“Preparing” the Equity Market for Corporate Events: Theory and Evidence from Firms Cutting Dividends

Thomas J. Chemmanur*

and

Xuan Tian**

Current Version: March 14, 2007

*Professor of Finance, Carroll School of Management, Boston College, Chestnut Hill, MA 02467. Phone: (617) 552 3980. Fax: (617) 552 0431. Email: chemmanu@bc.edu.

**Ph.D. Candidate in Finance, Carroll School of Management, Boston College, Chestnut Hill, MA 02467. Phone: (617) 552 2023. Fax: (617) 552 0431. Email: tianxu@bc.edu.

For helpful comments and discussions, we thank David Chapman, Richard Evans, Wayne Ferson, Yawen Jiao, Kose John, Darren Kisgen, Karthik Krishnan, Jun Qian, Susan Shu, Karen Simonyan, and seminar participants at Boston College for their comments. We remain responsible for all errors and omissions.
“Preparing” the Equity Market for Corporate Events: Theory and Evidence from Firms Cutting Dividends

Abstract

This paper presents the first theoretical as well as the first empirical analysis of the choice of firms between preparing or not preparing the equity market in advance of a possible dividend cut. We use a hand-collected data set of dividend cutting firms that allows us to distinguish between prepared and non-prepared dividend cutting firms. In our model, a firm has assets in place (which will generate an intermediate cash flow), and a growth opportunity. Firm insiders have private information not only about the probability of their firm realizing a high intermediate cash flow, but also about the net present value of its growth opportunity. We characterize the firm insiders’ equilibrium choice between preparing and not preparing the market, as well as their decision regarding whether or not to cut the firm’s dividend (subsequent to the realization of the firm’s intermediate cash flow). In equilibrium, firms in temporary financial difficulties but good long-term growth prospects prepare the market in advance of dividend cuts, while those with permanently declining earnings are less likely to prepare the market. Our analysis generates several testable predictions. First, the abnormal stock returns upon the announcement of a dividend cut will be less negative for prepared compared to non-prepared dividend cutting firms. Second, the abnormal stock returns of firms preparing the market for a dividend cut will be negative on the market preparation day. Third, the long-run operating, dividend payment, and stock return performance of prepared dividend cutting firms will be better than that of non-prepared dividend cutting firms. Fourth, the post-dividend-cut equity holdings of institutional investors in prepared dividend cutting firms will be larger than those in non-prepared dividend cutting firms. The results of our empirical analysis support the above predictions of our theory.
“Preparing” the Equity Market for Corporate Events: Theory and Evidence from Firms Cutting Dividends

1 Introduction

Should firms “prepare” the equity market for corporate events? Does such market preparation indeed matter for a firm’s future operating and stock return performance? Further, if firm insiders receive some private information that their firm may perform poorly in the future, should they inform investors about this adverse information as soon as possible, or should they wait to release this information? In other words, does the manner in which a firm releases bad news to the equity market (the timing of information release) affect its future stock return and operating performance?

Consider the case of a firm contemplating a dividend cut in the future. Firm insiders may have received some private information about a potential decline in future earnings, or that the current level of dividends is unsustainable for some other reason (e.g., a change in the competitive environment requiring it to retain more cash within the firm). Under these circumstances, should insiders release a statement to the market that they are reviewing the dividend, and indicating that there is a possibility of a dividend cut (i.e., “prepare” the market for a dividend cut)? Or should they wait till they in fact decide to cut their firm’s dividends before making any announcement? The former strategy seems to have been adopted by Gould, when it cut its quarterly dividend from $0.43 to $0.17 per share on December 6, 1983. Several months prior to the dividend cut, management released a statement announcing that it was reviewing the company’s dividend policy to determine its consistency with the firm’s new business strategy. On the other hand, when ITT cut its dividend from $0.69 to $0.25 per share on July 10, 1984, it seems to have adopted the latter strategy, i.e., not providing any information in advance of the actual dividend cut announcement.1

The above raises several interesting questions. First, is preparing the market or not preparing the market for a dividend cut a dominant strategy, in the sense that all firms would be strictly better off following one or the other strategy? Alternatively, is it the case that some firms are better off preparing the market while others are better off not doing so? If the latter case is true, what are the characteristics of firms that are better off preparing the market compared to those that are worse off doing so? Finally, what are the implications of a firm preparing or not

1 The anecdotes of Gould and ITT are provided by Woolridge and Ghosh (1985). They, however, do not focus on firms preparing versus not preparing the market in their empirical analysis.
preparing the market for the announcement effect upon a dividend cut, its future operating and dividend payment performance, and its future stock return performance? There has been no literature so far, either theoretical or empirical, which allows us to answer the above questions. The objective of this paper is to fill this gap in the literature. We first develop a theoretical analysis of the equilibrium choice of a firm between preparing and not preparing the market for a dividend cut. \(^2\) We then test the implications of our theory on a sample of dividend cutting firms, making use of hand-collected information indicating whether they prepared or did not prepare the market for these dividend cuts.

We consider a setting in which a firm has assets in place which will generate a high or a low intermediate cash flow, and a new positive NPV project, which needs to be funded from the firm’s internal cash flow. The firm currently pays a certain dividend, and we assume that, while a high cash flow generated by the firm’s assets in place would be adequate to not only fund the investment opportunity, but also to maintain the current dividend level, a low cash flow realization would require the firm to either cut its dividend from its current level or to pass up its growth opportunity. The equity market is characterized by asymmetric information: the manager (insider) has private information about the probability of the firm realizing a high cash flow and also the intrinsic value of its growth opportunity. We capture this private information by assuming that there are three types of firms with only the manager observing firm types to begin with. High intrinsic value (type G) firms have a high likelihood of realizing a high intermediate cash flow, and who have a high net present value growth opportunity; medium intrinsic value (type M) firms have a lower probability of realizing a high intermediate cash flow, but like high type firms, they have a high net present value growth opportunity; finally low intrinsic value (type B) firms not only have the lowest chance of realizing a high intermediate cash flow, but also have a lowest present value of growth opportunity. Low intrinsic value (type B) firms are also assumed to have a positive probability of deteriorating further (prior to a possible dividend cut), in which case their true type becomes observable to outsiders as well.

In the above setting, we analyze the equilibrium choice of a firm about whether or not to prepare the equity market

\(^2\)While aimed specifically at analyzing the optimality of preparing the market around corporate dividend cuts, our analysis also applies to market preparation around other corporate events. The most immediate application of our theory outside market preparation around dividend cuts seems to be the analysis of the optimality of firms issuing earnings warnings in the face of negative earnings surprises. While some have argued that firms are better off disclosing bad news early to lower litigation risk (e.g., Skinner, 1994), the optimality or otherwise of firms issuing earnings warnings is controversial in the accounting literature. For example, while the empirical study of Kasznik and Lev (1995) documents that warning firms experience lower stock returns than non-warning firms, the empirical study of Shu (2005) documents that, after controlling for self-selection bias, both warning and non-warning firms seem to have made the right choice of disclosure strategy (i.e., both kinds of firms would have experienced worse stock returns had they adopted the alternative strategy). Our model resolves the above controversy and characterizes the conditions under which firms will issue earnings warnings and those under which they will not.
in advance of a possible dividend cut, as well as its decision to cut or not cut its dividend (after its intermediate cash flow is realized). First consider the high intrinsic value firm. It clearly will not choose to prepare the market in equilibrium, since there is little chance that it will realize a low intermediate cash flow (and therefore little chance of its having to cut its dividend in the first place). Now consider the medium intrinsic value firm. It does have an incentive to prepare the market for a possible dividend cut, depending on the following trade off: on the one hand, preparing the market by pre-announcing that there is a possibility of a dividend cut conveys negative information to the equity market, thereby depressing the current stock price. However, in the event that the firm has to cut its dividend subsequently, pre-announcing the dividend cut indicates to the market that the firm is likely a medium intrinsic value firm rather than a low intrinsic value firm, thereby ensuring that in the event of a dividend cut, its stock price does not fall to the true level of the stock price of a low intrinsic value firm. If above benefit of preparing the market dominates the cost of doing so, the medium intrinsic value firm always prepares the market. Finally, consider the low intrinsic value firm. It faces a trade off similar to the medium intrinsic value firm: preparing the market is costly to it, since it has the effect of depressing the current stock price (the market realizes that it can not be a high intrinsic value firm) but also has benefits, since it allows the low intrinsic value firm to mimic the medium intrinsic value firm in the event of a dividend cut (thus preventing its stock price from falling to the level it would fall to if outsiders informed it to be of low intrinsic value with probability 1). However, given that the low intrinsic value firm also faces a positive probability of future deterioration (which would reveals its true type to the equity market, regardless of whether it prepared the market for a dividend cut or not), the low intrinsic value firm chooses to prepare the market with some probability and does not prepare the market with the remaining probability (i.e., it mixes between preparing and not preparing the market).

The dividend cut decision, made by firm insiders after they observe the realization of the firm’s assets-in-place cash flow, is straightforward in the above setting. All three types of firms will maintain the current level of dividends and invest in the firm’s growth opportunity if they realize a high cash flow. They will cut their dividend and implement the firm’s positive NPV growth opportunity if they realize a low cash flow. As long as the NPV of the firm’s new project is significant, no type of firm has an incentive to maintain the current dividend level in the event of realizing a low cash flow by passing up the firm’s positive net present value project, since the loss in long-term value arising from passing up the new project will be greater than any temporary stock valuation benefits from maintaining the
current dividend level.

Given the above equilibrium behavior by the three types of firms, the combination of a firm’s decision to prepare (or not prepare) the equity market for a dividend cut, and the subsequent decision to cut the dividend or not, conveys information to the equity market. First, the decision to prepare the market for a dividend cut (i.e., the decision to release a statement indicating the possibility of a dividend cut) conveys negative information to the market, since the decision indicates to outsiders that the firm is likely to be a medium or low intrinsic value (rather than a high intrinsic value) firm, who therefore use this information to amend a lower price for its equity (i.e., there is a negative stock price reaction on the market preparation day). Second, a firm that does not prepare the market but subsequently cuts its dividend conveys to outsiders that it is a low intrinsic value firm with probability 1, prompting a severe negative stock price reaction on the day of the dividend cut announcement: in this case, the information conveyed to the market is that the firm not only realized a low cash flow, but has poor long term growth opportunity as well. Finally, a firm that prepares the market and subsequently cuts its dividend conveys to outsiders that it is a medium intrinsic value with some probability and a low intrinsic value firm with the complementary probability (recall that medium intrinsic value firm always prepares the market, while a low intrinsic value firm prepares the market with some probability and does not prepare the market with the complementary probability). In this case, a dividend cut conveys negative information to the equity market, but the stock price reaction to the dividend cut will be less negative than in the previous scenario (where the firm cuts its dividend without market preparation), since the market realizes that, if the firm is a medium intrinsic value firm, the dividend cut only indicates that the firm realized a low assets-in-place cash flow (and does not indicate anything negative about its future growth opportunity).

Our analysis has implications for firms’ choice regarding whether or not to prepare the market in advance of a dividend cut, and for the optimal timing of the release of bad news in general. In particular, it implies that firms in temporary financial difficulties but good long-term growth prospects are the ones which are more likely to prepare the market in advance of dividend cuts; in contrast, those with permanently declining earnings (i.e., poor long-term growth opportunities) are less likely to prepare the market. The former category of firms are better off preparing the market (and suffering the associated stock price decline), since it allows them to credibly separate themselves (to a greater degree) from the latter category of firms in the event they do have to cut their dividends. Firms in the latter category (with poor long-term growth opportunities) are, however, less likely to prepare the market, since
they would prefer to delay revealing their true value to the equity market for as long as possible, thus enjoying a higher stock price for a longer period.

Our model also generates several other testable predictions. First, it predicts that firms cutting dividends subsequent to preparing the market will have a more favorable (less negative) announcement effect on equity compared to the announcement effect of those cutting dividends without such market preparation. Second, it predicts that the announcement effect on the market preparation day will itself be negative. Third, it predicts that the long-term operating as well as dividend payment performance subsequent to dividend cuts will be better for firms cutting dividends after some market preparation compared to those cutting dividends without such preparation. Fourth, it makes similar predictions for the long-term post-dividend-cut stock return performance of prepared versus non-prepared dividend cutters (assuming that the effects of the better expected long-term operating performance of prepared dividend cutters are not completely captured in the announcement effect on the day of the dividend cut announcement). Finally, it predicts that institutional equity holdings subsequent to dividend cuts will be larger for prepared dividend cutters compared to non-prepared dividend cutters.

We provide evidence consistent with many of the above predictions of our model, using a hand-collected data set of dividend cutting firms which allows us to distinguish between those which prepared the market prior to the dividend cut and those which did not do so. First, consistent with the first prediction of our model described above, we find that the announcement effect on equity of firms cutting dividends subsequent to market preparation is indeed less negative than that of firms cutting dividends without such market preparation. Further, consistent with our second prediction, we find a significantly negative abnormal stock returns for dividend cutters preparing the market on the market preparation day. Second, we find that the long-term operating performance of prepared dividend cutters is significantly better than that of non-prepared dividend cutters, again supporting our model’s predictions. Third, we find significant differences between prepared and non-prepared dividend cutters in their pattern of dividend payments in the years subsequent to the dividend cut. Thus, while prepared dividend cutters increase their dividends on average in the years following a dividend cut, non-prepared dividend cutters either decrease dividends or leave them unchanged. Further, we find that the long run post-dividend-cut stock return performance of prepared dividend cutters is better than that of non-prepared dividend cutters. Fifth, we find that the post-dividend-cut institutional investors’ holdings in prepared dividend cutters are larger than those in non-prepared dividend cutters. Finally, we
find that, consistent with the predictions of our analysis, firms with lower current profitability but higher long-term growth opportunities are more likely to prepare the market prior to dividend cuts.

This is the first paper in the literature to develop a theoretical analysis of the choice of a firm regarding whether or not to prepare the equity market for a dividend cut (or for any other corporate events). Thus, the theoretical literature closest to this paper is the literature on signaling through dividends: see, e.g., Bhattacharya (1979), John and Williams (1985), and Miller and Rock (1985). In contrast to the above literature (where the decision to change dividend alone conveys information to outsiders), in our setting, it is the combination of the decision whether or not to prepare the market and the dividend cut decision which conveys information to the market about the firm’s future prospects. There have also been no empirical studies of the consequences of a firm’s choice to prepare or not prepare the market. However, the small empirical literature on the timing of dividend announcement is indirectly related to our paper: see, e.g., Kalay and Loewenstein (1986), who document that late announcement of dividends (i.e., whose dividend announcement are made later than the expected announcement date) are disproportionately associated with bad news (dividend reductions). Our paper is also broadly related to the large literature analyzing the relationship between dividend changes and omissions to prior and subsequent operating performance, as well as the literature on the information content of dividend changes (see, e.g., Watts (1973), Aharony and Swary (1980), Asquith and Mullins (1983), Healy and Palepu (1988), and DeAngelo, DeAngelo, and Skinner (1992)). Our theoretical analysis (and supporting empirical findings) can explain a puzzling empirical finding of this literature, namely, that while dividend reductions are strongly related to poor earnings performance concurrently and in the immediate past, they are not a strong predictor of poor future earnings. In contrast to dividend signaling models in the existing theoretical literature, our analysis predicts that dividend cuts do not, by themselves, predict poor future operating performance; in our setting, whether dividend cuts predict poor future operating performance or not depends on the nature of the private information held by firm insiders (which, as discussed above, affects their choice of whether to prepare or not prepare the market prior to these dividend cuts).

The rest of the paper is organized as follows: In section 2, we describe the essential features of our model, and

---

3 However, there has been some practitioner oriented papers providing anecdotes indicating that at least some firm managers are concerned about preparing the market in advance of dividend cuts (see, e.g., Woolridge and Ghosh, (1985)) and also that managers are concerned about the proper manner in which to release negative information about dividends to the equity market (see, e.g., Soter, Brigham, and Evanson (1996)).

4 See also Kothari, Shu, and Wysocki (2005), who document that management, on average, delays the release of bad news to outside investors.
characterize its equilibrium in section 3. In section 4, we describe the testable predictions of our model. In section 5, we provide evidence consistent with these predictions. We conclude in section 6. The proofs of all propositions are confined to the appendix.

2 Model

The model has three dates: time 0, time 1, and time 2. There are two types of agents in the model: the firm manager (insider) and outside investors. The firm has assets in place and a new positive net present value project (growth opportunity) that it is going to implement. The firm’s assets in place will generate an intermediate cash flow at time 1 with two possible outcomes: high (h) or low (l). The new project needs an investment $I$ at time 1, and generates a payoff with a high ($H$) or low ($L$) realization at time 2. For simplicity, we normalize the low cash flow realization of the new project to be zero ($L = 0$). The investment requirement is fulfilled by internal financing, i.e., the realization of the intermediate cash flow generated from assets in place.\(^5\) At time 1, the firm pays out a dividend $D$ which is its intermediate cash flow generated from assets in place net of its investment $I$ in its new project (if it chooses to implement it). For simplicity, we assume that the firm’s current dividend level $D$ is equal to $h - I$, and $l = I = D$, i.e. if the firm has a high realization of the intermediate cash flow at time 1, after investing $I$ in the new project, the firm can maintain its current dividend level; if the firm has a low realization of its intermediate cash flow at time 1, the firm can either cut the dividend to zero if it chooses to implement the new project or pay out its current dividend level $D$ by passing up the new project. We assume that all agents are risk-neutral, the risk-free rate of return is zero, and the firm manager holds all of the firm’s equity. The sequence of events is depicted in figure 1.

2.1 Information Structure

The equity market is characterized by asymmetric information. In particular, we assume that there are three types of firms: $G$ (good), $M$ (median), or $B$ (bad), with the intrinsic value of the type $G$ firm being higher than that of the type $M$, which in turn is higher than that of the type $B$ firm, $V_G > V_M > V_B$. We denote firm type by $k$, $k \in \{G, M, B\}$, and the type $k$ firm’s probability of getting a high realization of the intermediate cash flow at time

\(^5\)For simplicity, we assume firm needs to implement the new project from internal financing, but relaxing this assumption by allowing external financing does not affect our results as long as the external financing is more costly than the internal financing.
If firm is of type B, it deteriorates with probability $\lambda$, fully revealing its true type.

New project’s cash flow is realized. Firm insiders announce a dividend cut if needed. Firm insiders choose whether or not to implement the new project.

Figure 1: Sequence of Events

1 by $\beta_k \equiv \text{prob}(h|k)$. We assume that a type $G$ firm always has a high realization of the intermediate cash flow at time 1, denoted for $\beta_G \equiv \text{prob}(h|k = G) = 1$. The bad firm always has a low realization of the intermediate cash flow at time 1, denoted for $\beta_B \equiv \text{prob}(h|k = B) = 0$. The type $M$ firm has a medium probability of getting high realization of the intermediate cash flow, denoted for $\beta_M \equiv \text{prob}(h|k = M)$. The probabilities of a high realization of the intermediate cash flow of the different types of firms satisfy:

$$0 = \beta_B < \beta_M < \beta_G = 1. \quad (1)$$

We further denote a firm’s probability of getting a high cash flow from its new project at time 2 by $\theta_k \equiv \text{prob}(H|k)$. A type $G$ firm is good at implementing the new project and has a probability $\theta_G$ to get cash flow $H$, i.e., $\theta_G \equiv \text{prob}(H|k = G)$. The type $M$ firm has a probability $\theta_M$ of getting the high cash flow $H$.\footnote{For simplicity, we assume $\theta_G = \theta_M$, but relaxing this assumption does not affect our model’s results.} The type $B$ firm has probability $\theta_B$ of getting high cash flow. The probabilities of firm’s getting a high cash flow from the new project satisfy:

$$\theta_B < \theta_M = \theta_G. \quad (2)$$

Since even the type $B$ firm has a positive net present value project, $H\theta_B - I > 0$.

While firm insiders observe the type of their own firm, outsiders observe only the prior probability distribution across firm type at time 0: outsiders believe that the firm is of type $G$ with probability $\gamma_G$; of type $M$ with $\gamma_M$;
and of type $B$ with probability $\gamma_B$; $\gamma_G + \gamma_M + \gamma_B = 1$. For mathematical simplicity, we assume that $\gamma_G = \gamma$, and $\gamma_M = \gamma_B = \frac{1-\gamma}{2}$.\(^7\) Between time 0 and time 1, a type $B$ firm may deteriorate visibly with a probability $\lambda$ such that outsiders are able to distinguish its true type from that of type $G$ and type $M$ firms; the type $B$ firm will not deteriorate with the complementary probability $(1 - \lambda)$. The higher type firms, type $M$ and type $G$ do not suffer from any probability of deterioration.\(^8\) All parameters of the model are common knowledge and outside investors can observe whether the firm implements the new project at time 1 or not. At time 2, the new project’s cash flow is realized so that the asymmetric information between firm insiders and outsiders is resolved completely.

2.2 The Manager’s Objective and Dividend Decision

The manager needs to make two different decisions regarding the dividend at different points in time. At time 0, the manager observes his true type $k$, $k = G, M, B$, and decides whether or not to prepare the market by pre-announcing a dividend cut. We denote by $a \in \Theta \equiv \{NP, P\}$, the manager’s action set at time 0, where $NP$ stands for not preparing the market and $P$ stands for preparing the market. At time 1, the manager decides whether to cut the dividend or not (and if he decides to cut, by how much) after he observes the firm’s intermediate cash flow. If the high intermediate cash flow is realized, the firm has enough cash to both fulfill the investment requirement and maintain the current dividend level $D$; if, however, the low intermediate cash flow is realized, insiders need to determine whether to cut the dividend to zero or pass up the new project.\(^9\) We denote by $b \in \Omega \equiv \{NC, C\}$, the manager’s action set at time 1, where $NC$ stands for not cutting the dividend and $C$ stands for cutting the dividend.

At time 0, the manager chooses his action $a$ to maximize his objective (3), which is the weighted average of the firm’s current, intermediate term and long-term stock price. He chooses his action $b$ at time 1 after observing the realization of the firm’s cash flow from its assets in place to maximize the value of his objective for the remainder of the game, given by (4). Then, at time 0 the manager chooses his market preparation policy $a$ to maximize

$$\max_{a \in \Theta} \alpha_0 V_0(a) + \alpha_1 E_0[V_1(a, b)] + \alpha_2 E_0[V_2(b)]$$

\(^7\)This assumption is not crucial in our model and the relaxation of the assumption does not affect the results.

\(^8\)Note that for our results to go through, all we require is some exogenous positive probability of outsiders being able to distinguish between the type $B$ and type $M$ firms at time 1. One way in which this might occur is by outsiders being able to observe an exogenous noisy indicator of the true quality of the type $B$ firm’s new project between time 0 and time 1. Further, while for simplicity, we assume that only the type $B$ firm is subject to such a probability of its true type being revealed, our results go through even if the type $M$ is also subject to such a probability, as long as the latter probability is significantly lower than that of the type $B$. See Allen and Faulhaber (1989) for a similar assumption, though in an unrelated context.

\(^9\)Since the new project has a positive net present value, it can be shown that insiders will never raise the dividend by passing up the project when they get a high realization of the intermediate cash flow.

9
s.t. \( b \in \arg \max \alpha_1 [V_1(a, b)] + \alpha_2 E_1 [V_2(b)] \) \hspace{1cm} (4)

where \( V_0, V_1 \) and \( V_2 \) denote the value of the firm equity at time 0, 1, and 2 respectively, and \( \alpha_0, \alpha_1 \) and \( \alpha_2 \) are the weights placed by the manager on the firm’s time 0, time 1, and time 2 stock price respectively.\(^{10}\)

In (3), the firm’s expected stock price at time 1 conditional on the information available to the manager at time 0 is given by \( E_0 [V_1(a, b)] = \beta_j V_1^{NC|a} + (1 - \beta_j) V_1^{C|a} \), where the superscript “ \( NC|a \) ” stands for the strategy path that the firm does not cut the dividend conditional on the manager’s action \( a \) at time 0 and the superscript “ \( C|a \) ” stands for the strategy path that the firm cuts the dividend conditional on the manager’s action \( a \) at time 0. At time 2, the firm’s stock price \( V_2 \) is \( H\theta_k \) if the firm chooses to implement its new project and is zero if the firm does not implement its new project. In other words, the firm’s stock price at time 2 is a function of its dividend decision \( b \) made at time 1, i.e. \( V_2 = V_2(b) \).

3 Equilibrium

We will now characterize the equilibrium of the model. Equilibrium strategies and beliefs in our model are defined as those constituting a Pareto dominant or Efficient Perfect Bayesian Equilibrium (PBE) which survives the Cho-Kreps intuitive criterion, where the higher type (type \( G \) and type \( M \)) firms engage only in pure strategies (i.e., only the type \( B \) firm engages in mixed strategies). Before going on to characterize the equilibrium of our model, we analyze the problem faced by each type of firm.\(^{11}\)

3.1 Analysis of the Firm’s Problem

We now analyze the trade-offs faced by the three types of firms in arriving at their equilibrium strategies. In particular, we analyze how each type firm arrives at its equilibrium choice of market preparation and dividend cuts. In our discussion below, we will focus primarily on the type \( M \) and type \( B \) firms, since, given the equilibrium choices made by the type \( M \) and the type \( B \) firms, the type \( G \) firm is always clearly worse off from mimicking the above two

\(^{10}\)Note that this simplified objective function is adopted only to minimize mathematical complexity. This objective can be shown to arise from the manager’s desire to maximize the long-term value of current shareholders’ wealth in a setting where the firm funds part of its investment requirement by issuing new equity at time 0 and at time 1. In the latter setting, the manager cares about the firm’s stock price at time 0 and at time 1 (as well as at time 2), since selling equity at an undervalued price at these two dates will dilute the equity holdings of current shareholders, thus reducing their long-term wealth.

\(^{11}\)Thus, we look for Perfect Bayesian Equilibria which maximize the objective of each type firm, by minimizing the dissipative costs incurred by them. See Fudenberg and Tirole (1991) for a formal definition of a PBE, and Milgrom and Roberts (1986) for an application of Pareto dominant or Efficient PBE to signaling games. The Cho-Kreps Intuitive Criterion is formally defined in Cho and Kreps (1987).
types of firms compared to its payoff if it follows its full information equilibrium strategy.

3.1.1 The Type G Firm’s Problem

The type G firm has a probability 1 of realizing a high intermediate cash flow at time 1, and also has favorable private information about its new project. It knows that it will have enough cash at time 1 to maintain its current dividend level $D$, and therefore it does not have any incentive to prepare the equity market for a dividend cut at time 1 since it does not need to cut its dividend in the first place. The type G firm therefore does not prepare the market at time 0, and maintains its current dividend level $D$ by distributing a cash dividend of $D = h - I$ at time 1, thus maximizing its objective.

3.1.2 The Type M Firm’s Problem

The type M firm has a moderate probability of realizing a high intermediate cash flow: with probability $\beta_M$, the type M firm will achieve a high cash flow, and with probability $1 - \beta_M$, it will achieve a low cash flow. At time 0, the type M firm chooses between one of two strategies: it either chooses to prepare the market or not. Similarly, at time 1, it will choose one of two strategies if it realizes a low cash flow: it can either cut its dividend and use the cash flow it conserves to implement the new project; alternatively, it can maintain the current level $D$ (by paying out its entire intermediate cash flow to outsiders as a dividend), while passing up its new positive NPV project. However, if the type M firm realizes a high cash flow at time 1, it does not need to make any such choice, since, in this case, it will have enough cash both to maintain its current dividend and to implement its new project. Thus, combining the two choices that the type M firm has at time 0 (preparing versus not preparing the market) with the two choices it has at time 1 (cutting its dividend versus not cutting it); the type M has four pure strategies. Below, we present the expected payoff of the type M firm if it plays each of these pure strategies.

If it prepares the market and chooses to cut the dividend if the low intermediate cash flow is realized at time 1, the type M firm’s ex ante payoff at time 0 is given by:

$$J^P_M = \alpha_0 V^P_0 + \alpha_1 [\beta_M V^{NC|P}_1 + (1 - \beta_M)V^{C|P}_1] + \alpha_2 H\theta_G,$$

where $V^{NC|P}_1$ stands for the firm’s stock price at time 1 conditional on the strategy path that it prepares the market at time 0 and does not cut the dividend at time 1, and $V^{C|P}_1$ stands for firm’s stock price at time 1 conditional on
the strategy path that it prepares the market at time 0 and cuts its dividend at time 1. With probability $\beta_M$, the type $M$ firm gets a high intermediate cash flow and maintains the current dividend level and gets the stock price of $V_1^{NC|P}$. With the complementary probability $1 - \beta_M$, it gets a low intermediate cash flow and cuts its dividend, thereby getting the stock price of $V_1^{C|P}$. The type $M$ firm’s stock price at time 2 is its expected cash flow from the new project, i.e. $H\theta_G$.

On the other hand, if a type $M$ firm prepares the market at time 0 but chooses to maintain its current dividend level by paying out $D = l$ and passing up the new project even when the low intermediate cash flow is realized at time 1, its expected payoff is given by:

$$J_{M}^{P'} = \alpha_0 V_0^P + \alpha_1 V_1^{NC|P}, \quad (6)$$

i.e., at time 1, it will get a stock price of $V_1^{NC|P}$ with probability 1 since it always implements the project regardless of the realization of the intermediate cash flow. Its stock price at time 2 will be zero because it did not implement its new project.

If, however, the type $M$ firm chooses not to prepare the market and cuts its dividend when the low intermediate cash flow is realized at time 1, its expected payoff is given by:

$$J_{M}^{NP} = \alpha_0 V_0^{NP} + \alpha_1 V_1^{NC|NP} + (1 - \beta_M) V_1^{C|NP} + \alpha_2 H\theta_G, \quad (7)$$

where $V_1^{NC|NP}$ stands for firm’s stock price at time 1 conditional on the strategy path that it does not prepare the market at time 0 and does not cut the dividend at time 1, and $V_1^{C|NP}$ stands for firm’s valuation at time 1 conditional on the strategy path that it does not prepare the market at time 0 and cuts the dividend at time 1. With probability $\beta_M$, the firm gets a high intermediate cash flow and maintains its current dividend level and gets a stock price of $V_1^{NC|NP}$. With the complementary probability $1 - \beta_M$, it gets a low intermediate cash flow and cuts its dividend and gets a stock price of $V_1^{C|NP}$. The type $M$ firm’s stock price at time 2 is unchanged no matter whether it chooses to prepare the market or not, i.e. $H\theta_G$, provided it has implemented its new project at time 1.

If, however, the type $M$ firm chooses not to prepare the market and cuts its dividend when the low intermediate cash flow is realized at time 1, its expected payoff at time 0 is given by:

$$J_{M}^{NP'} = \alpha_0 V_0^{NP} + \alpha_1 V_1^{NC|NP}. \quad (8)$$

Again, this is because at time 1 the type $M$ gets the stock price of $V_1^{NC|NP}$ with probability 1. Its stock price at
time 2 is zero because the new project was not implemented.

The type M firm chooses from the above four strategies in order to maximize its expected payoff. While the type M firm can maintain its current dividend and implement its new project if it realizes a high cash flow, it will have to cut its dividend if it realizes a low cash flow and wishes to implement its new project. Given that it may have to cut its dividend with a significant probability at time 1, the type M firm has an incentive to distinguish itself from the type B firm by preparing the market via pre-announcing a possible dividend cut at time 1. By doing so, it partially reveals its private information about its intermediate cash flow. The type M can credibly convey information by preparing the market, since, by doing so, the type M firm permanently distinguishes itself from the type G, and therefore suffers an immediate stock price drop at time 0. Thus, while the cost to the type M of preparing the market at time 0 is this immediate stock price drop upon market preparation, its benefit of preparing the market is that it can potentially distinguish itself from the type B firm in case it needs to cut its dividend at time 1, which, in turn, prevents its stock price from falling to the true stock price of a type B firm at time 1. We will discuss the type M firm’s equilibrium choice among the above four strategies in section 3.2.

3.1.3 The Type B Firm’s Problem

Unlike the type M firm, the type B firm will get a low intermediate cash flow at time 1 with probability 1. Further, there exists a probability $\lambda$ that the type B firm will deteriorate between time 0 and time 1 revealing its true type. Similar to the case of a type M firm, the type B firm can choose between preparing or not preparing the market at time 0, and subsequently cutting its dividend (and implementing its positive NPV project) or not cutting its dividend (at the cost of not implementing its positive NPV project). This yields the type B firm four pure strategies, and we present below the expected payoff to the type B firm if it plays each of these pure strategies below.12

The expressions for the type B firm’s expected payoff are very similar to the type M firm’s, with the difference that the type B firm is subject to an additional probability of deterioration $\lambda$ that fully reveals its true type between time 0 and time 1. If the type B firm prepares the market at time 0 and chooses to cut its dividend at time 1, its

---

12We allow the type B firm to mix between preparing and not preparing the market at time 0 (indeed, we will show that this is what happens in equilibrium). However, for ease of exposition, we will present the type B’s time 0 expected payoff corresponding only to its four pure strategies. Note, however, that the type B’s payoff from a mixed strategy at time 0 is simply a weighted average of its payoff from the corresponding pure strategies (with the mixing probabilities of preparing and not preparing the market serving as the weights).
expected payoff is given by:

\[ J_B^P = \alpha_0 V_0^P + \alpha_1 [\lambda V_1^{C|\text{True}} + (1 - \lambda)V_1^{C|P}] + \alpha_2 H\theta_B, \]  \hspace{1cm} (9)

where \( V_1^{C|\text{True}} \) is the firm’s valuation (stock price) at time 1 conditional on the arrival of the deterioration that fully reveals the type B true type. So, \( V_1^{C|\text{True}} = l - I + H\theta_B = H\theta_B. \) \( V_1^{C|P} \) stands for the type B firm’s valuation at time 1 conditional on the strategy path that it prepared the market at time 0 and cuts its dividend at time 1. With probability \( \lambda \), the firm’s true type is revealed and its stock price will be \( V_1^{C|\text{True}} \). With the complementary probability \( 1 - \lambda \), it keeps its true type private and gets the stock price of \( V_1^{C|P} \). Finally, the type B firm’s valuation at time 2 is its expected payoff from its new project, i.e. \( H\theta_B \).

If, however, the type B firm chooses to prepare the market at time 0 and pays out the current dividend by passing up its new project if it does not deteriorate between time 0 and time 1, its expected payoff will be given by:

\[ J_B^{P'} = \alpha_0 V_0^P + \alpha_1 [\lambda V_1^{C|\text{True}} + (1 - \lambda)V_1^{NC|P}] + \alpha_2 \lambda H\theta_B. \]  \hspace{1cm} (10)

In (10), \( V_1^{C|\text{True}} \) is the type B firm’s time 1 valuation if it deteriorates between time 0 and time 1 (this occurs with probability \( \lambda \)). \( V_1^{NC|P} \) is its time 1 valuation if it does not deteriorate and chooses to pass up its positive NPV project. The type B firm’s time 2 value will be \( H\theta_B \) if it deteriorates between time 0 and time 1 but chooses to implement its project at time 1 (with probability \( \lambda \)); the firm’s time 2 value if it chooses maintain its current dividend level at time 1 (by passing up its positive NPV project) will be zero (with the complementary probability \( 1 - \lambda \)).

If, however, the type B firm chooses not to prepare the market at time 0 and cuts its dividend at time 1, its expected payoff is given by

\[ J_B^{NP} = \alpha_0 V_0^{NP} + \alpha_1 [\lambda V_1^{C|\text{True}} + (1 - \lambda)V_1^{NC|NP}] + \alpha_2 H\theta_B. \]  \hspace{1cm} (11)

Note that the intuition underlying the derivation of (11) is similar to that of (9). Finally, if the type B firm chooses not to prepare the market at time 0 and passes up its new project at time 1 in order to maintain its current dividend level, its expected payoff is given by:

\[ J_B^{NP'} = \alpha_0 V_0^{NP} + \alpha_1 [\lambda V_1^{C|\text{True}} + (1 - \lambda)V_1^{NC|NP}] + \alpha_2 \lambda H\theta_B. \]  \hspace{1cm} (12)

\footnote{We can see that if the deterioration that reveals the type B’s true type with probability 1 arrives, the firm will always cuts its dividend and implement the new project at time 1 since it is always a dominant strategy for them the pay out the current dividend and pass up the positive net present value project, \( H\theta_B - l > 0 \) (given that, once its type is revealed, there is no longer any benefit from maintaining its current dividend, since there is no further possibility of pooling with higher type firms).}
Note that, similar to (10), the type $B$ firm’s time 2 value will be $H\theta_B$ if it deteriorates between time 0 and time 1 but chooses to implement its project at time 1; the firm’s time 2 value if it chooses maintain its current dividend level at time 1 (by passing up its positive NPV project) will be zero.

The type $B$ firm will choose between preparing and not preparing the market at time 0, and between maintaining its current dividend level (by passing up its positive NPV project) and cutting it at time 1 in order to maximize its expected payoff. The benefit to the type $B$ of not preparing the market at time 0 is that it can mimic the type $G$ at this date. However, the cost of not preparing the market is that, since (unlike the type $G$) the type $B$ will realize a low cash flow with probability 1, its true type will be revealed with probability 1 if it chooses to cut its dividend at time 1. The benefit to the type $B$ of preparing the market is that it allows it to mimic the type $M$ (we will see in the next section that the type $M$ always prepares the market in equilibrium). However, there are two costs incurred by the type $B$ if it prepares the market at time 0. First, it bears a stock price drop at time 0 by revealing that it is not a type $G$ firm, since (as we will see in the next section), the type $G$ firm never prepares the market at time 0 in equilibrium. Second, while preparing the market allows the type $B$ firm to pool with the type $M$ at time 0, it may not be able to continue pooling with the type $M$ at time 1 with probability $\lambda$ (since it will deteriorate between time 0 and time 1 with such a probability, causing its true type to be revealed). In other words, while preparing the market at time 0 allows the type $B$ to pool with the type $M$ at time 0, it is able to maintain this pooling with the type $M$ at time 1 only with a probability $(1 - \lambda)$, since its true type will be revealed between time 0 and time 1 with the remaining probability $\lambda$. Overall, the type $B$ firm chooses to prepare or not prepare the market based on trading off the above costs and benefits.

### 3.2 The Equilibrium with Market Preparation

We now characterize the equilibrium of the model involving market preparation by at least one type of firm.\textsuperscript{14}

**Proposition 1 (The Equilibrium with Market Preparation)** If $\gamma > \gamma^*$, $\beta_M < \beta_M^*$, and $\alpha_2 H\theta_B > \alpha_1([h - I] + H(\theta_G - \theta_B))$, there exists an equilibrium that involves the following:

\textsuperscript{14}It can be shown that, for the parameter values specified in proposition 1 ($\gamma > \gamma^*$, $\beta_M < \beta_M^*$, and $\alpha_2 H\theta_B > \alpha_1([h - I] + H(\theta_G - \theta_B))$), the equilibrium specified is unique: i.e., equilibrium involves market preparation by at least one type of firm. It can also be shown that there never exists an equilibrium where all three type of firms prepare the market. If, however, $\beta_M > \beta_M^*$, there exists an equilibrium where no type of firm prepares the market. Given that our primary focus in this paper is to demonstrate the existence of equilibria with market preparation and develop hypotheses for our empirical tests based on the above equilibria, we will not present the details of equilibria without market preparation here; these are, however, available to interested readers upon request.
(i) At time 0, the type G firm does not prepare the market with probability 1. The type M firm always prepares the market. The type B firm prepares the market with probability $δ^*$ and does not prepare the market with the complementary probability $(1 − δ^*)$.

(ii) At time 1, the type G firm never cuts its dividend. The type M firm maintains its current dividend level if a high intermediate cash flow is realized and cuts its dividend if a low intermediate cash flow is realized. The type B firm always cuts its dividend from the current level. All three types of firms implement their positive NPV project regardless of the realization of the firm’s time 1 intermediate cash flow.\(^{15}\)

In the above equilibrium, the type G firm never prepares the market at time 0, since firm insiders anticipate that they will realize the high cash flow at time 1 with probability 1, so that they will always have enough cash flow to maintain the current dividend level and also to implement their new project at time 1. In equilibrium, the type M firm prepares the market with probability 1 as long as $β_M < β_M^∗$. This is because, when $β_M$ is small, the type M firm faces a large probability of cutting its dividend at time 1, and it wants to distinguish itself from the type B firm in case that it has to cut the dividend. By doing so, it partially reveals its private information about its intermediate cash flow. The type M can credibly convey information by preparing the market, since, by doing so, it permanently distinguishes itself from the type G, and therefore suffers an immediate stock price drop at time 0. Thus, while the cost to the type M of preparing the market at time 0 is this immediate stock price drop upon market preparation, its benefit of preparing the market is that it can potentially distinguish itself from the type B firm in case it needs to cut its dividend at time 1, which, in turn, will allow it to attain a higher share price at time 1.

The type B firm mixes between preparing and not preparing the market in equilibrium. The benefit to the type B of not preparing the market at time 0 is that it can mimic the type G at this date. However, the cost of not preparing the market is that, since (unlike the type G) the type B will realize a low cash flow with probability 1, its true type will be revealed with probability 1 if it chooses to cut its dividend at time 1 without preparing the market. The benefit to the type B of preparing the market is that it allows it to mimic the type M at time 1, attaining a higher share price. However, there are two costs incurred by the type B if it prepares the market at time 0.

\(^{15}\)Consistent with the above equilibrium, outsiders believe a firm that does not prepare the market at time 0 and does not cut its dividend at time 1 to be of the type G with probability 1; on the other hand, they believe a firm that does not prepare the market at time 0 but cuts its dividend at time 1 to be of type B with probability 1. If a firm prepares the market at time 0, and does not cut its dividend at time 1, outsiders believe the firm to be type M with probability 1. Finally, if a firm prepares the market at time 0, and cuts its dividend at time 1, outsiders believe the firm to be of type M with probability $\frac{1 − β_M^∗}{1 − β_M + δ^∗}$, see (19.2) for details. They believe such a firm to be type B with probability $\frac{δ}{1 − β_M + δ}$, see (19.3) for details. Since all possible moves available to each type of firm are along the equilibrium path, we do not need to specify any off-equilibrium-path beliefs here.
0. First, it bears a stock price drop at time 0 by revealing that it is not a type G firm, since the type G firm never prepares the market at time 0 in equilibrium. Second, while preparing the market allows the type B firm to pool with the type M at time 0, it may not be able to continue pooling with the type M at time 1 with probability \( \lambda \) (since it will deteriorate between time 0 and time 1 with such a probability, causing its true type to be revealed). In equilibrium, the type B balances the above costs and benefits of preparing versus not preparing the market, choosing the probability of preparing the market \( \delta^* \) such that it is indifferent between preparing and not preparing the market at time 0.

In equilibrium, no type of firm will choose to maintain its current dividend level at time 1 by passing up its positive NPV project. The type G firm never faces such a choice between maintaining its current dividend level and passing up its positive NPV project, since it always realizes a high cash flow at time 1 (recall that a high cash flow is adequate not only to maintain the firm’s current dividend level, but also to implement the firm’s new project). The type M firm, however, will face a choice between implementing its positive NPV project and maintaining its current dividend level if it realizes a low cash flow at time 1. However, as long as the NPV of its new project is large enough and firm insiders place enough weight on the firm’s long-term (time 2) cash flow, i.e., \( \alpha_2 H \theta_B > \alpha_1 [(h - I) + H(\theta_G - \theta_B)] \), the type M firm will prefer to cut its dividend and implement its new project if it realizes a low intermediate cash flow at time 1. This is because, the long-term value benefit to current shareholders achieved from implementing the firm’s positive NPV project at time 1 dominates the short-term benefit arising from attaining a temporarily high share price by maintaining its current dividend level (arising from distinguishing itself from the type B with a higher probability).

The type B firm will also face such a choice between implementing its positive NPV project and maintaining its current dividend level. However, similar to the type M, the type B firm will also choose to cut its dividend and implement its positive NPV project as long as the NPV of its new project is large enough and firm insiders place enough weight on the firm’s long-term (time 2) cash flow. The type B firm has a short-term (time 1) benefit from maintaining its current dividend level by passing up it positive NPV project, since (in the scenario where it does not deteriorate) this allows it to mimic higher type firms (either type G or type M, depending on whether or not it prepared the market at time 0) attaining a higher time 1 share price. However, as long as the NPV of the firm’s project is large enough and firm insiders put sufficient weight on its long-term (time 2) share value, the long-term
benefit arising from implementing the firm’s positive NPV project dominates any such short-term benefits.

We now discuss in detail the beliefs of outsiders in response to the equilibrium strategies adopted by each type, and the resulting valuation of the firm’s equity at time 0 and time 1 (recall that, since there is no information asymmetry at time 2, equity is correctly valued at this date).

At time 0, upon observing a firm preparing the market for a possible dividend cut at time 1, outsiders update their beliefs about the type of the firm using Bayes’ Rule as:

\[
\gamma^P_G = 0; \quad (13.1)
\]

\[
\gamma^P_M = \frac{\gamma_M}{\gamma_M + \gamma_B \delta} = \frac{1}{1 + \delta}; \quad (13.2)
\]

\[
\gamma^P_B = \frac{\gamma_B \delta}{\gamma_M + \gamma_B \delta} = \frac{\delta}{1 + \delta}. \quad (13.3)
\]

Based on the above updated beliefs, outsiders value a firm upon market preparation at time 0 as:

\[
V_0^P = V_1^{NC|P}(\gamma_M \beta_M) + V_1^{C|P}[\gamma_M(1 - \beta_M) + \gamma_B]. \quad (14)
\]

The above valuation is derived from the firm’s valuation at time 1 conditional on preparing the market at time 0 and subsequently not cutting or cutting its dividend, \(V_1^{NC|P}\) and \(V_1^{C|P}\) respectively (weighted by the probabilities that they occur, taking into account outsiders’ updated beliefs at time 0 about firm type). If a firm does not cut its dividend conditional on market preparation, outsiders infer with probability 1 that it is a type \(M\) firm that has a high realization of its intermediate cash flow. The valuation \(V_1^{NC|P}\) (given by (18), and discussed in detail below) will reflect this inference of outsiders. If, on the other hand, a firm cuts its dividend conditional on market preparation, outsiders infer that it is either a type \(M\) firm that has a low realization of its intermediate cash flow (given by 19.2) or a type \(B\) firm has a low realization of the intermediate cash flow (given by 19.3). The valuation \(V_1^{C|P}\) (given by 20, and discussed in detail below) will reflect this inference of outsiders.

On the other hand, upon observing a firm not preparing the market at time 0 for a possible dividend cut at time 1, outside investors update their belief about the firm type using Bayes’ Rule as:

\[
\gamma^{NP}_G = \frac{\gamma_G}{\gamma_G + \gamma_B (1 - \delta)} = \frac{2\delta}{2\delta + (1 - \delta)(1 - \gamma)}; \quad (15.1)
\]

\[
\gamma^{NP}_M = 0; \quad (15.2)
\]

\[
\gamma^{NP}_B = \frac{\gamma_B (1 - \delta)}{\gamma_G + \gamma_B (1 - \delta)} = \frac{(1 - \delta)(1 - \gamma)}{2\delta + (1 - \delta)(1 - \gamma)}. \quad (15.3)
\]
Based on the above updated beliefs, outsiders value a firm not preparing the market at time 0 as:

$$V_0^{NP} = V_1^{NC|NP} \gamma_G^{NP} + V_1^{C|NP} \gamma_B^{NP}. \quad (16)$$

The above time 0 valuation is derived from the firm’s valuation at time 1 conditional on preparing the market at time 0 and subsequently not cutting or cutting its dividend, $V_1^{NC|NP}$ and $V_1^{C|NP}$ respectively (weighted by the probabilities that they occur, taking into account the above updated beliefs of outsiders at time 0 about firm type). If a firm does not cut its dividend after not preparing the market, outsiders infer that it is of the type $G$ with probability 1. The valuation $V_1^{NC|NP}$ (given by (22), and discussed in detail below) will reflect this inference of outsiders. If a firm cuts its dividend after not preparing the market at time 0, outsiders infer that it is of the type $B$ with probability 1. The valuation $V_1^{C|NP}$ (given by (24), and discussed in detail below) will reflect this inference of outsiders.

At time 1, in equilibrium, the type $G$ firm maintains its dividend at its current level with probability 1, and the type $B$ firm cuts its dividend with probability 1. The type $M$ firm maintains its dividend at current level if a high intermediate cash flow is realized at time 1 and cuts its dividend if a low intermediate cash flow is realized. Upon observing a firm’s dividend cut decision at time 1, outsiders will look back whether or not the firm prepared the market at time 0, updating their beliefs about firm type based on the path followed by the firm. Overall, there are four dynamic paths a firm can follow, and we will discuss outside investors’ updated beliefs and the firm’s valuation along each path. The four possible equilibrium paths and outside investors’ beliefs about the firm’s true type along these paths are given in figure 2.

**Path 1. The firm prepares the market at time 0, but does not cut its dividend at time 1:** If outsiders observe that a firm that prepared the market at time 0 did not cut its dividend at time 1, they will infer that the firm is of type $M$ with probability 1, since a type $G$ firm never prepares the market at time 0 and a type $B$ firm always cuts its dividend at time 1. Correspondingly, their updated beliefs about firm type at time 1 are:

$$\gamma_{NC|P}^G = 0; \quad (17.1)$$
$$\gamma_{NC|P}^M = 1; \quad (17.2)$$
$$\gamma_{NC|P}^B = 0. \quad (17.3)$$

\footnote{We prove in the appendix that no firm has an incentive to deviate from the equilibrium strategy path at time 1 by maintaining the current dividend level by passing up its new project if a low intermediate cash flow is realized.}
Consistent with the above beliefs, outsiders value such a firm at time 1 as follows:

\[ V_{1}^{NC|P} = (h - I) + H\theta_{G}. \]  

The above value is given by the sum of the current cash flow from the firm, \( h - I \), and the type M firm’s expected time 2 cash flow from its new project, \( H\theta_{G} \).

**Path 2. The firm prepared the market at time 0 and cuts its dividend at time 1:** If outsiders observe that a firm that prepared the market at time 0 cut its dividend at time 1, they infer that it is a type M firm with a certain probability or a type B firm with the complementary probability. This is because a type G firm never prepares the market, and both a type M and a type B firm may potentially prepare the market and cut its dividend in equilibrium. Correspondingly, outsiders update their beliefs about the type of the firm at time 1 as:

\[ \gamma_{G}^{C|P} = 0; \]  

\[ \gamma_{M}^{C|P} = \frac{\gamma_{M}(1 - \beta_{M})}{\gamma_{M}(1 - \beta_{M}) + \gamma_{B}} = \frac{1 - \beta_{M}}{1 - \beta_{M} + \delta}; \]  

\[ \gamma_{B}^{C|P} = \frac{\gamma_{B}}{\gamma_{M}(1 - \beta_{M}) + \gamma_{B}} = \frac{\delta}{1 - \beta_{M} + \delta}. \]  

Consistent with the above beliefs, outsiders value such a firm at time 1 as follows:

\[ V_{1}^{C|P} = H(\gamma_{M}^{C|P}\theta_{G} + \gamma_{B}^{C|P}\theta_{B}). \]  

The above time 1 value is given by the average of the expected time 2 cash flows from a type M and a type B firm, respectively, weighted by the above updated beliefs of outsiders of the firm being of type M or type B, conditional on
market preparation at time 0 and a dividend cut at time 1 (recall that, since the firm cuts its dividend, the current cash flow to outsiders from the firm is zero).

Path 3. The firm did not prepare the market at time 0 and does not cut the dividend at time 1: If outsiders observe that a firm that did not prepare the market at time 0 did not cut its dividend at time 1, they infer that the firm is of type $G$ with probability 1, since a type $M$ firm always prepares the market at time 0 and a type $B$ firm always cuts its dividend at time 1. Correspondingly, their updated beliefs about its type at time 1 are:

\[
\gamma_{G|NP}^{NC} = 1; \quad (21.1)
\]
\[
\gamma_{M|NP}^{NC} = 0; \quad (21.2)
\]
\[
\gamma_{B|NP}^{NC} = 0. \quad (21.3)
\]

Consistent with the above beliefs, outsiders value such a firm at time 1 as follows:

\[
V_1^{NC|NP} = (h - I) + H\theta_G. \tag{22}
\]

The above value is given by the sum of the current cash flow from the firm, $h - I$, and the type $M$ firm’s expected time 2 cash flow from its new project, $H\theta_G$.

Path 4. The firm did not prepare the market at time 0 but cuts its dividend at time 1: If outsiders observe that a firm that did not prepare the market at time 0 cut its dividend at time 1, they infer that the firm is of type $B$ with probability 1, since a type $M$ firm always prepares the market at time 0 and a type $G$ firm never cuts its dividend at time 1. Correspondingly, their updated beliefs about the type of the firm at time 1 are:

\[
\gamma_{G|NP}^{C} = 0; \quad (23.1)
\]
\[
\gamma_{M|NP}^{C} = 0; \quad (23.2)
\]
\[
\gamma_{B|NP}^{C} = 1. \quad (23.3)
\]

Consistent with the above beliefs, outsiders value such a firm at time 1 as follows:

\[
V_1^{NC|P} = H\theta_B. \tag{24}
\]

The above value is given by the type $B$ firm’s expected time 2 cash flow from its new project, $H\theta_B$ (recall that, since the firm cuts its dividend, the current cash flow to outsiders from the firm is zero).

21
Proposition 2 \textit{(Announcement Effect and Long-term Operating Performance)} In the equilibrium characterized above:

(i) The stock price of any firm drops upon market preparation (at time 0) for a dividend cut.

(ii) The stock price drops upon the announcement of a dividend cut (at time 1), whether or not the firm previously prepared the market.

(iii) The negative stock price reaction upon a dividend cut announcement (at time 1) will be more severe for firms that did not prepare the market compared to those that prepared the market.

(iv) The long-term post-dividend cut operating performance of a dividend cutting firm will be higher on average for prepared dividend cutters relative to that of non-prepared dividend cutters.

The intuition behind the above proposition is as follows. As can be seen from figure 2 and as previously discussed, when outsiders observe a firm preparing the market at time 0, outsiders infer that the firm is of type $M$ with a certain probability and of type $B$ with the complementary probability. On the other hand, if a firm does not prepare the market at time 0, outsiders infer that the firm is of type $G$ with a certain probability and of type $B$ with the complementary probability, as previously discussed. So, if the proportion of the type $G$ firms in the economy is not too small, i.e., $\gamma > \gamma^*$, the stock price of a firm drops upon the market preparation for a dividend cut because outsiders believe that the firm that prepares the market is more likely to be a worse type firm relative to a firm that does not.

The intuition behind part (ii) of this proposition also can be seen from figure 2. If the firm prepared the market at time 0, cutting dividends at time 1 makes outsiders believe that the firm belongs to a pool consisting of the type $M$ and the type $B$ firm (path 2), while not cutting dividends fully reveals the firm’s type to be of type $M$ (path 1). Therefore, conditional on market preparation, cutting its dividend reveals a firm’s true type to be type $M$ with some probability and of type $B$ with the complementary probability. On the other hand, if the firm did not prepare the market at time 0, cutting its dividend reveals the firm’s true type to be of type $B$ (path 4), while not cutting its dividend reveals the firm to be of type $G$ (path 3). Given the above beliefs, again, the stock price will drop upon the dividend cut announcement. Overall, the announcement effect of a dividend cut will be negative regardless of whether or not the firm prepared the market at time 0.
The intuition behind part (iii) of proposition 2 is as follows. The difference in a firm’s true value between its cutting and not cutting its dividend conditional on not preparing the market is bigger than that conditional on its preparing the market at time 0 (i.e., the difference between time 1 firm values along path 3 and along path 4 is larger than the difference between the time 1 firm values along path 1 and path 2). If the firm did not prepare the market at time 0, cutting its dividends at time 1 reveals it to be of type B while not cutting its dividends reveals its true type to be of type G. On the other hand, if the firm prepared the market, cutting its dividends at time 1 makes outsiders infer that the firm belongs to a pool of type M and type B firms, while not cutting its dividends reveals its true type is to be of type M. Correspondingly, the negative stock price reaction upon a dividend cut announcement (at time 1) will be more severe for firms that did not prepare the market compared to those that prepared the market.

The intuition behind part (iv) of proposition 2 can be seen from figure 2 as well. In equilibrium, prepared dividend cutters belong to a pool of type M and type B firms (path 2), while non-prepared dividend cutters are of type B firms with probability 1 (path 4). Hence, on average, prepared dividend cutters will have higher intrinsic values relative to non-prepared dividend cutters. Correspondingly, our model predicts that the long-term post-dividend cut operating performance will be better for prepared dividend cutters relative to non-prepared dividend cutters.

**Proposition 3 (Propensity to Prepare the Market)** Let $\alpha_0 = \alpha_1 = 1$ and $\beta_M = \frac{2\gamma\lambda}{1 - \gamma + 2\gamma\lambda}$. Then:

(i) The type B firm’s equilibrium probability of preparing the market, $\delta^*$, is (a) increasing in the net present value of its growth opportunity and (b) decreasing in the firm’s current profitability.

(ii) The type B firm’s equilibrium probability of preparing the market, $\delta^*$, is also decreasing in its deterioration probability, $\lambda$.

Part (i) of the above proposition studies how cash flows generated from the firm’s assets in place (current profitability) and its new project (future growth opportunity) affect the type B firm’s incentive to prepare the market.$^{17}$ Part (a) says that, holding other parameters constant, the higher the firm’s cash flow generated from its new investment opportunity, the more likely the firm is to prepare the market. The intuition behind this result is that, as $H$ increases, the type B firm’s benefit of pooling with the type M firm via preparing the market increases because one of the differences between the type M and the type B firm is the probability of getting the high cash

$^{17}$For mathematical simplicity, we assume $\alpha_0 = \alpha_1 = 1$. Relaxing this simplifying assumption does not qualitatively affect our results.
flow $H$ at time 2 and a higher $H$ makes pooling with the type $M$ firm both at time 0 and time 1 more attractive to
the type $B$ than pooling with the type $G$ firm at time 0 and revealing its true type at time 1. Therefore, the type $B$
firm’s incentive to prepare the market increases as the high cash flow $H$ from the firm’s project (and therefore its new
project NPV) increases. Part (b) says that holding other parameters constant, the higher the firm’s intermediate
cash flow generated from assets in place, the less likely the firm is to prepare the market. The intuition behind this
result is that as the asset-in-place cash flow $h$ increases, the type $B$ firm’s benefit of pooling with the type $G$ firm
(rather than the type $M$) by not preparing the market increases because the difference between the type $G$ and the
type $M$ firm lies in the probability of getting the high intermediate cash flow $h$ at time 1: a higher $h$ makes pooling
with the type $G$ more attractive to the type $B$ than pooling with the type $M$. Consequently, the type $B$ firm’s
incentive to prepare the market decreases as $h$ increases.

The intuition behind part (ii) of proposition 3 is as follows. Increasing the probability of deterioration $\lambda$ reduces
the type $B$ firm’s benefit from preparing the market, since, as this probability increases, the type $B$ is less likely to be
able to mimic the type $M$ firm at time 1 even after incurring the cost of preparing the market at time 0. Given that
the type $B$ firm’s benefit from preparing the market decreases as $\lambda$ increases, its equilibrium probability of market
preparation, $\delta^*$, also decreases with $\lambda$.

4 Implications and Testable Hypotheses

Our model generates several testable predictions, which we describe below. We will test these implications in the
next section of this paper.

1.  Announce ment effect of “prepared” versus “non-prepared” dividend cut ters in response to dividend cut an
    nouncements: Our model predicts that the announcement effect on equity of firms cutting dividends subsequent to
    preparing the market will be less negative compared to that of firms cutting dividends without sufficiently preparing
    the market (our model predicts that the announcement effect will be negative for both kinds of firms). This will be
    hypothesis ($H_1$) that we test later.

2.  Announce ment effect on the market preparation day: Our model implies that some information will be
    conveyed to the market on the market preparation day: i.e., on the day when a firm releases a statement indicating
    that they are reviewing its dividend policy, and may have to cut its dividend. In particular, our model predicts that
the announcement effect on equity on the market preparation day will be negative. This is hypothesis \( H_2 \) we test later.

3. **Long-run operating performance of prepared versus non-prepared dividend cutters:** Given that, in our setting, it is the firms with the most unfavorable private information who are likely to cut dividends without preparing the market, our model predicts that the operating performance of firms subsequent to dividend cuts will be better for those cutting dividends subsequent to market preparation compared to those cutting dividends without market preparation \( (H_3) \).

4. **Dividend payment performance subsequent to dividend cuts:** A prediction related to our prediction (3) above is that the dividend payment performance subsequent to dividend cuts will be better for prepared dividend cutters compared to non-prepared dividend cutters. This prediction arises from the fact that, in the longer term, dividend payment performance cannot deviate significantly from operating performance: in other words, firms with better operating performance are likely to increase dividends more often (and by larger amounts) than those with poorer operating performance \( (H_4) \).

5. **Propensity to prepare the market:** Our comparative statics results have implications for the nature of firms that are more likely to “prepare the market”. In particular, our model predicts that firms with greater future growth opportunities are more likely to prepare the market, while those with higher current profitability are less likely to prepare the market prior to cutting dividends \( (H_5) \).

6. **Long-term stock returns of prepared versus non-prepared dividend cutters:** If we assume that all investors are fully rational, and instantly infer firm insiders’ private information from their choice to prepare the market for a dividend cut or not, then our model does not generate any prediction for the long-term stock returns of prepared versus non-prepared dividend cutters. If, however, firm insiders’ private information is not fully reflected in the stock price on the day of announcement of dividend cuts, but is incorporated only over a longer period, then our model predicts superior long-term stock return performance for prepared dividend cutters relative to non-prepared dividend cutters (as the superior operating performance of prepared dividend cutters relative to non-prepared dividend cutters gets reflected in stock prices over time). This is therefore the sixth hypothesis \( (H_6) \) that we test here.

7. **Changes in institutional investors’ holdings subsequent to dividend cuts:** Our model predicts that investors will infer that firms which cut dividends after preparing the market are likely to have better subsequent operating
performance than those which cut dividends without adequate market preparation. Assuming that institutional investors reduce their equity holdings in firms expected to perform poorly in the future and increase their holdings in those expected to perform better, our model predicts that institutional investors’ holdings in prepared dividend cutters will be larger than those in non-prepared dividend cutters ($H_7$).

5 Empirical Evidence

5.1 Data and Sample Selection

The data used in this study came from several different databases. We collect a sample consisting of firms that reduced their cash dividends between 1991 and 2002 from the Center for Research in Securities Prices (CRSP) database. Each observation in the sample satisfies the following criteria: (1) The firm’s financial data is available on the CRSP database and COMPUSTAT files, (2) the distribution is a quarterly cash dividend in U.S. dollars, (3) the cash dividend change is greater than 12.5 percent to ensure that we include only economically significant dividend decreases, (4) the cash dividend is not paid out by financial institutions, (5) the firm is publicly traded, and (6) there is at least a period of one year between two successive dividend cuts by the same firm. The first five criteria are standard in the literature; the last criterion is required because we want to test the effects of the pre-announcement of dividend cuts and need to have a long enough “window” to isolate the effect of any previous dividend cuts. The resulting sample contains 218 announcements of dividend decreases. The maximum dividend decrease in our sample is 100 percent, namely, dividend omissions. We then hand collect data about market preparation for dividend cuts by searching for news articles from one year to 30 days before the dividend cut announcement date from Factiva (formerly Dow Jones News Retrieval Service) by key strings of “dividend cuts”, “restructuring”, “financial strategy”, “conserve cash”, “dividend omissions”, “spokesman (spokeswoman)”, and “customer relations”. We classify the firm as a prepared dividend cutter if there is any information released by firm insiders about a potential dividend cut at least 30 days before the formal announcement date of the dividend cut (but no formal dividend cut is actually announced); otherwise, the firm is classified as a non-prepared dividend cutter. If the firm has multiple market preparations, the earliest date that the firm pre-announces the dividend cut is recorded as the market preparation date. Out of 218 announcements of dividend cutters, 58 firms are coded as prepared dividend
cutters and the remaining 160 are coded as non-prepared dividend cutters. Dividend cutting firms with market preparation account for 27% of all the dividend cutters, which suggests that market preparation for dividend cuts is a prevalent phenomenon.

Information on stock prices and returns necessary to analyze announcement effects, subsequent dividend payout performance, and stock return performance was obtained from the CRSP database. Financial statement and accounting information necessary to study the operating performance of firms was obtained from COMPUSTAT files. Information on analysts earning forecasts and the actual earnings data for firms necessary to measure information asymmetry was obtained from I/B/E/S.

We construct proxy variables for firms’ profitability, size, growth opportunity, leverage, tangibility, and cash availability following standard procedures in the literature. Following Christie (1987), Krishnaswami and Subramanian (1999), and Clarke and Shastri (2001), we construct three different measures of information asymmetry. The first measure is the number of analysts following the firm, Numest. It is the average number of analysts following the firm in the last month prior to the announcement of a dividend cut. Firms with larger analyst following can be expected to have a lower degree of information asymmetry. The second measure is the error in analysts’ earning forecasts, Forecast Error. It is the average ratio of the absolute difference between the forecasted and actual earnings per share over the absolute actual earnings per share in the last month prior to the announcement of a dividend cut. Firms with a higher analyst forecast error can be expected to have a greater extent of information asymmetry. The third measure we use is the standard deviation of analyst earnings forecasts, Stdest. It is the average standard deviation of analyst earnings forecasts in the last month prior to the announcement of a dividend cut. Firms with a higher standard deviation of analyst earnings forecasts are expected to have a greater extent of information asymmetry.

Table 1 reports the summary statistics and results of univariate comparisons across the two categories of dividend cutters. Prepared dividend cutters pre-announce the dividend cut on average 104 days prior to the formal announcement. Prepared dividend cutters cut their dividend on average 4.5 percent more than non-prepared dividend cutters; however, the difference is not statistically significant. This indicates that our following results from comparing prepared and non-prepared dividend cutters do not come from the fact that those two groups of firms have systematically different magnitudes of dividend cuts. In addition, it can be seen that prepared dividend cutters are significantly larger firms, and they have lower dividend yields and higher leverage levels than their counterparts.
Prepared dividend cutters have less information asymmetry than non-prepared dividend cutters: they have 5 more analysts following them and a lower forecast error than non-prepared dividend cutters and the differences are significant. Other proxies for profitability, growth opportunity, tangibility, and cash availability are not significantly different across the two groups of firms.

5.2 Empirical Tests and Results

In this section, we discuss the empirical methodology used to test our hypotheses and report the results from our univariate and multivariate analyses.

5.2.1 Announcement Effect of Prepared Versus Non-prepared Dividend Cuts

In this subsection, we study the equity market reaction to market preparation for dividend cuts and the announcement effect of dividend cuts. We test hypothesis $H_1$, which states that the announcement effects of a prepared dividend cut is more favorable (less negative) than a non-prepared dividend cut, and $H_2$, which states that stock price drops upon market preparation for a dividend cut.

Table 2 presents the announcement effect of prepared versus non-prepared dividend cuts. The equity market reaction for each firm was computed as the cumulative abnormal return (CAR) for a particular window around the announcement day of the dividend cut. Daily abnormal returns were computed using the market model for two market indexes: equally-weighted and value-weighted CRSP indexes. Market model parameters are estimated over 250 trading days ending 46 trading dates before the pre-announcement with at least 100 non-missing daily returns in the estimation period. Equity market price reactions are calculated for six different windows for each market index ranging from three days before to three days after the dividend cut announcement day. Table 2 shows that prepared dividend cuts have a negative announcement effect that is statistically insignificant, while all non-prepared dividend cuts have a negative announcement effect that is statistically significant. The difference in means shows that prepared dividend cuts have a significantly more favorable (less negative) announcement effects than all non-prepared dividend cuts for windows of $-1$ to $0$ day, $0$ day, $-3$ to $0$ day, and $-3$ to $+3$ days around the announcement date. These results support hypothesis $H_1$.

Considering the fact that prepared dividend cutters are larger firms, we do a robustness check by matching each
prepared dividend cutter with a non-prepared dividend cutter in the same industry and with a similar firm size and operating performance. We follow Loughran and Ritter (1997) to select a matched non-prepared dividend cutter for each prepared dividend cutter and then compare the announcement effect of prepared dividend cutters with respect to their non-prepared counterparts. The matching algorithm is as follows. Each prepared dividend cutter is matched with a non-prepared dividend cutter that is in the same industry (using 2-digit SIC codes) with asset size at the end of the fiscal year prior to dividend cut between 25 to 200 percent of the prepared dividend cutter, and then the non-prepared dividend cutters with the closest operating income before depreciation (OIBD) relative to asset was chosen. If no non-prepared dividend cutter met these criteria then the industry requirement was dropped and a matching dividend cutter was chosen with asset size within 90 to 100 percent of the prepared dividend cutter and with closest, but higher, OIBD/Assets ratio. If a matched dividend cutter does not have accounting data for a particular year of study, we replace it with the next closest match. Table 2 shows the announcement effect of prepared dividend cutters and matched non-prepared dividend cutters. Similar to the results between prepared and all non-prepared dividend cutters, matched non-prepared dividend cutters have a significantly negative announcement effect across all six windows, and prepared dividend cutters have a significantly less negative announcement effect than matched non-prepared dividend cutters for windows of −1 to +1 day, −3 to 0 day, −3 to +3 days, and 0 to +3 days around the announcement date. These results, again, are consistent with our theory’s predictions and support hypothesis H₁.

Table 3 reports the equity market reaction on the market preparation day. The market preparation date is taken to be the earliest day that firm insiders pre-announce the dividend cut if there are multiple market preparations. We use the same methodology used for the announcement effect of a dividend cut to compute CARs for six different windows around the market preparation day. Table 3 shows that the stock price drops significantly upon the pre-announcement of a dividend cut. These results are consistent with our model’s predictions and support the hypothesis H₂.

An important concern one may have is whether the reason why we find a less negative stock price reaction to the market preparation of dividend cuts is that prepared dividend cutters have already suffered a stock price drop on the market preparation date, as reported in Table 3. To address this concern, we calculate the combined stock market reactions (the sum of market reactions on both the market preparation day and the dividend cut announcement day)
of prepared dividend cutters and compare this with announcement effect of matched non-prepared dividend cutters. Table 4 reports these results. It can be seen that matched non-prepared dividend cutters have a significant larger negative stock market reaction compared to prepared dividend cutters’ combined stock market reaction, indicating that prepared dividend cutters suffer a smaller overall stock market value loss compared to non-prepared dividend cutters.

5.2.2 Long-Term Operating Performance of Prepared Versus Non-prepared Dividend Cutters

In this subsection, we study the long-term operating performance of prepared and non-prepared dividend cutters after the dividend cut. We test hypothesis $H_3$, which states that the long-term operating performance of prepared dividend cutters after a dividend cut will be better compared to that of non-prepared dividend cutters.

Due to the difference in size of two groups of dividend cutters documented in Table 1, we compare the long-term operating performance of prepared dividend cutters with their matched non-prepared dividend cutters. We use four measures of operating performance: ROA, Profit Margin, EBIT/Assets, and OIBD/sales, where ROA is the return on assets (net income (Compustat item 172)/total assets (Compustat item 6)), Profit Margin is operating income before depreciation (Compustat item 13) divided by sales (Compustat item 12), EBIT/Assets is the ratio of earning before interest and tax (Compustat item 18 + item 15 + item 50 (if any)) and total assets, and OIBD/sales is the operating income before depreciation plus interest income (Compustat item 62) dividend by sales.

Table 5 presents mean operating performance ratios of prepared dividend cutters, their matched non-prepared dividend cutters, and mean difference between the performance ratios of prepared dividend cutters and matched non-prepared cutters, respectively. We report the operating performance measures for the dividend cut year (year 0) and six years post-dividend cut (year 1 through year 6). The performance of prepared dividend cutters is very similar to that of their respective matches from year 0 to year 3, and the mean differences between prepared dividend cutters and their matched non-prepared dividend cutters are not significantly different from zero. Starting from year 4 after the dividend cut, prepared dividend cutters outperform their counterparts for all four operating performance measures and the mean differences are significantly positive. In addition, the mean differences are larger in year 6 than those in year 4 and year 5, which indicate prepared dividend cutters’ long-term operating performance becomes better as time goes by. These results show that compared to the respective matched non-prepared dividend cutters,
prepared dividend cutters perform better in the years after the initial dividend cut, which supports our hypothesis $H_3$.

### 5.2.3 Subsequent Dividend Performance

In this subsection, we study the dividend payment performance subsequent to a dividend cut of prepared versus non-prepared dividend cutters. We test our hypothesis $H_4$, which states that prepared dividend cutters will have a better long-run dividend payout performance relative to non-prepared dividend cutters.

We study the long-run dividend performance of prepared dividend cutters relative to two benchmarks, namely, all non-prepared dividend cutters and matched non-prepared dividend cutters in each of the eight years after the dividend cut. Matched non-prepared dividend cutters are selected following the Loughran and Ritter (1997) matching algorithm described before. For each of the eight years after the initial dividend cut, we calculate the cumulative average dividend change rate for three portfolios: a portfolio of prepared dividend cutters and the two benchmark portfolios. As mentioned above, the first benchmark portfolio is a portfolio of the entire sample of non-prepared dividend cutters; the second benchmark portfolio is a portfolio of matched non-prepared dividend cutters. Our calculation of the dividend change rate is based only on ordinary quarterly cash dividends; any special dividends, stock splits, and stock dividends are excluded. The cumulative average dividend change rate is calculated in two steps: we first calculate the average quarterly dividend change rate within the calendar year after the dividend cut as $\Delta DIV_t = \frac{1}{4} \sum_{i=1}^{4} \frac{DIV_{i,t} - DIV_{i,t-1}}{DIV_{i,t-1}}$; second, we calculate the cumulative average dividend change rate for the subsequent eight years as $\sum_{t=1}^{T} \Delta DIV_{i,t}$, where $T$ is the number of years subsequent to the dividend cut. We then calculate the difference between the cumulative average dividend change rate of prepared dividend cutters and that of the entire sample of non-prepared dividend cutters and also the difference between the cumulative average dividend change rate of prepared dividend cutters and that of matched non-prepared dividend cutters.

Panel A of Table 6 presents the cumulative average dividend change rate of prepared dividend cutters relative to all non-prepared dividend cutters. Several interesting findings are as follows. First, prepared dividend cutters have a better dividend performance subsequent to the dividend cut. On average, by the end of the eighth year after the dividend cut, prepared dividend cutters’ cumulative dividend change rate is 385% while that of non-prepared dividend cutters is only −2%. Second, prepared dividend cutters increase their dividend subsequent to the initial dividend...
cut while all non-prepared dividend cutters, on average, reduce their dividend further after the initial dividend cut. Last, the difference between the cumulative dividend change rate of prepared and all non-prepared dividend cutters becomes significant from year 3 onwards (the third year after the dividend cut) and remains significant through year 8. Panel B of Table 6 presents the cumulative average dividend change rate of prepared dividend cutters relative to their matched non-prepared dividend cutters. All findings in Panel A hold in Panel B as well, except that the difference in cumulative dividend change rates across the two groups becomes significant from year 5 through year 8.

These results of our cumulative average dividend change rate analysis indicate that within eight years after the dividend cut, the dividend payment performance subsequent to dividend cuts of prepared dividend cutters is better compared to that of non-prepared dividend cutters. These results support our hypothesis $H_4$.

5.2.4 Propensity to Prepare the Market

In this subsection, we study the propensity for dividend cutting firms to prepare the market and test hypothesis $H_5$. We test the hypothesis by running logit regressions controlling for various factors including size, market-to-book ratio, information asymmetry, leverage, and payout ratio.

In the logit regressions, the dependent variable takes the value of 1 if the firm prepares the market and 0 if the firm does not prepare the market in advance of the dividend cut. We are interested in how firms’ future growth opportunities and current profitability affect their propensity to prepare the market. We therefore construct two independent variables. First, we use the three-year average growth in sales subsequent to a dividend cut as a proxy for a firm’s future growth opportunity. Second, we use a firm’s profit margin during the dividend cut year, which is the ratio of firm’s operating income before depreciation (Compustat item 13) and sales (Compustat item 12) as the proxy for its current profitability. In order to find unbiased estimates, we control for various other factors that potentially affect the firm’s propensity to prepare the market. First, from Table 1, we find that prepared dividend cutters are statistically and economically larger than non-prepared dividend cutters. To control for this, we use logarithm of assets as the control variable in various regressions. Second, information asymmetry is another factor that can affect the firm’s likelihood of preparing the market. We use three variables, $Forecast\ Error$, $Numest$, $Stdest$, to control for the effect of information asymmetry. Finally, we control for other firm characteristics such as leverage,
market-to-book ratio, tangibility, and payout ratio to get unbiased estimates.

In summary, the logit regression equation we estimate to test $H_5$ is as follows:

\[ \text{PREPARE}_i = \beta_0 + \beta_1 \text{GROWTH}_i + \beta_2 \text{PROFIT}_i + \beta_3 \text{SIZE}_i + \beta_4 \text{INFO\_ASY}_i + \beta_5 \text{CHARAC}_i + \epsilon_i. \]  

(25)

If $H_5$ is supported, we expect $\beta_1$ to be positive and $\beta_2$ to be negative.

Table 7 reports the logit regression results. Column (1) presents how firms’ growth opportunities alone affect its likelihood of preparing the market. As expected, we find that $\beta_1$ to be positive and significant, which suggests that higher a firm’s future growth opportunity, higher its likelihood of preparing the market. Column (2) through column (7) present the results of regressions controlling for various sets of firm characteristics. Specifically, we control for firm size and information asymmetry in all specifications. Consistent with regression 1, $\beta_1$ is significantly positive regardless of specification. As expected, $\beta_2$ is significantly negative through all regressions suggesting that firms with lower current profitability are more likely to prepare the market. As a robustness check, we run the same regressions using a probit model and get similar results.\textsuperscript{18} Thus, our findings are consistent with hypothesis $H_5$, i.e., a firm with higher future growth opportunities and lower current profitability is more likely to prepare the market in advance of a dividend cut.

\textbf{5.2.5 Long-Term Stock Returns}

In this subsection, we study the long-term stock returns of prepared versus non-prepared dividend cutters. We test the hypothesis $H_6$, which states that the long-term stock returns of prepared dividend cutters after a dividend cut will be better compared to that of non-prepared dividend cutters. We test this hypothesis by analyzing the intercepts of the Fama and French (1993) three-factor model based on calendar-time monthly portfolio returns. We construct the calendar-time portfolio returns by averaging monthly returns of firms that cut dividends within 60 months of the announcement date. We present results both for equally and event-weighted the calendar periods and for both equally and value-weighted return portfolios.

Panel A of Table 8 reports results for prepared versus all non-prepared dividend cutters, and also for prepared versus matched non-prepared dividend cutters with equally weighted portfolios via OLS regressions. The intercept of the Fama-French (1993) three-factor model for the prepared dividend cutters is negative but insignificant, while\textsuperscript{18} The results are not reported here but available to interested readers upon request.
the same intercepts for all non-prepared dividend cutters as well as for matched non-prepared dividend cutters are significantly negative. Panel B of Table 8 reports similar results with equally weighted portfolios via WLS regressions. The intercept of Fama-French (1993) three-factor model for the prepared dividend cutters is insignificant while that of all non-prepared dividend cutters is negative and significant. Although the intercept of matched non-prepared dividend cutters is insignificant as well, the magnitude of the intercept is smaller for prepared dividend cutters relative to matched non-prepared dividend cutters. Panel C reports results with value weighted portfolios via OLS regressions and Panel D reports results with value weighted portfolios via WLS regressions. In both these cases, the intercept of Fama-French (1993) three-factor model for the prepared dividend cutters is more positive but insignificant relative to that of all non-prepared dividend cutters as well as that of matched non-prepared dividend cutters. These results indicate that prepared dividend cutters have better long-term stock market performance relative to their non-prepared dividend cutters.

Overall, our results support hypothesis H_6, since the long-run stock performance of prepared is better than that of non-prepared dividend cutters, for the five year period after a dividend cut.

5.2.6 Institutional Investors' Holdings Subsequent to Dividend Cuts

In this subsection, we study the long-term institutional investors' holdings of prepared versus non-prepared dividend cutters. We test hypothesis H_7, which states that institutional investors' equity holdings in prepared dividend cutting firms will be larger than those in non-prepared dividend cutting firms.

We retrieve institutional investors' holdings data from Spectrum Institutional (13f) Holdings Database of Thomson Financial. Table 9 reports institutional investors' holdings 8 years subsequent to the dividend cut year. The institutional investors' holdings are calculated as the percentage of the number of shares held by institutional investors as a fraction of the total number of shares outstanding in the firm reported in CRSP. Panel A presents institutional investors' equity holdings in prepared dividend cutters relative to the entire sample of non-prepared dividend cutters, and also institutional investors' equity holdings in prepared versus matched non-prepared dividend cutters (these equity holdings are measured in the years after the dividend cut). It can be shown that, starting from the third year subsequent to the dividend cut, institutional investors’ equity holdings in prepared dividend cutters are significantly larger than those in non-prepared dividend cutters. Panel B presents the number of institutional
investors of prepared relative to non-prepared dividend cutters for ten years subsequent to the dividend cut. The results in Panel B are similar to those in Panel A: relative to non-prepared dividend cutters, prepared dividend cutters have more institutional investors holding their shares. In summary, we find support for hypothesis $H_7$ since our findings indicates that, subsequent to dividend cuts, institutional investors’ holdings in prepared dividend cutters are larger than those in non-prepared dividend cutters.

6 Conclusion

This paper has presented the first theoretical as well as the first empirical analysis of the choice of firms between preparing or not preparing the equity market in advance of a possible dividend cut. We use a hand-collected data set of dividend cutting firms that allows us to distinguish between prepared and non-prepared dividend cutting firms. In our model, a firm has assets in place (which will generate an intermediate cash flow), and a growth opportunity. Firm insiders have private information not only about the probability of their firm realizing a high intermediate cash flow, but also about the net present value of its growth opportunity. In the above setting, we characterized the firm insiders’ equilibrium choice between preparing and not preparing the market, as well as their decision regarding whether or not to cut the firm’s dividend (subsequent to the realization of the firm’s intermediate cash flow). We showed that, in equilibrium, firms in temporary financial difficulties but good long-term growth prospects prepare the market in advance of dividend cuts, while those with permanently declining earnings are less likely to prepare the market. Our analysis generated several testable predictions. First, the abnormal stock returns upon the announcement of a dividend cut will be less negative for prepared compared to non-prepared dividend cutting firms. Second, the abnormal stock returns of firms preparing the market for a dividend cut will be negative on the market preparation day. Third, the long-run operating, dividend payment, stock return performance, and institutional investors’ holdings of prepared dividend cutting firms will be better than that of non-prepared dividend cutting firms. Fourth, the post-dividend-cut equity holdings of institutional investors in prepared dividend cutting firms will be larger than those in non-prepared dividend cutting firms. The results of our empirical analysis support the above prediction of our theory.
References


Appendix: Proofs of Propositions

Proof of Proposition 1: (i) At time 0, each type of firm has two possible choices: prepares or not prepares the market for a possible dividend cut at time 1. In the following, we will calculate the payoffs to each type of firm following each choice, and then derive the conditions under which the choice made by each type of firm maximizes its expected payoff at time 0, given its equilibrium action at time 1 and outsiders’ equilibrium beliefs about their type.

For the type \( G \) firm, if it chooses to prepare the market, its expected payoff at time 0 is

\[
J_G^p = \alpha_0 V_0^p + \alpha_1 V_1^{NC|P} + \alpha_2 H \theta_G. 
\]

On the other hand, if it chooses not to prepare the market, its expected payoff at time 0 is

\[
J_G^{NP} = \alpha_0 V_0^{NP} + \alpha_1 V_1^{NC|NP} + \alpha_2 H \theta_G. 
\]

Since \( V_1^{NC|NP} = V_1^{NC|P} = h - I + H \theta_G \), we only need to compare \( V_0^{NP} \) and \( V_0^P \), where

\[
V_0^{NP} = V_1^{NC|NP} \gamma_B^{NP} + V_1^{C|NP} \gamma_B^{NP} \text{ and } V_0^P = V_1^{NC|P} (\gamma_B M) + V_1^{C|P} (\gamma_B M (1 - \beta_M) + \gamma_B^P). 
\]

If \( \gamma > \gamma^* \) where

\[
\gamma^* = \frac{(h-I) \beta_M (1-\delta) + H (1-\delta) (\theta_G - \theta_B)}{(1+\delta) (h-I) (2+\beta_M - H (\theta_G - \theta_B))},
\]

then \( V_0^{NP} > V_0^P \) and further \( J_G^{NP} > J_G^P \). Therefore, if \( \gamma > \gamma^* \), the type \( G \) firm always chooses not to prepare the market at time 0.

For the type \( M \) firm, if it chooses to prepare the market, its expected payoff at time 0 is

\[
J_M^p = \alpha_0 V_0^p + \alpha_1 [\beta_M V_1^{NC|P} + (1 - \beta_M) V_1^{C|P}] + \alpha_2 H \theta_G. 
\]

On the other hand, if it chooses not to prepare the market, its expected payoff at time 0 is

\[
J_M^{NP} = \alpha_0 V_0^{NP} + \alpha_1 [\beta_M V_1^{NC|NP} + (1 - \beta_M) V_1^{C|NP}] + \alpha_2 H \theta_G. 
\]

If \( \beta_M < \beta^*_M \), where

\[
\beta^*_M = \frac{B - \sqrt{B^2 + 4AC}}{2A}
\]

with

\[
A = 2 \{1 + 1 + \delta + \gamma \delta \} \{ \alpha_0 (h - I) - \alpha_1 H (1 + \delta) (\theta_G - \theta_B) \} \}
\]

\[
B = \alpha_0 (h - I) (1 + \delta) (1 - \delta + \gamma (3 + \delta)) - H (1 - \gamma - \delta + \gamma \delta) (\theta_G - \theta_B) - 2 \alpha_1 H (1 + \delta) (\theta_G - \theta_B) (1 + \gamma - \delta + \gamma \delta);
\]

\[
C = 1 + \delta \{ \alpha_0 [H (1 - \gamma - \delta + \gamma \delta) (\theta_G - \theta_B) - 2 \gamma (h - I) (1 + \delta)] + \alpha_1 H (\theta_G - \theta_B) (1 + \gamma - \delta + \gamma \delta) \},
\]

we can show \( J_M^p > J_M^{NP} \), so that the type \( M \) firm always prepare the market in equilibrium.

For the type \( B \) firm, if it chooses to prepare the market, its expected payoff at time 0 is

\[
J_B^p = \alpha_0 V_0^p + \alpha_1 [\lambda V_1^{C|True} + (1 - \lambda) V_1^{C|P}] + \alpha_2 H \theta_B. 
\]

On the other hand, if it chooses not to prepare the market, its expected payoff at time 0 is

\[
J_B^{NP} = \alpha_0 V_0^{NP} + \alpha_1 [\lambda V_1^{C|True} + (1 - \lambda) V_1^{C|NP}] + \alpha_2 H \theta_B. 
\]

The type \( B \) firm plays a mixed strategy by choosing \( \delta \), the probability of preparing the market, such that it equalizes its expected payoff of preparing and not preparing the market. Therefore, the equilibrium value of \( \delta \) makes \( J_B^p = J_B^{NP} \), and is given by

\[
\delta^* = \frac{B' + \sqrt{B'^2 + 4ACC'}}{2A},
\]

where
\[ A' \equiv \alpha_0 \{ H (\theta_G - \theta_B) (1 + \delta) + h - I \} \left[ (1 - \gamma) \beta_M + 2\gamma \right] + \alpha_1 H (1 - \beta_M) (1 - \gamma) (1 - \lambda) (\theta_G - \theta_B); \quad (A.4) \]

\[ B' \equiv \alpha_0 \{ (h - I) \left[ (1 - \gamma) \beta_M^2 + 4\gamma (1 + \beta_M) \right] + H (\theta_G - \theta_B) \left[ \beta_M (1 + \gamma) - 2\gamma \right] \} + 2\alpha_1 H \gamma (1 - \lambda) (1 - \beta_M) (\theta_G - \theta_B); \quad (A.5) \]

\[ C' \equiv (1 - \beta_M) \{ \alpha_0 [(h - I) [2\gamma - (1 - \gamma) \beta_M] - (1 - \gamma) H (\theta_G - \theta_B)] - \alpha_1 H (1 - \lambda) (\theta_G - \theta_B) (1 + \gamma) \}. \quad (A.6) \]

(ii). At time 1, since the type \( G \) firm always has a high realization of the intermediate cash flow and can both maintain its current dividend level and implement the new project, it will always keep its current dividend level and implement the new project in equilibrium. Since the type \( M \) firm has a non-zero probability of realizing a low intermediate cash flow, it has two possible choices if it has a low realization of the intermediate cash flow: cuts its dividend and implement the new project or pass up the new project. Since the type \( B \) firm will realize a low intermediate cash flow with probability 1 and deteriorate with a non-zero probability, it has two possible choices if does not deteriorate: cuts its dividend and implement the new project or pass up the new project. In the following, we will calculate the payoffs to both type \( M \) and type \( B \) firms following each choice, and then derive the conditions under which the firm’s choice at time 1 maximizes its expected payoff, given its equilibrium action at time 0 and outsiders’ equilibrium beliefs about its type.

For the type \( M \) firm, if it chooses to cut its dividend when the low intermediate cash flow is realized, its expected payoff at time 0 conditional on preparing the market is

\[ J_M^P = \alpha_0 V_0^P + \alpha_1 \beta_M V_1^{NC|[P]} + (1 - \beta_M) V_1^{C|[P]} + \alpha_2 H \theta_G. \]

On the other hand, if the type \( M \) firm chooses pass up the new project by maintaining its current dividend level, its expected payoff at time 0 conditional on preparing the market is

\[ J_M^{P'} = \alpha_0 V_0^{P'} + \alpha_1 V_1^{NC|[P]}. \]

Then the difference in expected payoffs between these two actions would be

\[ J_M^P - J_M^{P'} = \alpha_1 (1 - \beta_M) \frac{\delta H (\theta_G - \theta_B)}{1 - \beta_M + \delta} - (h - I) + \alpha_2 H \theta_G, \]

and the type \( M \) firm will choose to implement the new project if the low intermediate cash flow is realized if and only if

\[ \alpha_2 H \theta_G > \alpha_1 (1 - \beta_M) [(h - I) - \frac{\delta H (\theta_G - \theta_B)}{1 - \beta_M + \delta}]. \quad (A.7) \]

By a similar logic, if the type \( M \) firm chooses to cut its dividend and implement its new project when the low intermediate cash flow is realized, its expected payoff at time 0 conditional on not preparing the market is

\[ J_M^{NP} = \alpha_0 V_0^{NP} + \alpha_1 \beta_M V_1^{NC|[NP]} + (1 - \beta_M) V_1^{C|[NP]} + \alpha_2 H \theta_G. \]

On the other hand, if the type \( M \) firm chooses to maintain its current dividend level by passing up the new project, its expected payoff at time 0 conditional on not
preparing the market is $J_{M}^{NP'} = \alpha_{0} V_{0}^{NP} + \alpha_{1} V_{1}^{NC|NP'}$. Then the difference in expected payoffs between these two actions would be $J_{M}^{NP} - J_{M}^{NP'} = \alpha_{1} (1 - \beta_{M}) [H(\theta_{B} - \theta_{G}) - (h - I)] + \alpha_{2} H \theta_{G}$, and the type $M$ firm will choose to implement the new project if the low intermediate cash flow is realized if and only if

$$\alpha_{2} H \theta_{G} > \alpha_{1} (1 - \beta_{M}) [(h - I) + H(\theta_{G} - \theta_{B})].$$

Similarly, for the type $B$ firm, if it chooses to cut its dividend and implement its new project if it does not deteriorate, its expected payoff at time 0 conditional on preparing the market is $J_{B}^{P} = \alpha_{0} V_{0}^{P} + \alpha_{1} [\lambda V_{1}^{C|True} + (1 - \lambda) V_{1}^{C|P}] + \alpha_{2} \lambda H \theta_{B}$. On the other hand, if the type $B$ firm chooses to maintain its current dividend level by passing up its new project if it does not deteriorate, its expected payoff at time 0 conditional on preparing the market is $J_{B}^{P'} = \alpha_{0} V_{0}^{P} + \alpha_{1} [\lambda V_{1}^{C|True} + (1 - \lambda) V_{1}^{NC|P}] + \alpha_{2} \lambda H \theta_{B}$. The difference in expected payoffs between these two actions would be $J_{B}^{P} - J_{B}^{P'} = \alpha_{1} [\frac{\delta H (\theta_{G} - \theta_{B})}{1 - \beta_{M} + \delta} - (h - I)] + \alpha_{2} H \theta_{B}$, and the type $B$ firm will choose to implement the new project if the deterioration does not occur if and only if

$$\alpha_{2} H \theta_{B} > \alpha_{1} [(h - I) - \frac{\delta H (\theta_{G} - \theta_{B})}{1 - \beta_{M} + \delta}].$$

By the similar logic, if the type $B$ chooses to cut its dividend and implement its new project if it does not deteriorate, its expected payoff at time 0 conditional on not preparing the market is $J_{B}^{NP} = \alpha_{0} V_{0}^{NP} + \alpha_{1} [\lambda V_{1}^{C|True} + (1 - \lambda) V_{1}^{C|NP}] + \alpha_{2} \lambda H \theta_{B}$. On the other hand, if the type $B$ firm chooses to maintain its current dividend level by implementing the new project when the deterioration does not occur, its expected payoff at time 0 conditional on not preparing the market is $J_{B}^{NP'} = \alpha_{0} V_{0}^{NP} + \alpha_{1} [\lambda V_{1}^{C|True} + (1 - \lambda) V_{1}^{NC|NP}] + \alpha_{2} \lambda H \theta_{B}$. The difference in expected payoffs between these two actions would be $J_{B}^{NP} - J_{B}^{NP'} = \alpha_{1} [H(\theta_{B} - \theta_{G}) - (h - I)] + \alpha_{2} H \theta_{B}$, and the type $B$ firm will choose to implement the new project if the deterioration does not occur if and only if

$$\alpha_{2} H \theta_{B} > \alpha_{1} [(h - I) + H(\theta_{G} - \theta_{B})].$$

If the type $B$ deteriorates, it has no benefit from maintaining its current dividend, since it is already revealed as a type $B$. Given that its project has a positive NPV, the type $B$ will always choose to cut its dividend and implement the new project if it deteriorates. Combining equation (A.7) through (A.10), we get the necessary and sufficient condition for the type $M$ firm chooses to implement the new project if a low intermediate cash flow is realized and the type $B$ firm chooses to implement the new project if the deterioration does not occur is

$$\alpha_{2} H \theta_{B} > \alpha_{1} [(h - I) + H(\theta_{G} - \theta_{B})].$$
Q.E.D.

Proof of Proposition 2: (i): It has already been shown that if $\gamma > \gamma^*$, where $\gamma^* = \frac{(h - I) \beta_M (1 - \delta) + H (1 - \delta) (\theta_G - \theta_B)}{(1 + \sigma) [H - I] (2 + \beta_M) - H (\theta_G - \theta_B)}$, then $V^N_0 > V^P_0$ from the proof of proposition 1, so that the stock price of any firm drops upon market preparation for a dividend cut.

(ii): Substituting from the definitions of $V^C|NP$, $V^C|NP$, $V^NC|P$, and $V^C|P$ from the main text, we can prove the following relations:

\[ V^NC|NP - V^C|NP = h - I + H (\theta_G - \theta_B) > 0; \quad (A.11) \]
\[ V^NC|P - V^C|P = h - I + H (\theta_G - \theta_B) \frac{\delta}{1 - \beta_M + \delta} > 0, \quad (A.12) \]

so that the stock price drops upon the announcement of a dividend cut, whether or not the firm previously prepared the market.

(iii): Making use of equation (A.11) and equation (A.12), we can prove the following relation:

\[ (V^NC|NP - V^C|NP) - (V^NC|P - V^C|P) = H (\theta_G - \theta_B) \frac{1 - \beta_M}{1 - \beta_M + \delta} > 0, \quad (A.13) \]

so that the negative stock price reaction upon a dividend cut announcement will be more severe for firms that did not prepare the market compared to those that prepared the market.

(iv): In equilibrium, prepared dividend cutters belong to a pool of the type $M$ and the type $B$ firm while non-prepared dividend cutters are of the type $B$ with probability 1. Prepared cutters’ cash flow at time 2 will be $H(\theta_G + \delta \theta_B)$, while non-prepared cutters’ cash flow at time 2 will be $(1 - \delta)H\theta_B$. The difference between prepared and non-prepared cutters’ cash flow is then given by:

\[ H (\theta_G - \theta_B) > 0, \quad (A.14) \]

so that the long-term post-dividend cut operating performance of a dividend cutting firm will be higher on average for prepared dividend cutters relative to that of non-prepared dividend cutters.

Q.E.D.

Proof of Proposition 3: (i): Making use of the parameter restrictions that $\beta_M = \frac{2 \lambda \epsilon}{\delta \gamma^2 + \gamma}$, $(a) \frac{\partial \delta^*}{\partial \eta}$ can be shown to be given by $\frac{AB - E}{2 \sqrt{D^2 - 4BC}} + \frac{AD \sqrt{D^2 - 4BC} + D}{2C \sqrt{D^2 - 4BC}}$, where

\[ A \equiv (\theta_G - \theta_B) [\lambda^2 (1 - \beta_M) + (2 - \beta_M - \lambda)] > 0; \quad (A.15) \]
\[
B \equiv (h-I)(1-\beta_M)[2\gamma - \beta_M (1+\gamma)] + H(\theta_G - \theta_B)(1-\beta_M)[2-\gamma (1+\lambda)] > 0; \quad (A.16)
\]
\[
C \equiv (h-I)[2\gamma + \beta_M (1-\gamma)] + H(\theta_G - \theta_B)[\lambda^2 (1-\beta_M) + (2-\beta_M - \lambda)] > 0; \quad (A.17)
\]
\[
D \equiv (h-I)\frac{4(1-\gamma)[\gamma (1-\gamma) + \gamma \lambda^2 (2-\gamma)]}{(1-\gamma + 2\gamma \lambda)^2} > 0; \quad (A.18)
\]
\[
E \equiv (\theta_G - \theta_B)(1-\beta_M)(\gamma \lambda + \lambda - 2) < 0. \quad (A.19)
\]

The signs of the expressions (A.15), (A.16), (A.17), and (A.19) are obvious since \(\beta_M = \frac{2\gamma \lambda}{1-\gamma + 2\gamma \lambda} < \frac{2\gamma}{1+\gamma}\) and \(2\gamma - \beta_M (1+\gamma) > 0\), and (A.16) is positive by the model’s assumptions about parameter values. Based on the above relations, the first element of \(\frac{\partial \delta^*}{\partial h}\) is positive and the second element of \(\frac{\partial \delta^*}{\partial h}\) is positive as well.

Therefore, we can show that \(\frac{\partial \delta^*}{\partial h} = \frac{AB-E}{C\sqrt{B^2-4BC}} + \frac{AD(\sqrt{D^2-4BC}+D)}{2C\sqrt{B^2-4BC}} > 0\), i.e., the type B firm’s equilibrium probability of preparing the market, \(\delta^*\), is increasing in the net present value of its growth opportunity.

\[(b)\text{ Again using the parameter restrictions on } \beta_M\text{, we can show }\frac{\partial \delta^*}{\partial h}\text{ to be given by}
\]
\[
\begin{align*}
A' & \equiv H(\theta_G - \theta_B)(1-\beta_M)[2-\gamma (1+\lambda)] + (h-I)[2\gamma + \beta_M (1-\gamma)] > 0; \quad (A.20) \\
B' & \equiv (h-I)[4\gamma (1-\beta_M) + \beta_M^2 (1-\gamma)] > 0; \quad (A.21) \\
C' & \equiv H(\theta_G - \theta_B)(1-\beta_M)[\lambda^2 (1-\beta_M) + 2-\gamma (1+\lambda)] + (h-I)[2\gamma + \beta_M (1-\gamma)] > 0; \quad (A.22)
\end{align*}
\]
\[
D' \equiv 2\gamma + \beta_M (1-\gamma) > 0; \quad (A.23)
\]
\[
E' \equiv 4\gamma (1-\beta_M) + \beta_M^2 (1-\gamma) > 0; \quad (A.24)
\]
\[
F' \equiv (1-\beta_M)[2\gamma - \beta_M (1+\gamma)] > 0. \quad (A.25)
\]

Using the same logic as we used in part (a) of this proposition, \(2\gamma - \beta_M (1+\gamma) > 0\), and therefore \(F' > 0\). In addition, since \(A' > 0\) and \(C' > 0\), \(\sqrt{B'^2-4AC'} < B'\). Based on the above relations, \(E' \left(\sqrt{B'^2-4AC'} - B'\right) \left(C' + 2D'\right) < 0\).

Therefore, we can show that \(\frac{\partial \delta^*}{\partial k} = \frac{E' \left(\sqrt{B'^2-4AC'} - B'\right) \left(C' + 2D'\right)}{2C'\sqrt{B'^2-4AC'}} < 0\), i.e., the type B firm’s equilibrium probability of preparing the market, \(\delta^*\), is decreasing in the firm’s current profitability.

\[(ii):\text{ Making use of the parameter restrictions that } \alpha_0 = \alpha_1 = 1\text{, we can show that }\frac{\partial \delta^*}{\partial \alpha}\text{ is given by}
\]
\[
A \equiv H(\theta_G - \theta_B)(1-\beta_M) > 0; \quad (A.26)
\]
\[ B \equiv -(h - I)(1 + \beta_M) + H(\theta_G - \theta_B)[\beta_M (1 - \lambda) + \lambda - 3] < 0; \quad (A.27) \]

\[ C \equiv 2(h - I)(1 + \beta_M) + (h - I)\beta_M^2 + H(\theta_G - \theta_B)(\beta_M + \lambda + \lambda\beta_M) > 0; \quad (A.28) \]

\[ D \equiv (h - I)(1 + \beta_M)(1 + 2\beta_M) + H(\theta_G - \theta_B)(1 - \beta_M)(3 - 2\lambda) > 0. \quad (A.29) \]

Based on the above relations, it can be shown that \(-A(C - B)\left(\sqrt{C^2 - 4BD} + C\right) < 0\) and \(AB(2D - B) < 0\) so that the numerator of \(\frac{\partial \delta^*}{\partial \lambda}\) is negative; while at the same time, it is easy to see that the denominator of \(\frac{\partial \delta^*}{\partial \lambda}\) is positive. Therefore, \(\frac{\partial \delta^*}{\partial \lambda} = \frac{-A(C - B)(\sqrt{C^2 - 4BD} + C) + AB(2D - B)}{2B\sqrt{C^2 - 4BD}} < 0\), i.e., the type B firm’s equilibrium probability of preparing the market, \(\delta^*\), is decreasing in its deterioration probability, \(\lambda\).

Q.E.D.
Table 1: Summary Statistics of Prepared and Non-prepared Dividend Cutters

This table reports the descriptive statistics for the sample of firms that reduce their dividends between 1991 and 2002 about their market preparation days, profitability, sizes, growth opportunities, leverages, asset tangibility, and cash availabilities. Preparation_Day is the number of days between dividend cut market preparation date and formal announcement date of dividend cuts. ΔDiv is the change in dividends. ROE is return on equity, defined as the operating income before depreciation divided by book value of equity. EBIT/A is the ratio of earnings before interest and firm assets. ROA is return on assets, defined as the operating income before depreciation divided by total assets. EARN is the non-operating income before depreciation divided by assets. Profit Margin is the operating income before depreciation divided by total sales. M/B is the market to book ratio, which is defined as the aggregate market value of the firm divided by aggregate book value. Log (assets) is equal to the natural logarithm of assets. Asset Growth is the change rate of assets. ShareRepur is defined as the ratio of expenditure on share repurchases in the dividend cut year and total assets. Cash is the ratio of cash and short-term interest and total assets. CapitalExpe equals capital expenditure divided by total assets. DivRatio is the dividend ratio, defined as the cash dividend divided by net income before extraordinary items. DivYield is the cash dividend divided by market equity value. Leverage equals book value of long-term debt, book value of short-term debt, and notes payable divided by book value of the firm. Tangibility equals the plant, property, and equipment divided by book value of assets. R&D/A is research and development expenditure divided by assets. Forecast_Error is defined as the absolute value of the difference between earnings forecast and actual earnings divided by the absolute value of actual earnings. Numest is the number of analyst estimates. Stdest is defined as the standard deviation of analyst forecasts. The main data about firm accounting information is obtained from Compustat, and the data about analyst’s forecasts is obtained from I/B/E/S. ***, **, and * indicate significance of t-statistics for the test of difference in means between two sub-samples at the 1, 5, and 10 percent levels, respectively.

<table>
<thead>
<tr>
<th></th>
<th>Prepared Dividend Cutters</th>
<th>Non-prepared Dividend Cutters</th>
<th>Difference in Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>Preparation_Day</td>
<td>58</td>
<td>104.43</td>
<td>88</td>
</tr>
<tr>
<td>ΔDiv (%)</td>
<td>56</td>
<td>-56.69</td>
<td>-50</td>
</tr>
<tr>
<td>ROE (%)</td>
<td>57</td>
<td>28.72</td>
<td>25.87</td>
</tr>
<tr>
<td>EBIT/A (%)</td>
<td>54</td>
<td>1.69</td>
<td>2.53</td>
</tr>
<tr>
<td>ROA (%)</td>
<td>57</td>
<td>8.88</td>
<td>8.92</td>
</tr>
<tr>
<td>EARN (%)</td>
<td>57</td>
<td>0.65</td>
<td>0.54</td>
</tr>
<tr>
<td>Profit Margin (%)</td>
<td>57</td>
<td>14.79</td>
<td>12.80</td>
</tr>
<tr>
<td>M/B</td>
<td>57</td>
<td>1.13</td>
<td>0.98</td>
</tr>
<tr>
<td>Log(assets)</td>
<td>57</td>
<td>8.23</td>
<td>8.56</td>
</tr>
<tr>
<td>Asset Growth (%)</td>
<td>56</td>
<td>13.91</td>
<td>10.36</td>
</tr>
<tr>
<td>Sales Growth (%)</td>
<td>56</td>
<td>1.01</td>
<td>0.33</td>
</tr>
<tr>
<td>ShareRepur (%)</td>
<td>52</td>
<td>1.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Cash (%)</td>
<td>57</td>
<td>5.62</td>
<td>2.52</td>
</tr>
<tr>
<td>CapitalExpe (%)</td>
<td>57</td>
<td>5.12</td>
<td>4.64</td>
</tr>
<tr>
<td>DivRatio</td>
<td>55</td>
<td>31.63</td>
<td>14.31</td>
</tr>
<tr>
<td>DivYield (%)</td>
<td>55</td>
<td>6.04</td>
<td>5.08</td>
</tr>
<tr>
<td>Leverage (%)</td>
<td>56</td>
<td>35.71</td>
<td>35.05</td>
</tr>
<tr>
<td>Tangibility (%)</td>
<td>57</td>
<td>44.90</td>
<td>46.69</td>
</tr>
<tr>
<td>R&amp;D/A (%)</td>
<td>58</td>
<td>0.77</td>
<td>0</td>
</tr>
<tr>
<td>Numest</td>
<td>56</td>
<td>13.65</td>
<td>12.79</td>
</tr>
<tr>
<td>Forecast_Error</td>
<td>55</td>
<td>0.59</td>
<td>0.21</td>
</tr>
<tr>
<td>Stdest</td>
<td>55</td>
<td>0.19</td>
<td>0.10</td>
</tr>
</tbody>
</table>
Table 2: Abnormal Stock Returns of Prepared, All Non-prepared, and Matched Non-prepared Dividend Cutters on Dividend Cut Announcement Day

This table reports the abnormal stock returns upon announcement of prepared, all non-prepared and matched non-prepared dividend cuts. Matched non-prepared dividend cutting firms are chosen following Loughran and Ritter’s (1997) matching algorithm. The non-prepared dividend cutters have to be in the same industry (using 2-digit SIC codes) with asset size at the end of the previous fiscal year relative to the dividend cut year between 25 to 200 percent of the prepared dividend cutters, and then the non-prepared dividend cutter with the closest operating income before depreciate on, amortization, and taxes (OIBD) relative to assets was chosen. If no non-prepared dividend cutters met these criteria then industry requirement was dropped and a matching firm was chosen with asset size within 90-100 percent of the prepared dividend cutters and with closest, but higher OIBD/Assets ratio. Announcement effect for each dividend cut is computed as the cumulative abnormal return (CAR) for a particular window around the announcement day of the dividend cut. Daily abnormal returns are computed using market model for two market indexes: equally-weighted (EW) and value-weighted (VW) CRSP indexes. Market model parameters are estimated over 250 trading days ending 46 trading days before the dividend cut announcement with at least 100 non-missing daily returns in the estimation period. Dividend cut announcement date is denoted as date 0. ***, **, and * indicate significance of t-statistics for the equality of means of two sub-samples at the 1, 5, and 10 percent levels, respectively.

<table>
<thead>
<tr>
<th>Window</th>
<th>Prepared Dividend Cutters</th>
<th>All Non-prepared Dividend Cutters</th>
<th>Matched Non-prepared Dividend Cutters</th>
<th>Diff in Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (%)</td>
<td>Median (%)</td>
<td>Mean (%)</td>
<td>Median (%)</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>EW (-1, 0)</td>
<td>-1.11</td>
<td>-0.51</td>
<td>-3.48***</td>
<td>-2.27***</td>
</tr>
<tr>
<td>VW (-1, 0)</td>
<td>-1.01</td>
<td>-0.13</td>
<td>-3.46***</td>
<td>-2.29***</td>
</tr>
<tr>
<td>EW (-1, +1)</td>
<td>-2.05**</td>
<td>-0.36</td>
<td>-4.15***</td>
<td>-3.22***</td>
</tr>
<tr>
<td>VW (-1, +1)</td>
<td>-1.98**</td>
<td>-0.85</td>
<td>-4.09***</td>
<td>-3.13***</td>
</tr>
<tr>
<td>EW 0</td>
<td>-0.10</td>
<td>-0.35</td>
<td>-2.69***</td>
<td>-1.68***</td>
</tr>
<tr>
<td>VW 0</td>
<td>-0.95</td>
<td>-0.24</td>
<td>-2.64***</td>
<td>-1.42***</td>
</tr>
<tr>
<td>EW (-3, 0)</td>
<td>-0.17</td>
<td>-0.58</td>
<td>-4.19***</td>
<td>-2.62***</td>
</tr>
<tr>
<td>VW (-3, 0)</td>
<td>-0.11</td>
<td>0.24</td>
<td>-4.19***</td>
<td>-2.69***</td>
</tr>
<tr>
<td>EW (-3, +3)</td>
<td>-0.63</td>
<td>-0.69</td>
<td>-4.83***</td>
<td>-4.38***</td>
</tr>
<tr>
<td>VW (-3, +3)</td>
<td>-0.69</td>
<td>0.33</td>
<td>-4.84***</td>
<td>-4.39***</td>
</tr>
<tr>
<td>EW (0, +3)</td>
<td>-1.46</td>
<td>-0.23</td>
<td>-2.32***</td>
<td>-2.87***</td>
</tr>
<tr>
<td>VW (0, +3)</td>
<td>-1.53*</td>
<td>-0.29</td>
<td>-3.29***</td>
<td>-2.61***</td>
</tr>
<tr>
<td>N</td>
<td>57</td>
<td>57</td>
<td>136</td>
<td>136</td>
</tr>
</tbody>
</table>
Table 3: Abnormal Stock Returns on the Market Preparation Day for All Prepared Dividend Cutters.
This table reports the equity market price reaction of prepared dividend cutters on the market preparation day. The equity market price reaction for each market preparation is computed as the cumulative abnormal return (CAR) for a particular window around the market preparation of the dividend cut. Daily abnormal returns are computed using market model for two market indexes: equally-weighted (EW) and value-weighted (VW) CRSP indexes. Market model parameters are estimated over 250 trading days ending 46 trading days before the pre-announcement of dividend cut with at least 100 non-missing daily returns in the estimation period. Dividend cut announcement date is denoted as date 0. ***, **, and * indicate significance of t-statistics for the equality of means of two sub-samples at the 1, 5, and 10 percent levels, respectively.

<table>
<thead>
<tr>
<th>Window</th>
<th>EW Mean (%)</th>
<th>EW Median (%)</th>
<th>VW Mean (%)</th>
<th>VW Median (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1 to 0</td>
<td>-0.74</td>
<td>-1.21</td>
<td>-0.87</td>
<td>-1.47</td>
</tr>
<tr>
<td>-1 to +1</td>
<td>-2.72***</td>
<td>-1.34*</td>
<td>-2.85***</td>
<td>-2.02**</td>
</tr>
<tr>
<td>0</td>
<td>-0.91</td>
<td>-1.43**</td>
<td>-1.00</td>
<td>-1.46***</td>
</tr>
<tr>
<td>-3 to 0</td>
<td>-0.75</td>
<td>-1.41</td>
<td>-0.94</td>
<td>-1.73*</td>
</tr>
<tr>
<td>-3 to +3</td>
<td>-3.31***</td>
<td>-2.62**</td>
<td>-3.65***</td>
<td>-3.28**</td>
</tr>
<tr>
<td>0 to +3</td>
<td>-3.46***</td>
<td>-2.34**</td>
<td>-3.65***</td>
<td>-2.43***</td>
</tr>
</tbody>
</table>

Number of Firms | 52 | 52 | 52 | 52 |
Table 4: Combined Abnormal Stock Return of Prepared and Matched Non-prepared Dividend Cutters on the Market preparation Day and the Dividend Cut Announcement Day

Abnormal stock returns upon announcement of prepared and matched non-prepared dividend cuts. Matched non-prepared dividend cut firms are chosen following Loughran and Ritter's (1997) matching algorithm. The non-prepared dividend cutters have to be in the same industry (using 2-digit SIC codes) with asset size at the end of the previous fiscal year relative to the dividend cut year between 25 to 200 percent of the prepared dividend cutters, and then the non-prepared cutter with the closest operating income before depreciation, amortization, and taxes (OIBD) relative to assets was chosen. If no non-prepared dividend cutters met these criteria then industry requirement was dropped and a matching firm was chosen with asset size within 90-100 percent of the prepared dividend cutters and with closest, but higher, OIBD/Assets ratio. Announcement effect for each dividend cut is computed as the cumulative abnormal return (CAR) for a particular window around the announcement day of the offering. Daily abnormal returns are computed using market model for two market indexes; equally-weighted (EW) and value-weighted (VW) CRSP indexes. Market model parameters are estimated over 250 trading days ending 46 trading days before the dividend cut announcement with at least 100 non-missing daily returns in the estimation period. Announcement date is denoted as date 0. ***, **, * indicate significant at the 1, 5, and 10 percent levels, respectively.

<table>
<thead>
<tr>
<th>Window</th>
<th>Prepared Dividend Cutters</th>
<th>Matched Non-prepared Dividend Cutters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (%)</td>
<td>Median (%)</td>
</tr>
<tr>
<td>EW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1 to 0</td>
<td>-1.27</td>
<td>-2.21</td>
</tr>
<tr>
<td>VW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1 to 0</td>
<td>-1.24</td>
<td>-2.12</td>
</tr>
<tr>
<td>EW</td>
<td>-1 to +1</td>
<td>-2.43**</td>
</tr>
<tr>
<td>VW</td>
<td>-1 to +1</td>
<td>-3.47**</td>
</tr>
<tr>
<td>EW</td>
<td>0</td>
<td>-1.13*</td>
</tr>
<tr>
<td>VW</td>
<td>0</td>
<td>-1.99</td>
</tr>
<tr>
<td>EW</td>
<td>-3 to 0</td>
<td>-1.66</td>
</tr>
<tr>
<td>VW</td>
<td>-3 to 0</td>
<td>-0.97</td>
</tr>
<tr>
<td>EW</td>
<td>-3 to +3</td>
<td>-2.86**</td>
</tr>
<tr>
<td>VW</td>
<td>-3 to +3</td>
<td>-3.05**</td>
</tr>
<tr>
<td>EW</td>
<td>0 to +3</td>
<td>-2.77**</td>
</tr>
<tr>
<td>VW</td>
<td>0 to +3</td>
<td>-3.64***</td>
</tr>
<tr>
<td>N</td>
<td>57</td>
<td>57</td>
</tr>
</tbody>
</table>
Table 5: Long-term Operating Performance of Prepared and Non-prepared Dividend Cutters

This table reports the mean operating performance of the prepared and matched non-prepared dividend cutters from the year of dividend cut announcement until six years afterwards for a sample period from 1991 to 2002. Matched non-prepared dividend cutters are chosen following Loughran and Ritter’s (1997) matching algorithm. The non-prepared dividend cutters have to be in the same industry (using 2-digit SIC codes) with asset size at the end of the previous fiscal year relative to the dividend cut year between 25 to 200 percent of the prepared dividend cutters, and then the non-prepared cutter with the closest operating income before depreciation, amortization, and taxes (OIBD) relative to assets was chosen. If no non-prepared dividend cutters met these criteria then industry requirement was dropped and a matching firm was chosen with asset size within 90-100 percent of the prepared dividend cutters and with closest, but higher, OIBD/Assets ratio. The Compustat data items for the variables are ROA (net income (item 172)/Assets (item 6)), Profit Margin (OIBD (item 13)/sales (item12)), EBIT/Assets (item 18 + item 15 + item 50(if any)/ (item 6), and OIBD/Sales (OIBD +interest income (item 13 + item 15)/Sales (item12)). ***, **, and * indicate significance of t-statistics for the test of difference in means between two sub-samples at the 1, 5, and 10 percent levels, respectively.

<table>
<thead>
<tr>
<th>Fiscal Year After Dividend Cuts</th>
<th>No. of Firms</th>
<th>ROA (%)</th>
<th>Profit Margin (%)</th>
<th>EBIT/Assets (%)</th>
<th>OIBD/Sales (%)</th>
<th>ROA (%)</th>
<th>Profit Margin (%)</th>
<th>EBIT/Assets (%)</th>
<th>OIBD/Sales (%)</th>
<th>Mean Differences of Prepared and Non-Prepared Dividend Cutters</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>58</td>
<td>-0.45</td>
<td>15.83</td>
<td>2.29</td>
<td>20.94</td>
<td>-1.07</td>
<td>16.34</td>
<td>2.49</td>
<td>20.90</td>
<td>-0.61</td>
</tr>
<tr>
<td>1</td>
<td>49</td>
<td>1.44</td>
<td>15.55</td>
<td>5.16</td>
<td>21.91</td>
<td>1.93</td>
<td>17.45</td>
<td>4.91</td>
<td>21.72</td>
<td>-0.49</td>
</tr>
<tr>
<td>2</td>
<td>37</td>
<td>2.42</td>
<td>18.38</td>
<td>6.20</td>
<td>23.34</td>
<td>2.38</td>
<td>18.57</td>
<td>5.01</td>
<td>22.65</td>
<td>0.03</td>
</tr>
<tr>
<td>3</td>
<td>28</td>
<td>1.90</td>
<td>19.16</td>
<td>4.78</td>
<td>24.02</td>
<td>2.33</td>
<td>15.59</td>
<td>5.11</td>
<td>18.96</td>
<td>-0.43</td>
</tr>
<tr>
<td>4</td>
<td>30</td>
<td>4.57</td>
<td>21.19</td>
<td>7.40</td>
<td>26.13</td>
<td>0.92</td>
<td>14.11</td>
<td>3.23</td>
<td>17.33</td>
<td>3.65</td>
</tr>
<tr>
<td>5</td>
<td>23</td>
<td>4.17</td>
<td>21.86</td>
<td>6.55</td>
<td>26.71</td>
<td>0.82</td>
<td>15.12</td>
<td>3.10</td>
<td>19.07</td>
<td>3.36</td>
</tr>
<tr>
<td>6</td>
<td>17</td>
<td>4.81</td>
<td>20.77</td>
<td>7.25</td>
<td>25.23</td>
<td>-0.67</td>
<td>10.29</td>
<td>2.25</td>
<td>13.99</td>
<td>5.49</td>
</tr>
</tbody>
</table>
Table 6: Dividend Payout Performance Subsequent to Dividend Cuts of Prepared and Non-prepared Dividend Cutters

This table reports the subsequent dividend payout performance of prepared dividend cutters relative to the entire sample of non-prepared dividend cutters and prepared dividend cutters relative to a matched sample of non-prepared dividend cutters for eight calendar years after the dividend cut. Panel A presents the cumulative dividend change rate of prepared dividend cutters relative to the entire sample of non-prepared dividend cutters. Panel B presents the cumulative dividend change rate of prepared dividend cutters relative to a matched sample of non-prepared dividend cutters. Matched non-prepared dividend cutters for prepared dividend cutters are chosen following Loughran and Ritter’s (1997) matching algorithm. The non-prepared dividend cutters had to be in the same industry (using 2-digit SIC code) with asset size at the end of the previous fiscal year relative to the dividend cut year between 25 to 200 percent of the prepared dividend cutter, and then the non-prepared dividend cutter with the closest operating income before depreciation, amortization, and taxes (OIBD) relative to assets was chosen. If no non-prepared dividend cutter met these criteria then industry requirement was dropped and a matching firm was chosen with asset size within 90 to 100 percent of the prepared dividend cutter and with closest, but higher, OIBD/Assets ratio. Dividend change rates are calculated in two steps: first, calculate the average dividend change rate for each year after the initial dividend cut year by $\Delta \text{Div}_{i,t} = \frac{\sum_{t=1}^{4} \text{Div}_{i,t} - \text{Div}_{i,t-1}}{\text{Div}_{i,t-1}}$ and second, calculate the cumulative average dividend change rate as $\sum_{t=1}^{8} \Delta \text{Div}_{i,t}$. ***, **, and * indicate significance of t-statistics for the test of difference in means between two sub-samples at the 1, 5, and 10 percent levels, respectively.

<table>
<thead>
<tr>
<th>Calendar Year After the Dividend Cut</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared Dividend Cutters</td>
<td>0.09</td>
<td>0.16</td>
<td>0.66</td>
<td>1.29</td>
<td>1.58</td>
<td>2.17</td>
<td>2.37</td>
<td>3.85</td>
</tr>
<tr>
<td>All Non-prepared Dividend Cutters</td>
<td>-0.15</td>
<td>-0.11</td>
<td>-0.11</td>
<td>-0.06</td>
<td>-0.05</td>
<td>-0.04</td>
<td>0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td>Differences</td>
<td>0.24</td>
<td>0.27</td>
<td>0.76**</td>
<td>1.35***</td>
<td>1.63***</td>
<td>2.20***</td>
<td>2.36***</td>
<td>3.87**</td>
</tr>
<tr>
<td>t-statistics</td>
<td>1.58</td>
<td>1.50</td>
<td>2.44</td>
<td>2.83</td>
<td>2.81</td>
<td>3.21</td>
<td>2.68</td>
<td>2.53</td>
</tr>
</tbody>
</table>

Panel A: Cumulative Dividend Change Rates by Event Years for All Prepared Dividend Cutters and All Non-prepared Dividend Cutters

| Prepared Dividend Cutters            | 0.09| 0.16| 0.66| 1.29| 1.58| 2.17| 2.37| 3.85|
| Matched Non-Prepared Dividend Cutters| -0.05| -0.08| -0.09| -0.13| -0.12| -0.18| -0.18| -0.27|
| Differences                           | 0.14| 0.24| 0.75| 1.41| 1.70*| 2.35**| 2.55*| 4.11*|
| t-statistics                          | 0.49| 0.74| 1.30| 1.61| 1.72| 2.01| 1.73| 1.68|
Table 7: Multivariate Analysis of Dividend Cutters’ Propensity to Prepare the Market

This table shows the results of logit regressions with dependent variable that equals one if the dividend cutter prepared the market and zero if the dividend cutter did not prepare the market in advance of a dividend cut. Independent variables include Sales Growth defined as the average three year sales growth rate subsequent to the dividend cut year, Profit Margin defined as OIBD divided by sales, Log (assets) defined as the natural logarithm of assets, Forecast Error defined as the absolute value of the difference between earnings forecast and actual earnings divided by the absolute value of actual earnings, Numest defined as the number of analyst estimates, Stdev defined as the standard deviation of analyst forecasts, DivRatio defined as the cash dividend divided by net income before extraordinary items, DivYield defined as the cash dividend divided by market value of equity, Tangibility defined as the plant, property, and equipment divided by book value of assets, Leverage defined as the book value of long-term debt, book value of short-term debt, and notes payable divided by book value of the firm, M/B is the market to book ratio defined as the aggregate market value of the firm divided by aggregate book value, CapitalExpe defined as capital expenditure divided by total assets, R&D/A defined as research and development expenditure divided by assets, and ShareRepur defined as the ratio of expenditure on share repurchases and total assets. Robust t-statistics are reported in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

<table>
<thead>
<tr>
<th>Regression</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Growth</td>
<td>4.77***</td>
<td>4.28***</td>
<td>4.51***</td>
<td>5.04***</td>
<td>5.37***</td>
<td>5.54***</td>
<td>5.52***</td>
</tr>
<tr>
<td></td>
<td>(3.91)</td>
<td>(2.96)</td>
<td>(3.03)</td>
<td>(3.26)</td>
<td>(3.23)</td>
<td>(3.24)</td>
<td>(3.20)</td>
</tr>
<tr>
<td>Profit Margin</td>
<td>-4.40**</td>
<td>-3.60*</td>
<td>-4.31*</td>
<td>-4.43*</td>
<td>-5.29**</td>
<td>-5.31**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.02)</td>
<td>(-1.69)</td>
<td>(-1.69)</td>
<td>(-1.71)</td>
<td>(-1.96)</td>
<td>(-1.96)</td>
<td></td>
</tr>
<tr>
<td>Log(assets)</td>
<td>0.66***</td>
<td>0.67***</td>
<td>0.61***</td>
<td>0.61***</td>
<td>0.52***</td>
<td>0.52***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.33)</td>
<td>(3.26)</td>
<td>(2.83)</td>
<td>(2.83)</td>
<td>(2.36)</td>
<td>(2.36)</td>
<td></td>
</tr>
<tr>
<td>Forecast Error</td>
<td>-0.36*</td>
<td>-0.15*</td>
<td>-0.30*</td>
<td>-0.29*</td>
<td>-0.42*</td>
<td>-0.43*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-1.71)</td>
<td>(-1.66)</td>
<td>(-1.74)</td>
<td>(-1.72)</td>
<td>(-1.66)</td>
<td>(-1.66)</td>
<td></td>
</tr>
<tr>
<td>Numest</td>
<td>-0.04</td>
<td>-0.04</td>
<td>-0.02</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.99)</td>
<td>(-1.05)</td>
<td>(-0.48)</td>
<td>(-0.51)</td>
<td>(-0.34)</td>
<td>(-0.35)</td>
<td></td>
</tr>
<tr>
<td>Stdev</td>
<td>-0.18</td>
<td>-0.41</td>
<td>-0.42</td>
<td>-0.47</td>
<td>-0.21</td>
<td>-0.21</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.29)</td>
<td>(-0.58)</td>
<td>(-0.57)</td>
<td>(-0.61)</td>
<td>(-0.30)</td>
<td>(-0.30)</td>
<td></td>
</tr>
<tr>
<td>DivRatio</td>
<td>-0.02</td>
<td>-0.03</td>
<td>-0.04</td>
<td>-0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.27)</td>
<td>(-0.62)</td>
<td>(-0.71)</td>
<td>(-0.70)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DivYield</td>
<td>0.18***</td>
<td>0.18***</td>
<td>0.19***</td>
<td>0.19***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.76)</td>
<td>(2.80)</td>
<td>(2.75)</td>
<td>(2.68)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tangibility</td>
<td>1.86*</td>
<td>1.68</td>
<td>1.36</td>
<td>1.36</td>
<td>1.74</td>
<td>1.80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.68)</td>
<td>(1.40)</td>
<td>(1.05)</td>
<td>(1.04)</td>
<td>(1.27)</td>
<td>(1.19)</td>
<td></td>
</tr>
<tr>
<td>Leverage</td>
<td>-0.75</td>
<td>-0.55</td>
<td>-0.44</td>
<td>-0.53</td>
<td>-0.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.54)</td>
<td>(-0.39)</td>
<td>(-0.32)</td>
<td>(-0.36)</td>
<td>(-0.38)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M/B</td>
<td>0.12</td>
<td>0.09</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.25)</td>
<td>(0.16)</td>
<td>(0.19)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CapitalExpe</td>
<td></td>
<td>-0.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-0.19)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R&amp;D/A</td>
<td>-4.70</td>
<td>-4.72</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.50)</td>
<td>(-0.51)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ShareRepur</td>
<td>2.79</td>
<td>2.77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.46)</td>
<td>(0.46)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-1.33***</td>
<td>-5.70***</td>
<td>-5.26***</td>
<td>-6.11***</td>
<td>-6.14***</td>
<td>-6.14***</td>
<td>-6.08***</td>
</tr>
<tr>
<td></td>
<td>(-6.68)</td>
<td>(-4.03)</td>
<td>(-2.95)</td>
<td>(-3.33)</td>
<td>(-3.32)</td>
<td>(-3.32)</td>
<td>(3.25)</td>
</tr>
<tr>
<td>N</td>
<td>198</td>
<td>168</td>
<td>170</td>
<td>170</td>
<td>170</td>
<td>162</td>
<td>162</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.08</td>
<td>0.24</td>
<td>0.23</td>
<td>0.27</td>
<td>0.28</td>
<td>0.28</td>
<td>0.28</td>
</tr>
</tbody>
</table>
Table 8: Long-term Stock Return Performance of Prepared and Non-prepared Dividend Cutters Using Fama-French Three Factor Model

This table reports time-series regressions of post-dividend monthly percentage returns of prepared, all non-prepared dividend cutters, and matched non-prepared dividend cutters using Fama-French’s three-factor model

\( R_p = \alpha + \beta (R_m - R_f) + \gamma S_{MB} + h HML + \epsilon, \)

where \( R_p \) is the return on the portfolio of sample firms in month \( t \); \( R_m \) is the return on the value-weighted index of NYSE, AMEX, and NASDAQ stocks in month \( t \); \( R_f \) is the 1-month T-bill yield in month \( t \); \( S_{MB} \) is the return on small firm minus the return on large firms in month \( t \); and \( HML \) is the return on high book-to-market stocks minus the return on low book-to-market stocks in month \( t \). The factor definitions are described in Fama and French (1993). The sample period is January 1991 to December 2002 (144 months), and sample firms returns are included in a particular monthly portfolio if the firm’s dividend cut date occurred within the last 60 months. Panel A reports results from equally-weighted returns using ordinary least squares (OLS). Panel B reports results from value-weighted returns (with value measured as the sample firms’ month-end market capitalization in the month prior to the portfolio formation) using weighted least squares (WLS) based on the number of dividend cutting firms in the monthly portfolio. Panel C reports results from value-weighted returns using OLS. Panel D reports results from value-weighted returns using WLS. Parameters estimates are presented with t-statistics in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

<table>
<thead>
<tr>
<th>Panel</th>
<th>Equally Weighted Portfolios with OLS</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \alpha )</td>
<td>( \beta )</td>
<td>( s )</td>
<td>( h )</td>
<td>( R^2_{adj} )</td>
</tr>
<tr>
<td>Prepared Dividend Cutters</td>
<td>-0.10</td>
<td>0.86***</td>
<td>0.20**</td>
<td>0.71***</td>
<td>0.43</td>
</tr>
<tr>
<td>All Non-prepared Dividend Cutters</td>
<td>-0.87***</td>
<td>1.01***</td>
<td>0.49***</td>
<td>0.84***</td>
<td>0.57</td>
</tr>
<tr>
<td>Matched Non-prepared Dividend Cutters</td>
<td>-0.79**</td>
<td>0.88***</td>
<td>0.36***</td>
<td>0.96***</td>
<td>0.34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel</th>
<th>Equally Weighted Portfolios with WLS</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \alpha )</td>
<td>( \beta )</td>
<td>( s )</td>
<td>( h )</td>
<td>( R^2_{adj} )</td>
</tr>
<tr>
<td>Prepared Dividend Cutters</td>
<td>-0.12</td>
<td>0.84***</td>
<td>0.22***</td>
<td>0.74***</td>
<td>0.44</td>
</tr>
<tr>
<td>All Non-prepared Dividend Cutters</td>
<td>-0.54**</td>
<td>1.03***</td>
<td>0.54***</td>
<td>0.82***</td>
<td>0.65</td>
</tr>
<tr>
<td>Matched Non-prepared Dividend Cutters</td>
<td>-0.48</td>
<td>0.95***</td>
<td>0.38***</td>
<td>0.96***</td>
<td>0.41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel</th>
<th>Value Weighted Portfolios with OLS</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \alpha )</td>
<td>( \beta )</td>
<td>( s )</td>
<td>( h )</td>
<td>( R^2_{adj} )</td>
</tr>
<tr>
<td>Prepared Dividend Cutters</td>
<td>0.28</td>
<td>0.92***</td>
<td>-0.16</td>
<td>0.68***</td>
<td>0.40</td>
</tr>
<tr>
<td>All Non-prepared Dividend Cutters</td>
<td>0.17</td>
<td>0.88***</td>
<td>0.16**</td>
<td>0.78***</td>
<td>0.50</td>
</tr>
<tr>
<td>Matched Non-prepared Dividend Cutters</td>
<td>-0.29</td>
<td>0.66***</td>
<td>0.13</td>
<td>0.88***</td>
<td>0.25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel</th>
<th>Value Weighted Portfolios with WLS</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \alpha )</td>
<td>( \beta )</td>
<td>( s )</td>
<td>( h )</td>
<td>( R^2_{adj} )</td>
</tr>
<tr>
<td>Prepared Dividend Cutters</td>
<td>0.44</td>
<td>0.85***</td>
<td>-0.18*</td>
<td>0.60***</td>
<td>0.40</td>
</tr>
<tr>
<td>All Non-prepared Dividend Cutters</td>
<td>0.33</td>
<td>0.94***</td>
<td>0.19**</td>
<td>0.92***</td>
<td>0.53</td>
</tr>
<tr>
<td>Matched Non-prepared Dividend Cutters</td>
<td>0.19</td>
<td>0.68***</td>
<td>0.14</td>
<td>0.84***</td>
<td>0.32</td>
</tr>
</tbody>
</table>
Table 9: Institutional Holdings Subsequent to Dividend Cuts of Prepared and Non-prepared Dividend Cutters

This table reports the institutional holdings subsequent to a dividend cut of prepared dividend cutters relative to the entire sample of non-prepared dividend cutters and also prepared dividend cutters relative to a matched sample of non-prepared dividend cutters, for ten calendar years after the dividend cut. Panel A presents institutional holdings subsequent to a dividend cut of prepared dividend cutters relative to non-prepared dividend cutters. Panel B presents the number of institutional investors subsequent to a dividend cut for prepared dividend cutters relative to non-prepared dividend cutters. Matching non-prepared dividend cutters for prepared dividend cutters are chosen following Loughran and Ritter’s (1997) matching algorithm. The non-prepared dividend cutters had to be in the same industry (using 2-digit SIC code) with asset size at the end of the previous fiscal year relative to the dividend cut year between 25 to 200 percent of the prepared dividend cutter, and then the non-prepared dividend cutter with the closest operating income before depreciation, amortization, and taxes (OIBD) relative to assets was chosen. If no non-prepared dividend cutter met these criteria then industry requirement was dropped and a matching firm was chosen with asset size within 90 to 100 percent of the prepared dividend cutter and with closest, but higher, OIBD/Assets ratio. Institutional holdings data is obtained from Spectrum Institutional (13f) Holdings Database of Thomson Financial. ***, **, and * indicate significance of t-statistics for the test of difference in means between two sub-samples at the 1, 5, and 10 percent levels, respectively.

<table>
<thead>
<tr>
<th>Calendar Year After the Dividend Cut</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared Dividend Cutters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Non-prepared Dividend Cutters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matched Non-Prepared Dividend Cutters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel A: Institutional Holdings Subsequent to Dividend Cuts for Prepared and Non-prepared Dividend Cutters (%)

<table>
<thead>
<tr>
<th>Calendar Year After the Dividend Cut</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared Dividend Cutters</td>
<td>47.61</td>
<td>49.44</td>
<td>54.43</td>
<td>57.46</td>
<td>61.89</td>
<td>59.66</td>
<td>60.44</td>
<td>60.00</td>
</tr>
<tr>
<td>All Non-prepared Dividend Cutters</td>
<td>44.57</td>
<td>44.75</td>
<td>45.21</td>
<td>48.03</td>
<td>48.22</td>
<td>48.10</td>
<td>45.58</td>
<td>45.92</td>
</tr>
<tr>
<td>Matched Non-Prepared Dividend Cutters</td>
<td>51.55</td>
<td>49.61</td>
<td>44.82</td>
<td>50.70</td>
<td>51.00</td>
<td>50.51</td>
<td>49.29</td>
<td>48.40</td>
</tr>
<tr>
<td>Differences</td>
<td>-3.91</td>
<td>-0.17</td>
<td>9.61</td>
<td>6.76</td>
<td>10.89**</td>
<td>9.15*</td>
<td>11.15**</td>
<td>11.61**</td>
</tr>
</tbody>
</table>

Panel B: Number of Institutional Investors Subsequent to Dividend Cuts for Prepared and Non-prepared Dividend Cutters

<table>
<thead>
<tr>
<th>Calendar Year After the Dividend Cut</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared Dividend Cutters</td>
<td>176.46</td>
<td>207.99</td>
<td>236.63</td>
<td>255.73</td>
<td>283.06</td>
<td>300.22</td>
<td>289.55</td>
<td>273.32</td>
</tr>
<tr>
<td>All Non-prepared Dividend Cutters</td>
<td>112.74</td>
<td>116.27</td>
<td>110.25</td>
<td>107.63</td>
<td>108.19</td>
<td>102.54</td>
<td>91.75</td>
<td>95.62</td>
</tr>
<tr>
<td>Differences</td>
<td>63.72**</td>
<td>91.73***</td>
<td>126.66***</td>
<td>148.09***</td>
<td>174.87***</td>
<td>197.69***</td>
<td>197.80***</td>
<td>177.70***</td>
</tr>
<tr>
<td>Matched Non-Prepared Dividend Cutters</td>
<td>149.55</td>
<td>167.61</td>
<td>153.75</td>
<td>147.11</td>
<td>186.09</td>
<td>185.73</td>
<td>151.56</td>
<td>144.13</td>
</tr>
<tr>
<td>Differences</td>
<td>26.80</td>
<td>40.38</td>
<td>82.88</td>
<td>108.81**</td>
<td>118.98**</td>
<td>114.49</td>
<td>138.00**</td>
<td>129.19*</td>
</tr>
</tbody>
</table>