4 may therefore be the most reliable (not including performance measures), supported by the highest adjusted R^2 value. This has no influence on the above conclusions except to increase their strength.

6.5 Influence of governance strength and agency sample separation

This section primarily attempts to address the possible influence of governance strength on announcement-period reactions (H8). In particular, I test whether the level of managerial entrenchment affects market reactions in the presence of agency conflicts.

In order to comprehensively measure this attribute, I employ the Gompers et al. (2003) Index (G index). The G index is a discrete measure of the number of anti-takeover amendments, structures and policies the firm has in place; an encompassing measure of managerial entrenchment. It is a broader measure of governance than that employed in earlier literature (Lie, 2000). Further literature supports the use of this measure, John and Knyazeva (2006) examine the role of corporate governance for payout policy design and employs the G-Index as the entrenchment measure while ownership, board composition and institutional block holding proxy for internal governance. As a robustness measure they also use the Bebchuk, Cohen and Ferrel (2009) measure of external governance, which reinforces results based on the G-Index. Bebchuk et al. (2009) analyse a set of twenty-four governance provisions and put forward an entrenchment index based on the six most influential provisions.

Similarly Cremers and Nair (2005) utilise the G- Index as the proxy for external governance when investigating the interaction of external and internal governance. They corroborate their findings by constructing an alternative takeover protection index, reinforcing the contention that the G-Index is a comprehensive proxy for entrenchment.

A possible reservation with respect to the G Index expressed in John and Knyazeva (2006), is that there may be endogeneity in its components as firm antitakeover provisions could be influenced by the payout policy. To address this, the authors construct a further external governance index using only provisions of state antitakeover laws and use it as a robustness measure. Results prove robust to the alternative measure, further supporting the use of the G-Index as an accurate measure of external governance (entrenchment)

In order to test the relationship between managerial entrenchment and market reactions in the presence of agency conflicts, I separate the sample into a ‘non-agency’ and ‘agency’ sample.

First, I separate the sample based on Q ratio. The 'agency' sample contains firms with a Q ratio below unity, while the 'non-agency' sample contains those firms with a Q ratio above unity. Second, separation is based on Q ratio and free cash flow levels. The 'agency' sample contains firms with a Q ratio below unity and free cash flow level above the median, while the 'non-agency' sample contains those firms with a Q ratio above unity and free cash flow level below the median. These separations are only for the set of firms which have complete data on the G-Index, a significantly restricted sample. The first separation utilises the primary measure of agency costs and follows Lang and Litzenberger (1989). This separation also allows for the largest sample sizes, important due to the restricted sample. The second separation is a supplementary separation for analysis and follows earlier results. The analysis forms samples hypothesised to have the greatest (least) agency costs of free cash flow to further address the relationship between announcement returns and the entrenchment level of management. This analysis is testing the potential influence of governance strength.

Across these two samples, cross-sectional regressions similar to those in Section 6.4 are run, with the incorporation of the entrenchment measure and dropping DQ as a regressor. The full regression takes the following form:

$$AR_i = \beta_0 + \beta_1 SIZE_i + \beta_2 DG + \beta_3 FCF_i + \beta_4 (DG_i * FCF_i) + \beta_5 LTA_i + \beta_6 \frac{LTD}{TA}_i + \beta_7 ROE_i + \beta_8 ROA_i \ , \quad (10)$$

where DG is a dummy variable which equals 1(0) if the firm's G index is greater (less) than the sample median. A high G index value indicates entrenched management, while a low value indicates non-entrenchment. This allows assessment of whether governance strength has any influence on stock price reaction in the presence or absence of agency conflicts (H8). Similarly, the value of the coefficient on the interaction term DG*FCF represents how the overall association between DG and announcement-period return (difference between firms with entrenched and non-entrenched management) changes with increasing levels of free cash flow. All other variables are as defined in equation (9).

Following the earlier cross-sectional analysis, nine regression models are estimated across the two samples beginning with the separation based on Q ratio. Model 1 contains the regression addressing SDD size expressed in equation (8), Model 2 contains purely the size variable and the three variables of interest with regards to governance and agency (first four variables in equation (10)) and Model 9 is the full regression from equation (10). Again, models 3–8 are a range of versions of the full cross-sectional model removing potentially collinear variables. Results for the agency sample are displayed in Table 13(i) and the non-agency sample in Table 13(ii).

[Insert Table 13(i) here]
[Insert Table 13(ii) here]

Variable coefficients for the agency sample (Table 13(i)) lack significance across all models (including the size coefficient). The only significant coefficient is that of the intercept term across some of the models. These results seem odd given earlier results and hypothesised governance relationship. Unfortunately, it seems the reduction in sample size (or the nature of the restricted sample) due to G Index data has meant definitive conclusions about the impact of governance strength on results cannot be made. Coefficients occasionally change signs over different models, and significance overall is weak. With separation based on Q ratio, the agency sample regressions are over a smaller sample size of 107. Results could also indicate that the market reaction is predominantly concerned with the mitigation of agency costs, as indicated by poor investment opportunities. Conclusions are most probably limited by data availability, and the underlying effects are unlikely to be captured. Nevertheless, the results give no support to hypothesis H8; the announcement-period reaction to SDDs does not display a positive relationship to the extent of managerial entrenchment in the presence of agency costs of free cash flow. This follows the results of Lie (2000), with governance variables yielding no additional explanatory power.

Analysis based on the non-agency sample (Table 13(ii)) yields relatively similar results with regards to variable significance. Again, sample size is reduced at 113 and coefficients vary considerably. The intercept terms are smaller when compared with the agency sample, somewhat reinforcing the comparatively smaller announcement returns for firms absent

agency conflicts. Results also support the view that once within a 'non-agency' sample, other variables lack explanatory power. However, overall no discernible relationships are identifiable and the impact of governance on results is not evident.

The separation based on Q ratio yields noisy results with respect to governance, for the most part inconsistent with hypothesis H8. The second separation based on Q ratio and free cash flow levels may provide more focused results. Conflicts of interest between shareholders and managers are especially severe when the organisation generates substantial free cash flow (Jensen, 1986). Jensen also shows that the mitigation of agency conflict is the most important for firms with high levels of free cash flow in addition to low growth opportunities. Earlier analysis confirmed the additional role of free cash flow. Results showed that the difference in abnormal returns between low and high-Q firms is greater with increasing levels of free cash flow. The low-Q firm with high free cash flows is expected to be the most likely candidate for overinvestment (Howe et al., 1992). The greatest reduction in agency costs of free cash flow comes from those firms with high levels of free cash flow (Easterbrook, 1984; Jensen, 1986; Lang and Litzenberger, 1989).Therefore, the second separation based on Q and free cash flow may provide an additional if not theoretically better test to attempt to identify differential effects based on governance (H8). Across the two samples, the same regression analysis is undertaken as per the previous separation. Results for the agency sample are displayed in Table 14(i) and the non-agency sample in Table 14(ii).

[Insert Table 14(i) here]
[Insert Table 14(ii) here]

The results for the agency sample (Table 14(i)) follow a very similar pattern to the preceding agency sample. All variable coefficients (including the size coefficient) lack significance across all models. It appears the use of free cash flow in sample separation did not yield any additional results with respect to governance. This analysis is attempting to address the impact of governance strength on announcement period returns and agency conflicts. I hypothesised that firms with entrenched management are likely to have reduced levels of investor expectation surrounding the payment of an SDD, and also increased agency costs of free cash flow of which the payment of an SDD mitigates. I therefore expected greater market reactions

for firms with entrenched management in the presence of high agency costs of free cash flow. However results do not support a notable impact of governance strength on announcement period returns in the presence or absence of agency conflicts.

Again, it seems the sample size may have led to noisy results, with regressions only over a sample size of 40 leading to large standard errors. The only notable difference is that the intercept term is now larger and significant across all models. This gives further support to the notion that other variables contain little explanatory power within a sample of firms containing agency conflicts. The intercept term is 0.0662 in Model 9, suggesting large abnormal returns are generated by firms within this sample due to agency factors, and differences beyond this due to SDD size, firm size, long-term debt ratio, performance measures and governance are largely irrelevant, although in general this second separation does not give any further support to hypothesis H8 and the explanatory power of governance.

Analysis based on the non-agency sample (Table 14(ii)) yields relatively similar results again. Sample size is small at 43 and coefficients vary considerably. However, the intercept terms are far smaller with this separation and the difference in comparison with the agency sample greater. This reinforces the differential announcement returns due to agency conflicts. However, unlike the agency sample, and the previous non-agency sample, the most intriguing result is that the coefficient of the interaction term, DG*FCF, is significantly negative at the 5% level across all models, with values ranging from -0.5008 to -0.5734. DG by itself is insignificant; however, this coefficient implies firms with entrenched management will experience a reduced abnormal return (compared with non-entrenched) if the firm has increasing levels of free cash flow. Hence, with increased levels of free cash flow, DG possibly approaches negative significance. Furthermore, this relationship exists only in the absence of agency costs of free cash flow. This result is unexpected; since the hypothesised relationship was that for firms with entrenched management, abnormal returns would be increasing in the level of free cash flow in the presence of agency conflicts. This relationship most likely indicates that investors are particularly worried about the firm's growth opportunities or investment opportunity set when management is entrenched. These firms have high perceived growth opportunities (Q ratio), so if self-serving management is paying an optional SDD rather than making investments, investors interpret the growth opportunities as

less likely to come to fruition. With increasing levels of free cash flow, this perception has more severe implications, as a larger amount of investment would be expected.

Overall, however, there is no definitive evidence to suggest the market is more or less concerned about the mitigation of agency conflicts if the firm has entrenched or non-entrenched management (H8). I find these results somewhat puzzling; however, this is consistent with the findings of Lie (2000), who reports no differential effects based on governance measures observed. My analysis utilises a broader measure of governance focused on management entrenchment, yet no differential effects were identified. Similar to Lie (2000), it is more than likely the samples are too small and/or noisy to recognise the effects, or some offsetting effects are present within governance and agency measures. Subsequent analysis with greater access to governance data may be able to provide more definitive conclusions.

6.6 Cash-level analysis

As outlined in the literature review and hypotheses sections, Lie (2000) finds that announcement returns are positively related to cash levels and not cash flow. More precisely, when completing cross-sectional regressions against announcement-period returns, he finds positive significance to cash levels independently and the interaction term, low Q x cash level. Upon separation of SDDs based on size, he finds these variables remain significant for large SDDs but lose significance for small SDDs.

Although results based on free cash flow support the agency theory up to this point, the research would not be complete without also analysing the relationship with respect to cash levels (H7). Cash levels can also be an important consideration for agency cost, as firms may accumulate substantial cash levels despite low cash flows from operations. They could be established from operating cash flows in the past or extraordinary events, such as asset sales. Nevertheless, they could present an opportunity for agency costs and overinvestment. Following previous definitions, the cash level for each firm is calculated as follows:

$$CL_i = Cash\ and\ marketable\ securities_i / TA_i\ , \tag{11}$$

where values are taken as at the fiscal year-end prior to an SDD announcement. Previous analysis is then repeated utilising cash levels in place of free cash flow.[12] Table 15 displays the univariate analysis based on Q and free cash flow levels.

[Insert Table 15 here]

The univariate results support a relation between the abnormal market reaction to SDD announcements and cash levels in addition to cash flow. Average announcement-period returns are 4.08% for the low-Q, high cash-level sample, and 1.46% for the high-Q, low cash-level sample, both significantly different from zero at the 1% level. The difference between the means is large and statistically significant at 1%, supporting hypothesis H6. In earlier analysis, the difference between groups when additionally separated based on free cash flow decreased slightly from the separation based on Q ratio. However, in this case it has increased, with the largest difference observed between the two samples. While conclusions may be premature, this result supports a differential market reaction due to agency costs of free cash flow using cash level as the measure of excess funds. This result is in line with the findings of Lie (2000).

I then extend the analysis to the multivariate cross-sectional regressions explained in Section 6.4. To reiterate: this will confirm whether a relationship exists between announcement-period returns and cash level while controlling for other factors. As the significance of the size coefficient has already been established, that model is no longer displayed, the remaining regressions are displayed as Models 1–8. In an attempt to replicate the results of Lie (2000), Model 9 most closely resembles the cross-sectional regression utilised in his analysis. Table 16 displays these regression results incorporating cash levels.

[Insert Table 16 here]

The coefficient for SDD size retains strong positive significance, with a slightly lower value than earlier analysis. LTA also retains significantly negative coefficients of similar magnitude

[12] Sample size increases from the free cash flow analysis, as the construction of cash level is less data intensive than that of free cash flow.

for the models in which it is included. Long-term debt ratio and the performance measures (ROA, ROE) are non-significant as per earlier analysis. Interestingly, the effect of Q is now more pronounced; DQ has stronger negative coefficients significant at the 5% level across all models except Model 8, significant at the 10% level. Coefficients range from -0.0099 to -.0139, significantly larger than the approximate coefficient of -0.008 from free cash flow analysis. This gives further support to hypothesis H5, a differential market reaction based on Q. It must also be noted that no independent relationship was found between announcement returns and Q in the analysis of Lie (2000). However, the most surprising result is that no significant relationship between returns and cash level is found across any model, including Model 9. The interaction term is additionally non-significant, suggesting a relationship to cash level is not apparent even for low-Q firms. This finding contrasts strikingly with the results of Lie (2000). I find this result puzzling. Previous results support a relationship between announcement-period returns and agency costs, as indicated by free cash flow and Q; it follows that this result should extend to the use of cash levels as a measure of excess funds, particularly considering the findings of previous literature.

As mentioned earlier, Lie found his results to be significant for large SDDs but insignificant for small SDDs. In one last attempt to replicate the results of Lie (2000), I follow his methodology, separating the sample at the median of the SIZE variable; large SDD sample has SIZE above the median, small SDD sample has SIZE below the median. Cross-sectional regressions were then re-run over the separate samples. Conflicting results between models did not occur; therefore displaying all models did not seem necessary. The full model (Model 1) and the model most closely resembling Lie's model (Model 2) are displayed for large and small SDDs in Table 17.

[Insert Table 17 here]

This separation does not yield more supportive results, since neither small nor large SDDs display a relationship between announcement-period return and cash level. Interestingly, DQ is only significant for large SDDs, suggesting small SDDs do not generate significantly different market reactions based on levels of agency costs as proxied by a firm's Q ratio. This is most likely due to the inconsequential reduction to agency costs. Almost no variables except

size are actually significant for the small SDD sample, suggesting small abnormal market reactions to announcements with little information conveyed. Once more, these results are particularly puzzling. It appears that over the more recent time frame, investors are more responsive to a firm's level of overinvestment as proxied by Tobin's Q, but non-responsive to the particular level of cash stores for the year prior to announcement. Conversely, what is influential is the free cash flow generated by the operations of the business. While this relationship is difficult to rationalise, it may indicate investors are primarily concerned with the mitigation of agency costs that have the possibility of continuing, as indicated by the flow measure.

As results do not support a relationship between cash levels and the announcement-period return, it did not seem relevant to extend the repetition of the previous analysis to governance influence.[13] Overall, analysis based on cash levels mostly yielded results inconsistent with hypothesis H7. Univariate analysis gave supportive evidence to a relation between announcement returns and cash levels, with the largest average return observed in the low-Q, high cash-level sample. However, in a multivariate setting, the relationship between pre-announcement cash levels and announcement returns is insignificant. This insignificance remains for the interaction of cash level and Q, and upon separation of the sample into large and small SDDs. Theoretically, cash levels should be another appropriate measure of excess funds with respect to agency costs. However, interestingly the results do not support this notion over the more recent time period. Rather, it appears the market is primarily concerned with the investment opportunity set of the firm (Q ratio) and cash flow.

[13] Results were generated for this analysis; however, no differential conclusions arose.

7. Conditional signalling

The focus of this research has been on signalling and the agency costs of free cash flow. Conditional signalling has also been a theory proposed to some degree in the literature, briefly addressed in the literature review. Essentially, this hypothesis offers an alternative interpretation for larger stock price reactions for low-Q firms. The hypothesis states that as low-Q firms are not perceived as having quality future prospects, the payment of an optional SDD is less likely to be anticipated and lead to greater changes in investor expectation of future earnings. This, in turn, causes a greater stock price reaction to the announcement. Gombola and Liu (1999) is perhaps its most prolific of supporters, finding significantly greater stock price reaction to SDD announcements for low-Q firms, but also finding a significant upward revision of earnings forecasts for low-Q firms, and not for high-Q firms.

Earlier analysis has detected a significant difference in the mean announcement-period return of samples separated based on levels of Q. For the most part, this relationship held when controlling for other possible explanatory factors. These results are consistent with agency theory and notably also the results of Gombola and Liu (1999). In order to briefly examine the conditional signalling hypothesis, rather than looking at earnings expectation changes of analysts, this research looks to test whether in fact the relationship between announcement returns and subsequent earnings changes differs based on Q. The sample is separated again based on Q levels either side of 1 and utilises the earlier signalling analysis from Section 5.4. I estimate equation (4) re-run for earnings changes in years 0–3, across the entire SDD sample, those firms with a Q ratio below 1 and those with a Q ratio above 1. Table 18 displays the annual earnings changes results.

[Insert Table 18 here]

Panel A of Table 18 reiterates the earlier signalling results for the full sample. Panel B displays the cross-sectional regressions results for those firms with a Q ratio of less than 1. The β_1 coefficient for year 0 is positive and significant at 1%, taking the value of 0.085. Additionally, the year 1 coefficient is also positive and significant at the 1% level, with an

estimated value of 0.10. The most surprising is that the year 2 coefficient is slightly significant at the 10% level, with a low positive value of 0.05; further coefficients are insignificant. Panel C displays the cross-sectional regressions results for those firms with a Q ratio greater than 1. The β_1 coefficient is positive and significant for year 0 at the 5% level, with a value of 0.081. However, the relationship extends no further. These results give support to the conditional signalling theory proposed by Lang and Litzenberger (1989). It suggests SDD announcements for low-Q firms convey information about firms' earning prospects in the year of and years following the announcement. SDD announcements for high-Q firms convey information only in regards to the firms' earning prospects in the year of announcement.

As discussed earlier in the signalling section, the use of fiscal data can influence results and conclusions. In order for the year 0 earnings change to contain earnings announced strictly after the SDD announcement, it is necessary to repeat the analysis using quarterly data. As per previous analysis, the year 0 and 1 earnings changes are re-constructed using annualised quarterly earnings and the year 0 regression re-tested. Table 19 displays the annualised quarterly earnings change results.

[Insert Table 19 here]

Panel A reiterates the result for the full sample. Panel B of Table 19 displays the cross-sectional regressions results using quarterly data for those firms with a Q ratio of less than 1. The β_1 coefficient for earnings strictly after the announcement is 0.0938, significant at the 1% level. This provides further support that SDD announcements for low-Q firms convey information about subsequent earnings. Panel C displays the results using quarterly data for those firms with a Q ratio of greater than 1. In this case, the coefficient is not significantly different from zero, indicating no relationship exists between future earnings changes and announcement-period returns for firms with a Q ratio above 1. This reconfirms conclusions from annual data regarding the presence of signalling; SDD announcements from low-Q firms convey information about firms' current and future earnings prospects. SDD announcements from high-Q firms provide a signal for earnings transitory in nature only.

Gombola and Liu (1999) claim that their results refute the explanatory power of the free cash flow theory. They state that distributing free cash flow to shareholders, instead of investing in lower-return projects, should not improve earnings for the firm but rather improve shareholder wealth. Upward revision of earnings forecasts should therefore not be produced by a reduction in agency costs, but rather as a result of signalling. This logic seems correct; however, I propose that the payout of excess cash reduces agency costs and/or provides an indication to the market that management is committed to shareholder wealth maximisation. These managers return unwanted free cash flow and endeavour to improve future earnings. Under this proposition, the free cash flow theory is not refuted by their results.

Nevertheless, the preceding results give some supportive evidence to the relationship identified by Gombola and Liu (1999). A relationship is found between announcement-period returns and subsequent earnings for low-Q firms but not for high-Q firms. However, Gombola and Liu (1999) find no significant relationship to free cash flow for the full sample of low-Q firms. While a differential reaction based on Q can be explained by the conditional signalling hypothesis, little explanation is given for the relationship between announcement returns and free cash flow. It would be difficult to rationalise an explanation for this relationship not centred on the mitigation of agency conflict, especially considering the relationship strengthens for low-Q firms. The results found in this research do not therefore favour conditional signalling at the expense of free cash flow agency; rather it appears abnormal market reactions are partially caused by a reduction in agency, but additionally the payment of SDDs by low-Q firms reflects a signal for improved current and future profitability. This information contained in an SDD announcement is being recognised by the market.

8. Robustness

8.1 Q separation based on median

Results for Tables 10–19 were completed with separation based on a Q ratio of above and below 1. Theoretically, this is the correct point of division, as a firm with inferior investment opportunities and greater agency problems of free cash flow ('overinvesting') will have an average Q of less than one. Also, it is the point of separation for almost all previous literature addressing agency theory. Tobin's Q itself is defined as the ratio of the firm's market value to the replacement cost of its assets. These exact data are not readily attainable, so the measurement of Q and the data which construct it are not necessarily exact, rather a close approximation. Hence, there is the potential for firms to be misclassified either side of 1, or for errors in measurement. However, making the classification according to other criteria does not adhere to agency theory and leads to different misclassification error. In order to investigate this influence on results, and to confirm a differential effect based on Q, Tables 10, 11 and 12[14] are repeated with separation based on the value of a firm's Q ratio being above or below the median. Tables 20, 21 and 22 contain these results.

[Insert Table 20 here]
[Insert Table 21 here]
[Insert Table 22 here]

Table 20 shows a strongly significant (1%) difference between announcement-period returns for low- and high-Q firms when separated based on median, confirming earlier results. The average announcement-period return for both low- and high-Q firms increases slightly, as does the difference between these two groups. Table 21 also follows earlier analysis, with a significant difference in abnormal returns between firms separated on Q and free cash flow. This result increases in significance (1%) upon separation based on median, with the average

[14] Analysis for the remaining tables utilising Q separation was also repeated; however, full display seemed unnecessary; no further differences significantly influenced the conclusions pertaining to governance and conditional signalling.

announcement-period return increasing slightly for low-Q, high FCF firms and decreasing slightly for high-Q, low-FCF firms compared with earlier separation based on 1.

However, Table 22 (multivariate analysis) provides some material differences. The majority of variables retain similar coefficients and significance levels to original analysis. However, in earlier analysis, the coefficient for DQ was only significantly negative at the 10% level across some of the models. With separation based on median, it is now significantly negative at the 1% level for Model 1-8 and at the 5% level for Model 9. The coefficient is approximately -0.13 compared with the earlier result of approximately -0.08. Additionally, the coefficients for FCF and DQ*FCF both decrease in magnitude, losing significance across all models. It seems that altering the point of separation that dictates overinvesting firms (low Q) and value-maximisers (high Q) affects the proposed relationship between announcement-period returns and free cash flow. Upon separation based on median, the overall association between DQ (high-Q, low-Q differential) and announcement-period return does not significantly alter with increasing levels of free cash flow. It is likely that the overall relationship between agency conflicts and announcement-period returns is represented by a combination of Q and free cash flow, and the change in separation technique creates a more drastic difference based on Q. This clouds the effect of higher levels of free cash flow, removing the additional explanatory power.

8.2 Q as market-to-book ratio

Analysis of the free cash flow hypothesis utilised Tobin's Q as defined by Chung and Pruitt (1994), following the majority of previous literature and theoretical considerations. The intuition for the use of Tobin's Q is that it essentially models the firm's investment opportunity set. If the market value of a firm reflects existing assets' contribution to value plus the net present value of future investment opportunities, a firm with inferior investment opportunities and greater agency problems of free cash flow, will have an average Q of less than one. This brings us to the term 'overinvesting', due to management partaking in a negative NPV investment. A value-maximising firm will have an average Q in excess of one as future investment opportunities are positive. In other words, high-Q firms have high growth opportunities and low-Q firms have low growth opportunities.

Therefore, an alternative definition of Q, or rather an alternative measure of Q, is simply the market-to-book ratio; in fact, this could be argued to be a more correct measure to proxy for the calibre of the firm's investment opportunity set. Adams and Goyal (2008) evaluate the performance of several proxy variables for a firm's investment opportunity set and find that the market-to-book ratio has the highest information content with respect to investment opportunities, and other proxies do not add to the information contained in the market-to-book ratio. Tables 10, 11 and 12[15] are repeated using Q as a firm's market-to-book ratio. Q is defined as follows:

$$Q_i = MV_i/BV_i \,, \tag{12}$$

where MV_i is the market capitalisation of the firm, calculated as the product of firm *i*'s share price and the number of common shares outstanding; BV_i is the book value of the firm, represented by shareholders equity. Both items are as at the fiscal year-end prior to an SDD announcement. With Q taking this form, the theoretical consideration of a split based on unity is less precise, and does not necessarily correspond; in addition, the values across the sample would result in prohibitively small samples for those firms with market-to-book ratios below 1. The separation was therefore done based on median levels of Q in order for appropriate results and analysis to follow. Unfortunately, this means that the marginal effect of this measure cannot be isolated, as differences occurring due to separation based on median as per the previous section may occur. Tables 23, 24 and 25 contain the results of the repeated analysis.

[Insert Table 23 here]
[Insert Table 24 here]
[Insert Table 25 here]

Table 23 confirms earlier results, with a strongly significant difference between announcement-period returns for low- and high-Q firms. The results show the largest average returns for low-Q firms thus far at 4.29%, and the greatest significance and difference between

[15] Analysis for the remaining tables utilising Q was also repeated; however, full display seemed unnecessary; no further differences significantly influenced the conclusions pertaining to governance and conditional signalling.

the mean announcement-period reactions for low- and high-Q firms. Table 24 also follows earlier analysis, with a significant difference in abnormal returns between firms separated on Q and free cash flow. Again, the strongest results based on this separation are displayed; average announcement-period returns for low-Q, high-FCF firm exceed the average return for purely low-Q firms at 4.37%, with a highly significant (1%) difference between the means of the two samples.

Based on the previous results with separation based on median, the multivariate analysis (Table 25) could have been thought to provide differential results. However, in this case, the point of plus or minus one is less significant than the previous measure of Q; results provide strong support for earlier conclusions and show results are robust to an alternative measure of the firm's investment opportunity set. In fact, they provide even stronger results in support of the presence of explanatory power of the free cash flow hypothesis. DQ is significantly negative at the 1% level across all models except Models 4 and 9 at the 5% level. The coefficient is larger ranging from -0.0092 to -0.0137 compared with approximately -0.008 in original analysis. The coefficient for FCF is significantly negative at least at the 5% level across all models, with slightly larger coefficients. The interaction term DQ*FCF is also significant at the 5% and 10% levels across all models with coefficients of similar magnitude reconfirming hypothesis H6; the announcement-period reaction to SDDs is positively related with a firm's pre-announcement free cash flow, and this relationship is stronger for firms with a low-Q ratio. The coefficient on this interaction term suggests the difference in announcement-period returns between low- and high-Q firms is far greater for firms with increasing levels of free cash flow. All control variables retain similar coefficients and significance levels. These results confirm a market response to SDD announcements based on potentially large agency problems, as indicated by poor investment opportunities coupled with large amounts of free cash flow.

8.3 Lehn and Poulsen (1989) original measure of free cash flow

Results have indicated a significant positive relationship between the level of free cash flow and announcement-period return, and a significant difference in this relationship between high- and low-Q firms. This result is far more pronounced than results from previous literature

with regards to free cash flow. However, as mentioned, the definition of free cash flow utilised in analysis incorporates capital expenditures, while previous literature did not. Tables 11 and 12[16] are repeated over the same sample as the original analysis, utilising the original measure from Lehn and Poulsen (1989). Free cash flow is defined as follows:

$$FCF_i = (INC_i - TAX_i - INTEXP_i - PFDIV_i - COMDIV_i)/TA_i \quad , \qquad (13)$$

where variables take the same definitions as defined earlier. Tables 26 and 27 contain the results of the repeated analysis.

[Insert Table 26 here]
[Insert Table 27 here]

Table 26 shows the difference between announcement-period returns for low-Q, high-FCF and high-Q, low-FCF firms under this definition of free cash flow to be insignificant. Compared with original analysis, the mean announcement-period return is lower for the low-Q, high-FCF sample at 3.31% and higher for the high-Q, low-FCF sample at 2.42%. Table 27 also displays some differential results. Again, all control variables retain similar coefficients and significance levels; however, the magnitude of the coefficients on both DQ and FCF are reduced, losing significance. The interaction term, DQ*FCF, retains significance, with similar coefficients to original analysis. At minimum, the significance of the interaction term indicates abnormal announcement-period returns to some degree are generated by the mitigation of agency conflicts. This significance has not been found in earlier literature and supports the trend that over the more recent era, SDDs have been used with more purpose, increasingly as a tool with which to mitigate the agency costs of free cash flow. However, the change in free cash flow specification results in the independent effects being obscured and/or changed. These results are at odds with earlier findings, but correspond to the findings of previous literature suggesting the free cash flow definition incorporated in my analysis is more likely to be representative of the free cash flow with which the market is concerned.

[16] Analysis for the remaining tables utilising FCF was also repeated; however, full display seemed unnecessary; no further differences significantly influenced governance conclusions.

9. Conclusions

This research examines the nature of the information contained in SDD announcements. Specifically, I examine this information vis-à-vis future profitability of firms and also regarding the potential for SDDs to alleviate agency costs of free cash flow facing a firm.

Previous literature examined the signalling hypothesis with respect to an entire SDD sample. To assess the signal contained within SDD announcements devoid of other distributions, I separate the sample according to the proximity of SDD announcements to regular dividend payments, which have provided stronger evidence of signalling. This is important, since past literature has conclusively demonstrated that increases in regular dividends serve as a strong signal of future earnings. In examination of earnings changes, firms paying SDDs are found to have significantly positive earnings changes leading up to and during the year of announcement, reconfirming the notion that the most important impetus for paying an SDD is recent profitability. Utilising quarterly data, positive earnings changes were also found in the year immediately following the year of an SDD payment. Upon separation, the earnings change relationship yielded interesting results. Results show that positive earnings changes following announcement were larger and more apparent for SDDs paid concurrently with a regular dividend increase. In contrast, SDDs paid in isolation had greater past profitability, with negative earnings changes following announcement. This result highlights the motivations for each payment type.

In examination of the relationship between announcement-period returns and subsequent earnings changes, I find significant evidence to support the presence of a signal in SDD announcements. I find that the announcement-period stock price reaction is positively related to earnings in the year of and year following when using quarterly data, across all subsamples regardless of surrounding regular dividend payments. Results between subsamples suggest that, as hypothesised, the signalling strength is weak for SDDs paid in isolation, stronger for SDDs paid with a regular dividend and stronger again for SDDs paid with a regular dividend increase, particularly after controlling for SDD size. This signalling evidence is stronger than

in previous literature, and particularly draws attention to the influence of surrounding regular dividend payments when interpreting results for SDDs.

In examination of the free cash flow hypothesis, I find a strongly significant difference in average abnormal returns between high-Q and low-Q firms, indicating the market is responding to the mitigation of agency costs of free cash flow. A significant difference is also observed between low-Q, high free cash flow firms and high-Q, low free cash flow firms. These two samples are hypothesised to contain the most differential agency costs of free cash flow, and a difference in abnormal returns between these two samples has not been found in earlier literature (Howe et al., 1992). Univariate results provide strong support for the explanatory power of the free cash flow hypothesis. In a multivariate setting, tests first reconfirm the significant relationship between returns and SDD size, representative of the wealth effect, highlighting the need to control for size when investigating SDD payments. When controlling for size and other variables, cross-sectional regressions reveal the market reaction to be weakly related to Q, but significantly related to cash flow, a relation which strengthens significantly for firms with poor investment opportunities, as indicated by Tobin's Q. Additionally, even stronger evidence is found when using a firm's market-to-book ratio as the proxy for the investment opportunity set. I originally hypothesised an entrenchment measure would enhance the results attributable to agency conflicts, as previous literature had found mixed results. I expected firms with entrenched management to have reduced levels of investor expectation, as management would not be expected to pay out the excess cash absent the threat of displacement or sources of monitoring. I therefore expected such firms to experience larger announcement-period reactions within the presence of agency costs of free cash flow. However, overall I find no evidence to suggest the market is more or less concerned about the mitigation of agency costs based on management entrenchment. These results were disjointed and noisy; it is likely that subsequent research with greater data availability will be able to ascertain the influence of governance more accurately.

In light of previous conclusions, I replicate the signalling analysis over separation based on Q in assessment of the conditional signalling hypothesis. Results suggest the signal for future profitability present in SDD announcements is dominated by firms with low Q consistent with the hypothesis. The signal present for high-Q firms regards current profitability only. It seems

SDDs paid by low-Q firms are stronger signals due to the perception at the time of poor future profitability. This result does not deter from the free cash flow agency results, as the hypothesis does not explain the relationship to free cash flow, particularly one which increases for low-Q firms.

This study contributes significantly to our understanding of the role of signalling, free cash flow and corporate governance in explaining shareholder wealth effects of SDD announcements. I provide the first documented evidence of abnormal announcement-period stock price impacts purely due to an SDD; the first analysis to isolate the pure impact of SDDs by separating out contemporaneous regular dividend payments. I illustrate that over the most recent era SDDs do provide a signal for future earnings, previous literature shows highly inconclusive results. I show that the signal exists for an isolated SDD, however signal strength is the greatest when paid in conjunction with regular dividend increases. Previous evidence based on a full sample of SDDs may misconstrue the true 'signalling' power of SDDs. This analysis provides the strongest evidence that over the most recent era announcement-period reactions are caused by the mitigation of agency costs of free cash flow. Results show market reactions for firms with potentially large agency conflicts, and high levels of free cash flow are the largest and significantly greater than the inverse. Furthermore, I demonstrate that the entrenchment level of management has inconclusive influence on market reactions based on agency conflicts. This result seems puzzling and provides an opportunity for refinement in future literature.

The main contribution of my results is that within SDD announcements, the information conveyed can or is representing a signal of firm profitability and/or the mitigation of agency costs of free cash flow. These hypotheses are not mutually exclusive. Over the more recent era, abnormal announcement-period returns are partially being caused by a reduction in agency costs, and additionally the payment of SDDs, predominantly by low-Q firms, reflects a signal for improved current and future profitability. Moreover, signalling strength has been shown to be overestimated due to the presence of accompanying regular dividend-increase announcements in particular. The strongest relationship between announcement-period returns and subsequent earnings is generated from those SDDs joined with regular dividend increases. In both fields of signalling and agency, these results are stronger than in previous literature.

This is achieved perhaps partially through the specification of free cash flow, but also supports the view that SDDs are used more specifically over the more recent time frame. Common SDDs are being built into regular dividends, and they are now used with more purpose; the market recognises the potential reduction in agency costs and performance indication.

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Result Tables

Table 1

Frequency distributions of sample firms paying SDDs by sample split and year in the period 1990-2006

Year	All Firms paying SDDs	Firms paying SDDs in isolation	Firms paying SDDs with a regular dividend	Firms paying SDDs with a regular increase	Firms paying SDDs with a regular increase within the following two quarters
1990	131	62	59	9	1
1991	109	46	53	9	1
1992	93	37	49	7	0
1993	115	48	53	14	0
1994	152	63	60	28	1
1995	152	74	58	19	1
1996	131	52	52	23	4
1997	104	52	41	9	2
1998	67	36	23	7	1
1999	96	53	31	10	2
2000	69	35	23	8	3
2001	61	33	19	8	1
2002	91	47	36	8	1
2003	136	71	49	15	0
2004	179	97	60	19	3
2005	163	83	60	15	5
2006	165	76	67	20	2
Total	2,014	965	793	228	28
Proportion		47.9%	39.4%	11.3%	1.4%

Table 2

Cumulative abnormal returns at announcement of SDDs over selected holding periods surrounding the announcement date (t statistics in parentheses).[ab]

Days in holding period	Firms paying SDDs	Firms paying SDDs in isolation	Firms paying SDDs with a regular dividend	Firms paying SDDs with a regular increase	Firms paying SDDs with a regular increase within the following two quarters
t - 60 to t - 21	0.0216	0.0268	0.0181	0.0149	-0.0001
	(7.03)***	(5.28)***	(4.26)***	(2.04)**	(-0.00)
t - 20 to t - 11	0.0053	0.0074	0.0053	-0.0032	0.0052
	(3.60)***	(3.11)***	(2.49)**	(-0.89)	(-0.40)
t - 10 to t - 2	0.0074	0.0090	0.0060	0.0054	0.0061
	(4.95)***	(3.59)***	(2.92)***	(1.84)*	(0.72)
t - 1 to t + 1	0.0271	0.0395	0.0140	0.0237	0.0013
	(15.16)***	(11.95)***	(7.93)***	(7.40)***	(0.22)
t + 2 to t + 10	0.0122	0.0143	0.0108	0.0080	0.0147
	(7.51)***	(5.35)***	(4.68)***	(2.32)**	(1.15)
Number of firms	2007	960	791	228	28

[a]Abnormal returns are market-adjusted returns using CRSP value-weighted market returns. They are calculated using the following formula: $AR_{it} = R_{it} - R_{mt}$

[b]Cumulative abnormal returns (CAR) over the different event holding periods are calculated as follows: $CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 3

Comparison of the size of SDD payments across signalling subsamples between 1990-2006.[a]

SIZE	Firms paying SDDs in isolation	Firms paying SDDs with a regular dividend	Firms paying SDDs with a regular increase	Firms paying SDDs with a regular increase within the following two quarters	t-test[b]
Mean	0.0951 (16.03)***	0.0222 (11.13)***	0.0232 (7.54)***	0.0221 (2.51)**	12.2059***
Median	0.0220	0.0077	0.0075	0.0034	
Standard deviation	0.1843	0.0562	0.0465	0.0466	
Number of firms	965	792	228	28	

[a]*SIZE* : The ratio of the special dividend to share price the day before announcement.

[b]Parametric t-test tests the null hypothesis that the difference in the mean of SIZE between SDDs in isolation and the rest of the sample equals zero

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 4 (i)

Summary statistics on changes in earnings before extraordinary items for the full sample between 1990 and 2006.[a]

Year in relation to SDD announcement[b]	Number of firms	Mean	Student *t* probability[c]
-5	1320	-0.0051	-3.32***
-4	1424	-0.0024	-1.4467
-3	1556	0.0049	3.41***
-2	1695	0.0110	7.62***
-1	1851	0.0134	10.94***
0	1834	0.0186	12.55***
1	1705	0.0028	1.78*
2	1570	0.0003	0.17
3	1456	0.0026	0.96

[a]The standardised change in earnings for each firm *i* in year *t*, is defined as: $\Delta E_{it} = (E_{it} - E_{it-1}) / MV_{it}$

where E_{it} are earnings before extraordinary items, and MV_{it} is the firms market capitalisation at the year end prior to announcement

[b]Year 0 is defined as the first fiscal year whose earnings are announced after the SDD announcement.

[c]Student *t* statistic tests the null hypothesis that mean earnings changes are equal to zero.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 4 (ii)

Summary statistics on changes in earnings before extraordinary items for SDDs paid in isolation between 1990 and 2006.[a]

Year in relation to SDD announcement[b]	Number of firms	Mean	Student *t* probability[c]
-5	637	-0.0072	-2.92***
-4	684	-0.0082	-3.04***
-3	747	0.0024	0.99
-2	809	0.0112	4.66***
-1	884	0.0142	6.86***
0	847	0.0232	9.07***
1	789	0.0036	1.35
2	720	-0.0021	-0.65
3	670	0.0049	1.14

[a]The standardised change in earnings for each firm *i* in year *t*, is defined as: $\Delta E_{it} = (E_{it} - E_{it-1}) / MV_{it}$

where E_{it} are earnings before extraordinary items, and MV_{it} is the firms market capitalisation at the year end prior to announcement

[b]Year 0 is defined as the first fiscal year whose earnings are announced after the SDD announcement.

[c]Student *t* statistic tests the null hypothesis that mean earnings changes are equal to zero.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 4 (iii)

Summary statistics on changes inearnings before extraordinary items for SDDs paid concurrently with a regular dividend between 1990 and 2006.[a]

Year in relation to SDD announcement[b]	Number of firms	Mean	Student *t* probability[c]
-5	528	-0.0043	-1.94*
-4	571	0.0019	0.8587
-3	618	0.0080	4.22***
-2	675	0.0109	5.66***
-1	732	0.0126	7.59***
0	743	0.0140	6.98***
1	689	-0.0002	-0.0756
2	640	0.0009	0.3573
3	591	-0.0014	-0.3469

[a]The standardised change in earnings for each firm *i* in year *t*, is defined as: $\Delta E_{it} = (E_{it} - E_{it-1}) / MV_{it}$

where E_{it} are earnings before extraordinary items, and MV_{it} is the firms market capitalisation at the year end prior to announcement

[b]Year 0 is defined as the first fiscal year whose earnings are announced after the SDD announcement.

[c]Student *t* statistic tests the null hypothesis that mean earnings changes are equal to zero.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 4 (iv)

Summary statistics on changes in earnings before extraordinary items for SDDs paid concurrently with a regular dividend increase between 1990 and 2006.[a]

Year in relation to SDD announcement[b]	Number of firms	Mean	Student *t* probability[c]
-5	135	0.0004	0.10
-4	147	0.0064	1.59
-3	167	0.0057	1.55
-2	186	0.0099	2.69***
-1	208	0.0147	5.39***
0	217	0.0169	5.59***
1	203	0.0088	2.48**
2	188	0.0067	1.50
3	174	0.0113	1.75*

[a]The standardised change in earnings for each firm *i* in year *t*, is defined as: $\Delta E_{it} = (E_{it} - E_{it-1}) / MV_{it}$

where E_{it} are earnings before extraordinary items, and MV_{it} is the firms market capitalisation at the year end prior to announcement

[b]Year 0 is defined as the first fiscal year whose earnings are announced after the SDD announcement.

[c]Student *t* statistic tests the null hypothesis that mean earnings changes are equal to zero.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 4 (v)

Summary statistics on changes in earnings before extraordinary items for SDDs paid with a regular dividend increase occuring within the following two quarters, between 1990 and 2006.[a]

Year in relation to SDD announcement[b]	Number of firms	Mean	Student *t* probability[c]
-5	20	0.0043	0.67
-4	22	0.0086	0.92
-3	24	0.0005	0.07
-2	25	0.0132	2.41**
-1	27	0.0019	0.36
0	27	0.0183	1.98*
1	24	0.0134	1.10
2	22	0.0066	1.09
3	21	-0.0313	-1.54

[a]The standardised change in earnings for each firm *i* in year *t*, is defined as: $\Delta E_{it} = (E_{it} - E_{it-1}) / MV_{it}$

where E_{it} are earnings before extraordinary items, and MV_{it} is the firms market capitalisation at the year end prior to announcement

[b]Year 0 is defined as the first fiscal year whose earnings are announced after the SDD announcement.

[c]Student *t* statistic tests the null hypothesis that mean earnings changes are equal to zero.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 5

Summary statistics on annualised quarterly earnings before extraordinary items changes for firms paying SDDs between 1990 and 2006.[ab]

Year in relation to SDD announcement[c]	Number of firms	Mean	Student *t* probability[d]
	Panel A: All SDDs		
-1	1733	0.0178	12.95***
0	1720	0.0079	5.24***
	Panel B: SDDs in isolation		
-1	818	0.0198	8.49***
0	795	0.0096	3.78***
	Panel C: SDDs with a regular dividend		
-1	694	0.0156	8.42***
0	693	0.0054	2.56**
	Panel D: SDDs with a regular dividend increase		
-1	195	0.0192	6.22***
0	208	0.0101	2.99***
	Panel E: SDDs with a regular dividend increase within the following two quarters		
-1	26	0.0025	0.62
0	24	0.0067	0.65

[a]Earnings changes are estimated using quarterly earnings per share in the eight quarters prior to the SDD announcement and the four quarters subsequent.

[b]The standardised change in earnings for each firm i in year t, is defined as: $\Delta E_{it} = (E_{it} - E_{it-1})/MV_{it}$ where Eit are the annualised earnings before extraordinary items, and MV_{it} is the firms market capitalisation at the year end prior to announcement.

[c]Year 0 is defined as the first fiscal year whose earnings are announced after the SDD announcement.

[d]Student t statistic tests the null hypothesis that mean earnings changes are equal to zero.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 6

Tests of the relationship between changes in earnings following announcements of SDDs and the market-adjusted announcement returns for firms paying SDDs between 1990 and 2006 (t statistics in parentheses).[a]

$$\Delta E_{it} = \beta_0 + \beta_1 AR_i + \beta_2 \Delta E_{it-1} + \varepsilon_{it}$$

Year in relation to SDD announcement[b]	Number of firms	β_o	β_1	β_2	R^2
		Panel A: All SDDs			
0	1747	0.0184 (11.15)***	0.0838 (4.56)***	-0.1275 (-4.42)***	0.0220
1	1700	0.0021 (1.24)	0.0869 (4.43)***	-0.0930 (-3.66)***	0.0176
2	1568	-0.0003 (-0.17)	0.0307 (1.30)	-0.0377 (-1.30)	0.0020
3	1453	0.0028 (1.00)	0.0044 (0.13)	-0.2850 (-8.07)***	0.0430
		Panel B: SDDs in isolation			
0	808	0.0241 (8.37)***	0.0447 (1.84)*	-0.1800 (-4.27)***	0.0258
1	787	0.0027 (0.91)	0.0989 (3.93)***	-0.1363 (-3.75)***	0.0347
2	718	-0.0028 (-0.81)	0.0317 (1.03)	-0.0962 (-2.21)**	0.0076
3	667	0.0053 (-1.17)	-0.0091 (-0.22)	-0.2765 (-5.58)***	0.0449
		Panel C: SDDs with a regular dividend			
0	707	0.0125 (5.75)***	0.2201 (5.46)***	-0.0727 (-1.6)	0.0427
1	689	-0.0004 (-0.16)	0.0151 (0.34)	0.0003 (-0.01)	0.0002
2	640	-0.0003 (-0.11)	0.0960 (1.85)*	0.0395 (0.89)	0.0067
3	591	-0.0020 (-0.5)	0.0389 (0.48)	-0.3238 (-5.49)***	0.0488
		Panel D: SDDs with a regular dividend increase			
0	206	0.0117 (3.18)***	0.1766 (2.78)***	0.0839 (1.06)	0.0414
1	200	0.0067 (1.6)	0.0674 (0.9)	0.0116 (0.15)	0.0046
2	188	0.0072 (1.45)	-0.0513 (-0.55)	0.0716 (0.81)	0.0049
3	174	0.0137 (1.89)	-0.0036 (-0.03)	-0.2394 (-2.23)**	0.0283
		Panel E: SDDs with a regular dividend increase within the following two quarters			
0	26	0.0190 (1.99)*	0.4079 (1.36)	0.2777 (0.79)	0.0890
1	24	0.0245 (2.21)**	0.1055 (0.31)	-0.6943 (-3.12)***	0.0167
2	22	0.0062 (0.99)	0.0555 (0.3)	0.0701 (0.58)	0.0212
3	21	-0.0365 (-1.7)	-0.3363 (0.98)	0.7201 (-0.55)	0.0618

[a] ΔE_{it} is the standardised earnings change for firm *i* in year *t*. AR_i is the market-adjusted abnormal return for firm *i* for one trading day before to one day after the SDD announcement. ΔE_{it-1} is the prior year earnings change.

[b] Year 0 is defined as the first fiscal year whose earnings are announced after the SDD announcement.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 7

Tests of the relationship between standardised changes in annualised quarterly earnings per share one year following announcements of SDDs and the market-adjusted announcement returns. The sample comprises firms paying SDDs between 1990 and 2006 (t statistics in parentheses).[ab]

$$\Delta E_{it} = \beta_0 + \beta_1 AR_i + \beta_2 \Delta E_{it-1} + \varepsilon_{it}$$

Number of firms	β_0	β_1	β_2	R^2
		Panel A: All SDDs		
1584	0.0078 (4.49)***	0.0810 (4.17)***	-0.0933 (-3.29)***	0.0161
		Panel B: SDDs in isolation		
730	0.0105 (3.54)***	0.0647 (2.58)***	-0.1530 (-3.77)***	0.0264
		Panel C: SDDs with a regular dividend		
645	0.0054 (2.28)**	0.1144 (2.58)***	-0.0888 (-1.92)*	0.0136
		Panel D: SDDs with a regular dividend increase		
186	-0.0009 (-0.23)	0.1862 (2.78)***	0.3797 (4.86)***	0.1559
		Panel E: SDDs with a regular dividend increase within the following two quarters		
23	0.0078 (0.79)	0.6698 (2.21)**	0.7581 (1.59)	0.2448

[a]Annualised earnings are estimated using the four quarters prior to the SDD announcement and the four subsequent quarters

[b]ΔE_{it} is the standardised earnings change for firm *i* in year *t*. AR_i is the market-adjusted abnormal return for firm *i* for one trading day before to one day after the SDD announcement. ΔE_{it-1} is the prior year earnings change.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 8

Tests of the relationship between standardised changes in annualised quarterly earnings per share one year following announcements of SDDs and the market-adjusted announcement returns controlling for the size of the SDD. The sample comprises firms paying SDDs between 1990 and 2006 (t statistics in parentheses).[abc]

$$\Delta E_{it} = \beta_0 + \beta_1 AR_i + \beta_2 \Delta E_{it-1} + \beta_3 SIZE_i + \varepsilon_{it}$$

Number of firms	β_0	β_1	β_2	β_3	R^2
		Panel A: All SDDs			
1584	0.0075 (4.49)***	0.0755 (3.52)***	-0.0925 (-3.26)***	0.0092 (0.61)	0.0164
		Panel B: SDDs in isolation			
730	0.0094 (2.97)***	0.0533 (1.91)*	-0.1512 (-3.71)***	0.0178 (0.94)	0.0275
		Panel C: SDDs with a regular dividend			
645	0.0065 (2.57)***	0.1260 (2.78)***	-0.0893 (-1.93)*	-0.0578 (-1.24)	0.0160
		Panel D: SDDs with a regular dividend increase			
186	-0.0010 (-0.24)	0.1844 (2.61)***	0.3803 (4.84)***	0.0063 -0.08	0.1559
		Panel E: SDDs with a regular dividend increase within the following two quarters			
23	0.0013 (0.11)	0.4962 (1.42)	0.9464 (1.84)*	0.2409 (0.99)	0.2816

[a]Annualised earnings are estimated using the four quarters prior to the SDD announcement and the four subsequent quarters

[b]ΔE_{it} is the standardised earnings change for firm *i* in year *t*. AR_i is the market-adjusted abnormal return for firm *i* for one trading day before to one day after the SDD announcement. ΔE_{it-1} is the prior year earnings change.

[c]SIZE: The ratio of the special dividend to share price the day before announcement.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 9

Firm characteristics of all firms paying SDDs between 1990 and 2006.[a]

	Mean	Median	Standard deviation
SDD size (*SIZE*)	0.0614	0.0135	0.1418
Market value of equity (*MV*)	1765.52	120.18	12589.57
Total assets (*TA*)	4057.31	160.33	54567.91
Long-term Debt ratio (*LTD/TA*)	13.73%	4.07%	20.22%
Q	1.1112	0.7860	1.3095
Free cash flow (*FCF*)	0.0037	0.0079	0.0726
Cash level (CL)	0.1785	0.0871	0.2010
Return on Assets (*ROA*)	6.98%	6.10%	6.13%
Return on Equity (*ROE*)	12.86%	11.21%	11.32%
Number of firms	1457	1457	1457

[a]SIZE: The ratio of the special dividend to share price the day before announcement. MV ($M): the market value of the issuing firm 5 days prior to announcement. TA ($M): the total book value of assets of the issuing firm at the end of the fiscal year preceding announcement (t-1). LTD/TA (%): long-term debt to total assets of the issuing firm at t-1. Q: Market value of equity + liquidating value of preferred stock + total debt, divided through by total assets (MV + PS + TD)/TA (Chung and Pruitt, 1994). FCF: Operating income before depreciation - interest expense - taxes - preferred and common dividends - capital expenditures for the year t-1 divided by total assets in that year. CL: Cash + cash equivalents for the year t-1 divided by total assets in that year. ROA (%): Income before extraordinary items to total assets in year t-1. ROE (%): Income before extraordinary items to shareholders equity in year t-1.

Table 10

Average announcement period abnormal returns for SDD paying sample firms surrounding the announcement date (t statistics in parentheses). Results are provided for the entire sample as well as for Q greater than and less than 1.[ab]

Announcement period abnormal return	All	Q<1	Q>1	*t* -test[c]
Mean	3.05% (12.99)***	3.75% (11.06)***	1.86% (7.30)***	3.89***
Median	1.34%	1.42%	1.26%	
Number of firms	1457	920	537	

[a]Abnormal returns are market-adjusted returns using CRSP value-weighted market returns. They are calculated using the following formula:

$AR_{it} = R_{it} - R_{mt}$

[b]The cumulative abnormal returns (CAR) is the announcement period abnormal return, from one trading day before to one day after the announcement , calculated as follows: $CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$

[c]Parametric t-test tests the null hypothesis that the difference in mean between the two groups separated based on Q equals zero
*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 11

Average announcement period abnormal returns for SDD paying sample firms surrounding the announcement date (t statistics in parentheses). Results are provided for the sample partitioned based on Q and free cash flow levels.[ab]

Announcement period abnormal return	All	Q < 1 & FCF > median	Q > 1 & FCF < median	*t* -test[c]
Mean	3.05% (12.99)***	3.56% (7.99)***	2.07% (5.26)***	2.22**
Median	1.34%	1.35%	1.13%	
Number of firms	1457	412	221	

[a]Abnormal returns are market-adjusted returns using CRSP value-weighted market returns. They are calculated using the following formula:

$AR_{it} = R_{it} - R_{mt}$

[b]The cumulative abnormal returns (CAR) is the announcement period abnormal return, from one trading day before to one day after the announcement , calculated as follows: $CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$

[c]Parametric t-test tests the null hypothesis that the difference in mean between the two groups separated based on Q and FCF equals zero
*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 12

Cross sectional regression results for all firms paying SDDs between 1990 and 2006. The dependent variable is the three-day market-adjusted abnormal return. Independent variables are possible explanatory variables to the price reaction (t-statistics in parentheses).[a]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	0.0132 (5.75)***	0.0165 (5.77)***	0.0175 (5.62)***	0.0448 (7.12)***	0.0167 (4.57)***	0.0178 (4.56)***	0.0158 (4.27)***	0.0162 (3.88)***	0.0476 (6.26)***
SIZE	0.2822 (19.03)***	0.2850 (18.63)***	0.2850 (18.63)***	0.2792 (18.34)***	0.2849 (18.36)***	0.2847 (18.34)***	0.2842 (18.3)***	0.2842 (18.3)***	0.2795 (18.1)***
DQ	-	-0.0079 (-1.77)*	-0.0073 (-1.60)	-0.0087 (-1.92)*	-0.0078 (-1.65)*	-0.0071 (-1.47)	-0.0095 (-1.93)*	-0.0091 (-1.76)*	-0.0072 (-1.41)
FCF_{t-1}	-	0.0797 (1.98)**	0.0804 (2.00)**	0.0919 (2.30)**	0.0801 (1.96)**	0.0813 (1.99)**	0.0815 (2.00)**	0.0818 (2.00)**	0.0918 (2.26)**
$DQ*FCF_{t-1}$	-	-0.1238 (-2.07)**	-0.1297 (-2.16)**	-0.1210 (-2.03)**	-0.1237 (-2.07)**	-0.1297 (-2.16)**	-0.1373 (-2.27)**	-0.1379 (-2.27)**	-0.1139 (-1.89)*
LTA_{t-1}	-	-	-	-0.0055 (-4.98)***	-	-	-	-	-0.0059 (-4.92)***
LTD/TA_{t-1}	-	-	-0.0085 (-0.8)	0.0098 (0.88)	-	-0.0086 (-0.81)	-	-0.0025 (-0.2)	0.0061 (0.51)
ROE_{t-1}	-	-	-	-	-0.0013 (-0.06)	-0.0026 (-0.12)	-0.0310 (-1.01)	-0.0289 (-0.89)	0.0226 (0.67)
ROA_{t-1}	-	-	-	-	-	-	0.0776 (1.32)	0.0711 (1.06)	-0.0570 (-0.8)
Adj R-squared	0.1987	0.2018	0.2016	0.2145	0.2013	0.2011	0.2017	0.2011	0.2137
F-statistics	361.99	93.04	74.54	67.26	74.38	62.08	62.3	53.37	50.48
P-value	0	0	0	0	0	0	0	0	0
Sample size	1457	1457	1457	1457	1457	1457	1457	1457	1457

[a]SIZE: The ratio of the special dividend to share price the day before announcement. DQ: Dummy variable where DQ equals 1 (0) if the firms Q ratio is greater (less) than 1. FCF_{t-1}: Free cash flow for the year prior to announcement (measured as Operating income before depreciation - interest expense - taxes - preferred and common dividends - capital expenditure) divided by total assets in that year. LTA_{t-1}: The natural logarithm of firm's total assets as at the year prior to announcement. LTD/TA_{t-1}: Ratio of Long-term debt to total assets for the year prior to announcement. ROA (%): Income before extraordinary items to total assets in year t-1. ROE (%): Income before extraordinary items to shareholders equity in year t-1.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 13 (i)

Cross sectional regression results for firms with agency costs of free cash flow, paying SDDs between 1990 and 2006. The dependent variable is the three-day market-adjusted abnormal return. Independent variables are possible explanatory variables to the price reaction (t-statistics in parentheses).[ab]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	0.0126 (2.72)***	0.0171 (2.58)**	0.0117 (1.39)	-0.0023 (-0.12)	0.0186 (2.41)**	0.0132 (1.39)	0.0221 (2.82)***	0.0200 (1.94)*	0.0156 (0.64)
SIZE	0.0304 (0.98)	0.0313 (0.96)	0.0346 (1.06)	0.0380 (1.15)	0.0284 (0.84)	0.0320 (0.94)	0.0324 (0.97)	0.0334 (0.99)	0.0338 (1.00)
DG	-	-0.0126 (-1.41)	-0.0132 (-1.47)	-0.0148 (-1.60)	-0.0115 (-1.22)	-0.0122 (-1.29)	-0.0145 (-1.53)	-0.0146 (-1.53)	-0.0147 (-1.53)
FCF_{t-1}	-	0.1140 (1.01)	0.1032 (0.91)	0.1070 (0.94)	0.1304 (1.08)	0.1178 (0.97)	0.1859 (1.51)	0.1774 (1.41)	0.1776 (1.40)
$DG*FCF_{t-1}$	-	-0.0037 (-0.02)	0.0472 (0.24)	0.0398 (0.20)	-0.0185 (-0.09)	0.0333 (0.16)	-0.0015 (-0.01)	0.0155 (0.08)	0.0117 (0.06)
LTA_{t-1}	-	-	-	0.0021 (0.78)	-	-	-	-	0.0006 (0.20)
LTD/TA_{t-1}	-	-	0.0352 (1.03)	0.0266 (0.74)	-	0.0346 (1.01)	-	0.0122 (0.33)	0.0110 (0.30)
ROE_{t-1}	-	-	-	-	-0.0197 (-0.39)	-0.0174 (-0.35)	0.0802 (1.11)	0.0738 (0.98)	0.0642 (0.71)
ROA_{t-1}	-	-	-	-	-	-	-0.3400 (-1.88)	-0.3153 (-1.61)	-0.2945 (-1.32)
Adj R-squared	-0.0003	0.0072	0.0078	0.004	-0.0011	-0.0009	0.0236	0.0148	0.0052
F-statistics	0.97	1.19	1.17	1.07	0.98	0.98	1.43	1.23	1.07
P-value	0.3273	0.3191	0.3306	0.3848	0.4359	0.4401	0.2119	0.2949	0.3914
Sample size	107	107	107	107	107	107	107	0.0148	107

[a]Firms with agency costs of free cash flow are defined as those with a Q ratio below 1.

[b]SIZE: The ratio of the special dividend to share price the day before announcement. DG: Dummy variable where DG equals 1(0) if the firms G-Index is greater (less) than the sample median. FCF_{t-1}: Free cash flow for the year prior to announcement (measured as Operating income before depreciation - interest expense - taxes - preferred and common dividends - capital expenditure) divided by total assets in that year. LTA_{t-1}: The natural logarithm of firm's total assets as at the year prior to announcement. LTD/TA_{t-1}: Ratio of Long-term debt to total assets for the year prior to announcement. ROA_{t-1} (%): Income before extraordinary items to total assets in year t-1. ROE_{t-1} (%): Income before extraordinary items to shareholders equity in year t-1.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 13 (ii)

Cross sectional regression results for firms without agency costs of free cash flow, paying SDDs between 1996 and 2006. The dependent variable is the three - day market-adjusted abnormal return. Independent variables are possible explanatory variables to the price reaction (t-statistics in parentheses).[ab]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	0.0087	0.0046	0.0107	0.0286	-0.0028	0.0033	-0.0005	0.0126	0.0434
	(1.69)*	(0.64)	(1.15)	(1.07)	(-0.28)	(0.29)	(-0.05)	(0.92)	(1.54)
SIZE	-0.0188	-0.0178	0.0001	-0.0181	-0.0029	0.0153	-0.0085	0.0135	-0.0142
	(-0.35)	(-0.33)	(0.00)	(-0.29)	(-0.05)	(0.26)	(-0.15)	(0.23)	(-0.23)
DG	-	0.0136	0.0118	0.0131	0.0135	0.0116	0.0134	0.0101	0.0124
		(1.30)	(1.11)	(1.21)	(1.29)	(1.10)	(1.27)	(0.95)	(1.15)
FCF_{t-1}	-	0.0370	0.0026	0.0194	-0.0054	-0.0403	0.0240	0.0068	0.0241
		(0.45)	(0.03)	(0.21)	(-0.06)	(-0.42)	(0.23)	(0.07)	(0.23)
$DG*FCF_{t-1}$	-	-0.2256	-0.2100	-0.2230	-0.2027	-0.1868	-0.2236	-0.2258	-0.2435
		(-1.65)	(-1.52)	(-1.60)	(-1.47)	(-1.34)	(-1.56)	(-1.59)	(-1.71)*
LTA_{t-1}	-	-	-	-0.0025	-	-	-	-	-0.0047
				(-0.72)					(-1.25)
LTD/TA_{t-1}	-	-	-0.0236	-0.0154	-	-0.0238	-	-0.0388	-0.0250
			(-1.04)	(-0.61)		(-1.05)		(-1.51)	(-0.90)
ROE_{t-1}	-	-	-	-	0.0481	0.0485	0.0688	0.0974	0.1205
					(1.09)	(1.10)	(1.22)	(1.65)	(1.96)*
ROA_{t-1}	-	-	-	-	-	-	-0.0746	-0.1758	-0.1890
							(-0.59)	(-1.24)	(-1.34)
Adj R-squared	-0.0079	-0.0024	-0.0017	-0.0063	-0.0006	0.0003	-0.0067	0.0054	0.0108
F-statistics	0.12	0.93	0.96	0.88	0.99	1.01	0.5155	1.09	1.15
P-value	0.7274	0.4484	0.4449	0.5102	0.4299	0.4259	0.0472	0.3772	0.3353
Sample size	113	113	113	113	113	113	113	113	113

[a]Firms without agency costs of free cash flow are defined as those with a Q ratio above 1.

[b]SIZE: The ratio of the special dividend to share price the day before announcement. DG: Dummy variable where DG equals 1(0) if the firms G-Index is greater (less) than the sample median. FCF_{t-1}: Free cash flow for the year prior to announcement (measured as Operating income before depreciation - interest expense - taxes - preferred and common dividends - capital expenditure) divided by total assets in that year. LTA_{t-1}: The natural logarithm of firm's total assets as at the year prior to announcement. LTD/TA_{t-1}: Ratio of Long-term debt to total assets for the year prior to announcement. ROA_{t-1} (%): Income before extraordinary items to total assets in year t-1. ROE_{t-1} (%): Income before extraordinary items to shareholders equity in year t-1.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 14 (i)

Cross sectional regression results for firms with agency costs of free cash flow, paying SDDs between 1990 and 2006. The dependent variable is the three-day market-adjusted abnormal return. Independent variables are possible explanatory variables to the price reaction (t-statistics in parentheses).[ab]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	0.0269 (4.37)***	0.0438 (-2.36)**	0.0479 (2.38)**	0.0531 (1.75)*	0.0459 (2.40)**	0.0500 (2.41)**	0.0454 (2.38)**	0.0516 (2.5)**	0.0662 (2.04)**
SIZE	-0.0188 (-0.35)	0.0237 (0.37)	0.0174 (0.27)	0.0195 (0.29)	-0.0013 (-0.02)	-0.0077 (-0.09)	-0.0195 (-0.24)	-0.0325 (-0.39)	-0.0216 (-0.25)
DG	-	-0.1532 (-0.68)	-0.1341 (-0.58)	-0.1249 (-0.52)	-0.0737 (-0.27)	-0.0542 (-0.19)	0.0528 (0.18)	0.1059 (0.34)	0.1351 (0.43)
FCF_{t-1}	-	-0.3665 (-0.87)	-0.4227 (-0.96)	-0.4689 (-0.96)	-0.4364 (-0.97)	-0.4931 (-1.06)	-0.3708 (-0.82)	-0.4447 (-0.96)	-0.5422 (-1.09)
$DG*FCF_{t-1}$	-	-0.0004 (-0.02)	0.0014 (0.05)	0.0048 (0.16)	0.0062 (0.21)	0.0080 (0.27)	0.0011 (0.04)	0.0029 (0.10)	0.0093 (0.29)
LTA_{t-1}	-	-	-	-0.0008 (-0.23)	-	-	-	-	-0.0025 (-0.59)
LTD/TA_{t-1}	-	-	-0.0300 (-0.55)	-0.0297 (-0.54)	-	-0.0301 (-0.55)	-	-0.0456 (-0.82)	-0.0481 (-0.85)
ROE_{t-1}	-	-	-	-	-0.0515 (-0.52)	-0.0518 (-0.52)	0.0531 (0.38)	0.0722 (0.51)	0.1190 (0.72)
ROA_{t-1}	-	-	-	-	-	-	-0.3451 (-1.05)	-0.4091 (-1.20)	-0.4955 (-1.33)
Adj R-squared	-0.0231	0.0178	-0.0020	-0.0308	-0.0030	-0.0240	0.0000	-0.0103	-0.0314
F-statistics	0.12	1.18	0.98	0.81	0.98	0.85	1.00	0.94	0.85
P-value	0.73	0.34	0.44	0.57	0.45	0.54	0.44	0.49	0.57
Sample size	40	40	40	40	40	40	40	40	40

[a]Firms with agency costs of free cash flow are defined as those with a Q ratio below 1 and FCF value above median.

[b]SIZE: The ratio of the special dividend to share price the day before announcement. DG: Dummy variable where DG equals 1(0) if the firms G-Index is greater (less) than the sample median. FCF_{t-1}: Free cash flow for the year prior to announcement (measured as Operating income before depreciation - interest expense - taxes - preferred and common dividends - capital expenditure) divided by total assets in that year. LTA_{t-1}: The natural logarithm of firm's total assets as at the year prior to announcement. LTD/TA_{t-1}: Ratio of Long-term debt to total assets for the year prior to announcement. ROA_{t-1} (%): Income before extraordinary items to total assets in year t-1. ROE_{t-1} (%): Income before extraordinary items to shareholders equity in year t-1.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 14 (ii)

Cross sectional regression results for firms without agency costs of free cash flow, paying SDDs between 1996 and 2006. The dependent variable is the three - day market-adjusted abnormal return. Independent variables are possible explanatory variables to the price reaction (t-statistics in parentheses).[ab]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	0.0047	0.0006	-0.0043	0.0384	0.0035	-0.0010	0.0067	0.0019	0.0420
	(0.70)	(0.07)	(-0.44)	(0.77)	(0.32)	(-0.08)	(0.58)	(0.14)	(0.80)
SIZE	0.1015	0.0628	0.0273	-0.0252	0.0552	0.0145	0.0385	0.0114	-0.0350
	(1.17)	(0.88)	(0.33)	(-0.25)	(0.74)	(0.17)	(0.49)	(0.13)	(-0.33)
DG	-	-0.0077	-0.0078	-0.0030	-0.0077	-0.0079	-0.0084	-0.0083	-0.0037
		(-0.68)	(-0.70)	(-0.24)	(-0.68)	(-0.70)	(-0.74)	(-0.72)	(-0.29)
FCF_{t-1}	-	-0.1010	-0.0779	-0.0643	-0.0872	-0.0580	-0.0723	-0.0539	-0.0469
		(-0.63)	(-0.48)	(-0.39)	(-0.53)	(-0.35)	(-0.43)	(-0.32)	(-0.27)
$DG*FCF_{t-1}$	-	-0.5008	-0.5444	-0.5030	-0.5079	-0.5571	-0.5482	-0.5734	-0.5320
		(-2.48)**	(-2.62)**	(-2.35)**	(-2.48)**	(-2.64)**	(-2.58)**	(-2.64)**	(-2.37)**
LTA_{t-1}	-	-	-	-0.0061	-	-	-	-	-0.0058
				(-0.87)					(-0.79)
LTD/TA_{t-1}	-	-	0.0202	0.0392	-	0.0218	-	0.0180	0.0350
			(0.91)	(1.26)		(0.97)		(0.73)	(1.07)
ROE_{t-1}	-	-	-	-	-0.0174	-0.0227	0.0051	-0.0078	0.0020
					(-0.42)	(-0.54)	(0.10)	(-0.14)	(0.04)
ROA_{t-1}	-	-	-	-	-	-	-0.1100	-0.0683	-0.0787
							(-0.76)	(-0.43)	(-0.50)
Adj R-squared	0.0085	0.3803	0.3776	0.3735	0.3666	0.3654	0.3591	0.3508	0.3438
F-statistics	1.36	7.44	6.1	5.17	5.86	5.03	4.92	4.24	3.75
P-value	0.25	0.0002	0.0003	0.0006	0.0004	0.0008	0.0009	0.0018	0.003
Sample size	43	43	43	43	43	43	43	43	43

[a]Firms without agency costs of free cash flow are defined as those with a Q ratio above 1 and FCF value below median.

[b]SIZE: The ratio of the special dividend to share price the day before announcement. . DG: Dummy variable where DG equals 1(0) if the firms G-Index is greater (less) than the sample median. FCF_{t-1}: Free cash flow for the year prior to announcement (measured as Operating income before depreciation - interest expense - taxes - preferred and common dividends - capital expenditure) divided by total assets in that year. LTA_{t-1}: The natural logarithm of firm's total assets as at the year prior to announcement. LTD/TA_{t-1}: Ratio of Long-term debt to total assets for the year prior to announcement. ROA_{t-1} (%): Income before extraordinary items to total assets in year t-1. ROE_{t-1} (%): Income before extraordinary items to shareholders equity in year t-1.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 15

Average announcement period abnormal returns for SDD paying sample firms surrounding the announcement date (t statistics in parentheses). Results are provided for the sample partitioned based on Q and cash levels.[ab]

	All	Q < 1 & CL > median	Q > 1 & CL < median	*t* -test[c]
Mean (%)	2.77% (15.03)***	4.08% (9.79)***	1.46% (5.26)***	3.81***
Median (%)	1.33%	1.71%	0.97%	
Number of firms	1938	630	256	

[a]Abnormal returns are market-adjusted returns using CRSP value-weighted market returns. They are calculated using the following formula: $AR_{it} = R_{it} - R_{mt}$

[b]The cumulative abnormal returns (CAR) is the announcement period abnormal return, from one trading day before to one day after the announcement , calculated as follows: $CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$

[c]Parametric t-test tests the null hypothesis that the difference in mean between the two groups separated based on Q and CL equals zero
*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 16

Cross sectional regression results for all firms paying SDDs between 1990 and 2006. The dependent variable is the three-day market-adjusted abnormal return. Independent variables are possible explanatory variables to the price reaction incorporating cash levels (t-statistics in parentheses).[a]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	0.0159 (6.26)***	0.0167 (5.91)***	0.0424 (7.18)***	0.0161 (5.02)***	0.0170 (4.86)***	0.0164 (5.10)***	0.0169 (4.83)***	0.0441 (6.79)***	0.0424 (7.18)***
SIZE	0.2404 (18.86)***	0.2413 (18.82)***	0.2351 (18.36)***	0.2402 (18.52)***	0.2410 (18.49)***	0.2400 (18.50)***	0.2404 (18.43)***	0.2360 (18.15)***	0.2360 (18.59)***
DQ	-0.0125 (-2.64)***	-0.0117 (-2.39)**	-0.0116 (-2.40)**	-0.0124 (-2.57)***	-0.0115 (-2.3)***	-0.0139 (-2.76)***	-0.0133 (-2.47)**	-0.0099 (-1.84)*	-0.0110 (-2.34)***
CL_{t-1}	0.0027 (0.23)	0.0012 (0.10)	-0.0045 (-0.38)	0.0027 (0.23)	0.0011 (0.09)	-0.0006 (-0.05)	-0.0011 (-0.09)	-0.0023 (-0.19)	-0.0056 (-0.48)
$DQ*CL_{t-1}$	0.0216 (1.20)	0.0205 (1.13)	0.0139 (0.77)	0.0217 (1.20)	0.0206 (1.14)	0.0211 (1.17)	0.0206 (1.14)	0.0129 (0.71)	0.0131 (0.73)
LTA_{t-1}	-	-	-0.0047 (-4.94)***	-	-	-	-	-0.0050 (-4.96)***	-0.0045 (-4.96)***
LTD/TA_{t-1}	-	-0.0059 (-0.64)	0.0051 (0.54)	-	-0.0060 (-0.65)	-	-0.0031 (-0.32)	0.0028 (0.29)	-
ROE_{t-1}	-	-	-	-0.0011 (-0.06)	-0.0020 (-0.11)	-0.0203 (-0.80)	-0.0188 (-0.73)	0.0251 (0.93)	-
ROA_{t-1}	-	-	-	-	-	0.0520 (1.07)	0.0467 (0.91)	-0.0546 (-0.99)	-
Adj R-squared	0.1747	0.1745	0.1844	0.1743	0.1741	0.1744	0.174	0.184	0.1847
F-statistics	103.32	82.71	73.83	82.61	68.89	69.04	59.16	55.48	88.58
P-value	0	0	0	0	0	0	0	0	0
Sample size	1934	1934	1934	1934	1934	1934	1934	1934	1934

[a]SIZE: The ratio of the special dividend to share price the day before announcement. DQ: Dummy variable where DQ equals 1 (0) if the firms Q ratio is greater (less) than 1. CL_{t-1}: Cash level for the year prior to announcement (measured as Cash plus cash equivalents) divided by total assets in that year. LTA_{t-1}: The natural logarithm of firm's total assets as at the year prior to announcement. LTD/TA_{t-1}: Ratio of Long-term debt to total assets for the year prior to announcement. ROA (%): Income before extraordinary items to total assets in year t-1. ROE (%): Income before extraordinary items to shareholders equity in year t-1.
*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 17

Cross sectional regression results for all firms paying SDDs between 1990 and 2006 split according to dividend size. The dependent variable is the three-day market-adjusted abnormal return. Independent variables are possible explanatory variables to the price reaction (t-statistics in parentheses).[ab]

	Large SDD		Small SDD	
Variable	Model 1	Model 2	Model 1	Model 2
Intercept	0.0722 (6.46)***	0.0658 (6.49)***	0.0071 (1.06)	0.0107 (1.73)*
SIZE	0.2205 (12.31)***	0.2201 (12.62)***	1.2820 (2.76)***	1.2577 (2.72)***
DQ	-0.0162 (-1.68)*	-0.0204 (-2.3)**	-0.0057 (-1.17)	-0.0011 (-0.27)
CL_{t-1}	-0.0074 (-0.40)	-0.0143 (-0.79)	-0.0070 (-0.55)	-0.0034 (-0.27)
$DQ*CL_{t-1}$	0.0370 (1.31)	0.0368 (1.30)	-0.0317 (-1.52)	-0.0331 (-1.64)
LTA_{t-1}	-0.0086 (-4.81)***	-0.0073 (-4.46)***	-0.0005 (-0.58)	-0.0010 (-1.23)
LTD/TA_{t-1}	-0.0028 (-0.17)	-	0.0091 (0.95)	-
ROE_{t-1}	0.0891 (1.81)*	-	-0.0255 (-1.05)	-
ROA_{t-1}	-0.2002 (-2.04)**	-	0.0848 (1.68)*	-
Adj R-squared	0.1798	0.1787	0.0122	0.0121
F-statistics	27.46	43.02	2.49	3.37
P-value	0	0	0.0113	0.0051
Sample size	967	967	967	967

[a]Large (Small) SDDs are those SDDs announced with SIZE greater (less) than the median.

[b]SIZE: The ratio of the special dividend to share price the day before announcement. DQ: Dummy variable where DQ equals 1 (0) if the firms Q ratio is greater (less) than 1. CL_{t-1}: Cash level for the year prior to announcement (measured as Cash plus cash equivalents) divided by total assets in that year. LTA_{t-1}: The natural logarithm of firm's total assets as at the year prior to announcement. LTD/TA_{t-1}: Ratio of Long-term debt to total assets for the year prior to announcement. ROA (%): Income before extraordinary items to total assets in year t-1. ROE (%): Income before extraordinary items to shareholders equity in year t-1.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 18

Tests of the relationship between changes in earnings following announcements of SDDs and the market-adjusted announcement returns for firms paying SDDs between 1990 and 2006 (t statistics in parentheses).[a]

$$\Delta E_{it} = \beta_0 + \beta_1 AR_i + \beta_2 \Delta E_{it-1} + \varepsilon_{it}$$

Year in relation to SDD announcement[b]	Number of firms	β_0	β_1	β_2	R^2
		Panel A: All SDDs			
0	1739	0.0183 (11.04)***	0.0842 (4.59)***	-0.1217 (-4.21)***	0.0212
1	1621	0.0025 (1.41)	0.0866 (4.34)***	-0.1012 (-3.88)***	0.0188
2	1491	-0.0005 (-0.22)	0.0339 (1.41)	-0.0311 (-1.05)	0.0019
3	1383	0.0024 (0.84)	0.0096 (0.28)	-0.2844 (-7.83)***	0.0426
		Panel B: Q<1			
0	1192	0.0181 (8.38)***	0.0848 (3.97)***	-0.1148 (-3.32)***	0.0212
1	1114	0.0009 (0.40)	0.1022 (4.53)***	-0.0482 (-1.56)	0.0192
2	1020	0.0000 (0.00)	0.0514 (1.90)*	-0.0297 (-0.83)	0.0038
3	943	-0.0016 (-0.43)	0.0157 (0.41)	-0.2727 (-6.31)***	0.0407
		Panel C: Q>1			
0	547	0.0191 (7.78)***	0.0810 (2.02)**	-0.1505 (-2.82)***	0.0215
1	507	0.0083 (2.96)***	-0.0272 (-0.57)	-0.2903 (-6.03)***	0.0691
2	471	-0.0004 (-0.12)	-0.1015 (-1.70)*	-0.0493 (-0.94)	0.0078
3	440	0.0104 (2.22)**	0.0114 -0.13	-0.3099 (-4.54)***	0.0458

[a] ΔE_{it} is the standardised earnings change for firm *i* in year *t*. AR_i is the market-adjusted abnormal return for firm *i* for one trading day before to one day after the SDD announcement. ΔE_{it-1} is the prior year earnings change.

[b] Year 0 is defined as the first fiscal year whose earnings are announced after the SDD announcement.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 19

Tests of the relationship between standardised changes in annualised quarterly earnings per share one year following announcements of SDDs and the market-adjusted announcement returns. The sample comprises firms paying SDDs between 1990 and 2006 (t statistics in parentheses).[ab]

$$\Delta E_{it} = \beta_0 + \beta_1 AR_i + \beta_2 \Delta E_{it-1} + \varepsilon_{it}$$

Number of firms	β_o	β_1	β_2	R^2
		Panel A: All SDDs		
1584	0.0078 (4.49)***	0.0810 (4.17)***	-0.0933 (-3.29)***	0.0161
		Panel B: Q<1		
1079	0.0058 (2.56)**	0.0938 (4.19)***	-0.0508 (-1.49)	0.0172
		Panel C: Q>1		
505	0.0137 (5.28)***	0.0139 (0.32)	-0.2457 (-4.82)***	0.0444

[a]Annualised earnings are estimated using the four quarters prior to the SDD announcement and the four subsequent quarters

[b]ΔE_{it} is the standardised earnings change for firm *i* in year *t*. AR_i is the market-adjusted abnormal return for firm *i* for one trading day before to one day after the SDD announcement. ΔE_{it-1} is the prior year earnings change.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 20

Average announcement period abnormal returns for SDD paying sample firms surrounding the announcement date (t statistics in parentheses). Results are provided for the entire sample as well as for Q greater than and less than the sample median.[ab]

	All	Q < median	Q > median	*t* -test[c]
Mean	3.05% (12.99)***	4.16% (10.15)***	1.94% (8.74)***	4.76***
Median	1.34%	1.49%	1.22%	
Number of firms	1457	728	729	

[a]Abnormal returns are market-adjusted returns using CRSP value-weighted market returns. They are calculated using the following formula: $AR_{it} = R_{it} - R_{mt}$

[b]The cumulative abnormal returns (CAR) is the announcement period abnormal return, from one trading day before to one day after the announcement , calculated as follows: $CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$

[c]Parametric t-test tests the null hypothesis that the difference in mean between the two groups separated based on Q equals zero
*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 21

Average announcement period abnormal returns for SDD paying sample firms surrounding the announcement date (t statistics in parentheses). Results are provided for the sample partitioned based on Q and free cash flow levels according to sample medians.[ab]

	All	Q < median & FCF > median	Q > median & FCF < median	*t* -test[c]
Mean (%)	3.05% (12.99)***	3.73% (7.99)***	1.98% (5.26)***	2.95***
Median (%)	1.34%	1.25%	1.06%	
Number of firms	1457	340	339	

[a]Abnormal returns are market-adjusted returns using CRSP value-weighted market returns. They are calculated using the following formula: $AR_{it} = R_{it} - R_{mt}$

[b]The cumulative abnormal returns (CAR) is the announcement period abnormal return, from one trading day before to one day after the announcement , calculated as follows: $CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$

[c]Parametric t-test tests the null hypothesis that the difference in mean between the two groups separated based on Q and FCF equals zero
*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 22

Cross sectional regression results for all firms paying SDDs between 1990 and 2006. The dependent variable is the three-day market-adjusted abnormal return. Independent variables are possible explanatory variables to the price reaction (t-statistics in parentheses).[a]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	0.0132 (5.75)***	0.0196 (5.77)***	0.0199 (5.93)***	0.0473 (7.39)***	0.0191 (5.01)***	0.0194 (4.85)***	0.0185 (4.79)***	0.0179 (3.88)***	0.0490 (6.46)***
SIZE	0.2822 (19.03)***	0.2818 (18.25)***	0.2818 (18.25)***	0.2759 (17.96)***	0.2824 (18.05)***	0.2823 (18.04)***	0.2816 (17.99)***	0.2816 (17.98)***	0.2770 (17.80)***
DQ	-	-0.0126 (-2.96)***	-0.0123 (-2.83)***	-0.0133 (-3.07)***	-0.0129 (-2.88)***	-0.0126 (-2.74)***	-0.0140 (-3.06)***	-0.0147 (-2.98)***	-0.0126 (-2.56)**
FCF_{t-1}	-	0.0637 (1.29)	0.0638 (1.29)	0.0727 (1.48)	0.0620 (1.24)	0.0622 (1.24)	0.0613 (1.22)	0.0607 (1.21)	0.0712 (1.43)
$DQ*FCF_{t-1}$	-	-0.0666 (-1.09)	-0.0676 (-1.1)	-0.0589 (-0.97)	-0.0665 (-1.09)	-0.0674 (-1.1)	-0.0729 (-1.19)	-0.0724 (-1.18)	-0.0550 (-0.90)
LTA_{t-1}	-	-	-	-0.0055 (-5.01)***	-	-	-	-	-0.0058 (-4.92)***
LTD/TA_{t-1}	-	-	-0.0027 (-0.8)	0.0156 (1.39)	-	-0.0025 (-0.24)	-	0.0047 (0.38)	0.0126 (1.02)
ROE_{t-1}	-	-	-	-	0.0045 (0.22)	0.0041 (-0.19)	-0.0214 (-0.70)	-0.0253 (-0.78)	0.0253 (0.75)
ROA_{t-1}	-	-	-	-	-	-	0.0663 (1.15)	0.0786 (1.19)	-0.0476 (-0.68)
Adj R-squared	0.1987	0.2028	0.2023	0.2153	0.2023	0.2018	0.2025	0.2020	0.2146
F-statistics	361.99	93.61	74.85	67.6	74.84	62.34	62.61	53.65	50.72
P-value	0	0	0	0	0	0	0	0	0
Sample size	1457	1457	1457	1457	1457	1457	1457	1457	1457

[a]SIZE: The ratio of the special dividend to share price the day before announcement. DQ: Dummy variable where DQ equals 1 (0) if the firms Q ratio is greater (less) than the sample median. FCF_{t-1}: Free cash flow for the year prior to announcement (measured as Operating income before depreciation - interest expense - taxes - preferred and common dividends - capital expenditure) divided by total assets in that year. LTA_{t-1}: The natural logarithm of firm's total assets as at the year prior to announcement. LTD/TA_{t-1}: Ratio of Long-term debt to total assets for the year prior to announcement. ROA (%): Income before extraordinary items to total assets in year t-1. ROE (%): Income before extraordinary items to shareholders equity in year t-1.
*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 23

Average announcement period abnormal returns for SDD paying sample firms surrounding the announcement date (t statistics in parentheses). Results are provided for the entire sample as well as for Q greater than and less than the sample median.[ab]

	All	Q < median	Q > median	*t* -test[c]
Mean	3.05% (12.99)***	4.29% (10.63)***	1.81% (7.84)***	5.33***
Median	1.34%	1.70%	0.95%	
Number of firms	1458	729	729	

[a]Abnormal returns are market-adjusted returns using CRSP value-weighted market returns. They are calculated using the following formula: $AR_{it} = R_{it} - R_{mt}$

[b]The cumulative abnormal returns (CAR) is the announcement period abnormal return, from one trading day before to one day after the announcement , calculated as follows: $CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$

[c]Parametric t-test tests the null hypothesis that the difference in mean between the two groups separated based on Q equals zero
*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 24

Average announcement period abnormal returns for SDD paying sample firms surrounding the announcement date (t statistics in parentheses). Results are provided for the sample partitioned based on Q and free cash flow levels according to sample medians.[ab]

	All	Q < median & FCF > median	Q > median & FCF < median	*t* -test[c]
Mean (%)	3.05% (12.99)***	4.37% (7.35)***	1.94% (4.90)***	3.41***
Median (%)	1.34%	1.79%	1.06%	
Number of firms	1458	285	285	

[a]Abnormal returns are market-adjusted returns using CRSP value-weighted market returns. They are calculated using the following formula: $AR_{it} = R_{it} - R_{mt}$

[b]The cumulative abnormal returns (CAR) is the announcement period abnormal return, from one trading day before to one day after the announcement , calculated as follows: $CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$

[c]Parametric t-test tests the null hypothesis that the difference in mean between the two groups separated based on Q and FCF equals zero
*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 25

Cross sectional regression results for all firms paying SDDs between 1990 and 2006. The dependent variable is the three-day market-adjusted abnormal return. Independent variables are possible explanatory variables to the price reaction (t-statistics in parentheses).[a]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	0.0132 (5.75)***	0.0204 (6.29)***	0.0199 (6.15)***	0.0448 (7.23)***	0.0193 (5.10)***	0.0203 (5.05)***	0.0189 (4.84)***	0.0201 (4.63)***	0.0500 (6.61)***
SIZE	0.2822 (19.03)***	0.2817 (18.40)***	0.2818 (18.40)***	0.2784 (18.28)***	0.2831 (18.25)***	0.2830 (18.24)***	0.2830 (18.24)***	0.2830 (18.23)***	0.2792 (18.10)***
DQ	-	-0.0126 (-2.90)***	-0.0122 (-2.78)***	-0.0092 (-2.09)**	-0.0137 (-2.89)***	-0.0132 (-2.76)***	-0.0135 (-2.84)***	-0.0131 (-2.75)***	-0.0097 (-2.02)**
FCF_{t-1}	-	0.0902 (2.11)***	0.0920 (2.15)**	0.1026 (2.41)**	0.0878 (2.04)**	0.0897 (2.08)**	0.0878 (2.04)**	0.0895 (2.08)**	0.1042 (2.43)**
$DQ*FCF_{t-1}$	-	-0.1114 (-1.86)*	-0.1187 (-1.96)*	-0.1232 (-2.04)**	-0.1130 (-1.88)*	-0.1198 (-1.97)**	-0.1167 (-1.92)*	-0.1206 (-1.98)**	-0.1144 (-1.89)*
LTA_{t-1}	-	-	-	-0.0051 (-4.56)***	-	-	-	-	-0.0057 (-4.81)***
LTD/TA_{t-1}	-	-	-0.0085 (-0.8)	0.0069 (0.63)	-	-0.0081 (-0.77)	-	-0.0076 (-0.66)	0.0014 (0.12)
ROE_{t-1}	-	-	-	-	0.0121 (0.56)	0.0111 (0.52)	0.0020 (0.06)	0.0078 (0.23)	0.0493 (1.44)
ROA_{t-1}	-	-	-	-	-	-	0.0238 (0.42)	0.0077 (0.13)	-0.1039 (-1.59)
Adj R-squared	0.1987	0.2041	0.2039	0.2146	0.2037	0.2035	0.2033	0.2030	0.2149
F-statistics	361.99	94.35	75.59	67.31	75.51	63	62.91	53.97	50.83
P-value	0	0	0	0	0	0	0	0	0
Sample size	1457	1457	1457	1457	1457	1457	1457	1457	1457

[a]SIZE: The ratio of the special dividend to share price the day before announcement. DQ: Dummy variable where DQ equals 1 (0) if the firms Q ratio (MV/BV) is greater (less) than the sample median. FCF_{t-1}: Free cash flow for the year prior to announcement (measured as Operating income before depreciation - interest expense - taxes - preferred and common dividends - capital expenditure) divided by total assets in that year. LTA_{t-1}: The natural logarithm of firm's total assets as at the year prior to announcement. LTD/TA_{t-1}: Ratio of Long-term debt to total assets for the year prior to announcement. ROA (%): Income before extraordinary items to total assets in year t-1. ROE (%): Income before extraordinary items to shareholders equity in year t-1.
*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 26

Average announcement period abnormal returns for SDD paying sample firms surrounding the announcement date (t statistics in parentheses). Results are provided for the sample partitioned based on Q and free cash flow.[abc]

	All	Q < 1 & FCF[c] > median	Q > 1 & FCF < median	*t* -test[d]
Mean (%)	3.05% (12.99)***	3.31% (7.60)***	2.42% (5.79)***	1.30
Median (%)	1.34%	1.24%	1.43%	
Number of firms	1458	389	198	

[a]Abnormal returns are market-adjusted returns using CRSP value-weighted market returns. They are calculated using the following formula: $AR_{it} = R_{it} - R_{mt}$

[b]The cumulative abnormal returns (CAR) is the announcement period abnormal return, from one trading day before to one day after the announcement , calculated as follows: $CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$

[c]Free cash flow measured as Operating income before depreciation - interest expense - taxes - preferred and common dividends divided by total assets in that year

[d]Parametric t-test tests the null hypothesis that the difference in mean between the two groups separated based on Q and FCF equals zero

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 27

Cross sectional regression results for all firms paying SDDs between 1990 and 2006. The dependent variable is the three-day market-adjusted abnormal return. Independent variables are possible explanatory variables to the price reaction (t-statistics in parentheses).[a]

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	0.0132 (5.75)***	0.0145 (4.48)***	0.0155 (4.52)***	0.0418 (6.49)***	0.0144 (3.78)***	0.0155 (3.86)***	0.0135 (3.52)***	0.0141 (3.30)***	0.0445 (5.83)***
SIZE	0.2822 (19.03)***	0.2824 (18.49)***	0.2825 (18.50)***	0.2763 (18.17)***	0.2825 (18.26)***	0.2824 (18.26)***	0.2817 (18.19)***	0.2817 (18.19)***	0.2770 (17.98)***
DQ	-	-0.0023 (-0.41)	-0.0013 (-0.23)	-0.0038 (-0.68)	-0.0024 (-0.42)	-0.0013 (-0.22)	-0.0035 (-0.61)	-0.0030 (-0.49)	-0.0027 (-0.45)
FCF_{t-1}	-	0.0593 (1.43)	0.0620 (1.49)	0.0653 (1.58)	0.0588 (1.39)	0.0621 (1.46)	0.0585 (1.38)	0.0598 (1.41)	0.0660 (1.56)
$DQ*FCF_{t-1}$	-	-0.1241 (-1.99)**	-0.1319 (-2.09)**	-0.1094 (-1.75)*	-0.1241 (-1.99)**	-0.1319 (-2.09)**	-0.1342 (-2.13)**	-0.1359 (-2.15)**	-0.1040 (-1.65)*
LTA_{t-1}	-	-	-	-0.0053 (-4.81)***	-	-	-	-	-0.0057 (-4.79)***
LTD/TA_{t-1}	-	-	-0.0094 (-0.88)	0.0084 (0.76)	-	-0.0094 (-0.88)	-	-0.0036 (-0.30)	0.0046 (0.37)
ROE_{t-1}	-	-	-	-	0.0014 (0.07)	-0.0002 (-0.01)	-0.0271 (-0.88)	-0.0240 (-0.74)	0.0258 (0.76)
ROA_{t-1}	-	-	-	-	-	-	0.0748 (1.28)	0.0651 (0.97)	-0.0597 (-0.84)
Adj R-squared	0.1987	0.2013	0.2012	0.2132	0.2008	0.2006	0.2011	0.2006	0.2125
F-statistics	361.99	92.75	74.34	66.76	74.15	61.91	62.09	53.2	50.12
P-value	0	0	0	0	0	0	0	0	0
Sample size	1457	1457	1457	1457	1457	1457	1457	1457	1457

[a]SIZE: The ratio of the special dividend to share price the day before announcement. DQ: Dummy variable where DQ equals 1 (0) if the firms Q ratio is greater (less) than 1. FCF_{t-1}: Free cash flow for the year prior to announcement (measured as Operating income before depreciation - interest expense - taxes - preferred and common dividends) divided by total assets in that year. LTA_{t-1}: The natural logarithm of firm's total assets as at the year prior to announcement. LTD/TA_{t-1}: Ratio of Long-term debt to total assets for the year prior to announcement. ROA (%): Income before extraordinary items to total assets in year t-1. ROE (%): Income before extraordinary items to shareholders equity in year t-1.

*Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.