



How the timing of dividend reductions can signal value



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ABSTRACT

This paper examines a firm's dividend reduction timing relative to other dividend reductions in the same industry. A model is proposed where the timing of dividend cuts signals true firm value. It is suggested that during periods of lower availability of external financing, firms with greater investment opportunities are among the first to make necessary dividend reductions to take advantage of such opportunities. When external financing is more available, firms with superior investment opportunities are able to access capital markets in lieu of dividend-reducing internal financing, indicating relatively higher firm values for earlier dividend reductions during periods of costly external financing, and significantly lower relative firm values for early reductions when financing is more easily obtained.

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1. Introduction

Many models have been proposed that suggest that a firm's dividend policy can signal private information about that firm's future prospects.¹ In these models, it is assumed that outside investors have less information than firm insiders, implying that any information that could indicate a firm's future prospects would benefit outside investors' valuation decisions. However, these models have confronted conflicting empirical evidence, as in *Watts (1973)*, *Healy and Palepu (1988)*, and *Benartzi et al. (1997)*. In this paper, I suggest that dividend reduction is a noisy signal that can be further deciphered when taking into account the timing of the dividend reduction, relative to other dividend reductions in the same industry. If dividend reduction timing does convey information, this raises several interesting questions. First, is reducing dividends relatively early or late a dominant strategy? Alternatively, is it the case that some firms are better off implementing necessary dividend reductions sooner, while others may optimally do so later? Lastly, is the optimal firm response sensitive to not only industry-specific conditions but market-wide conditions as well? I address the above dividend reduction timing questions using a theoretical model.

The proposed model allows managers who represent firms in financial difficulty to rationally decide whether to implement a dividend reduction and, if so, at what point in time. These managers care about both current and future firm valuations as assigned by outside investors. This financial difficulty is modeled as either an economy-wide shock, which destroys assets in place for a portion of the entire economy, or an industry shock, which destroys assets in place for only a portion of one particular industry.² Firms left without assets in place must decide how to move forward in light of this loss. Prior to the shock, all firms paid a regular dividend generated from assets in place. After the shock, some firms have cash on hand that can be used to either maintain past dividend policy or attempt to rebuild assets in place. Outside investors do not see what losses a firm may have sustained, nor do they know an individual firm's probability of successfully rebuilding assets in place, but they are aware of the distribution of success probabilities across

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¹ See, for example, *Bhattacharya (1979)*, *Miller and Rock (1985)*, and *John and Williams (1985)*.

² It is not of any particular importance that assets in place is what is being affected in the model. Loss of assets in place could easily be substituted for any sudden, not immediately observable loss in productivity, which could possibly be restored by means of investment.

all firms and are able to witness their dividend policies. Additionally, firm management has the option of accessing capital markets, but only when the shock is an industry-specific shock, as external financing is unavailable or undesirably costly in economy-wide shocks.³

In the above setting, let us analyze the equilibrium firm choice concerning dividend policy. First, consider the setting of an economy-wide shock where capital markets will be inaccessible. The portion of the economy that retained assets in place, in equilibrium, has incentive to continue regular dividend policy, thus signaling that these firms are healthy. Firms that have lost assets in place, being unable to access capital markets, face a decision between maintaining the usual dividend distribution, allowing them to mimic healthy firms, or using these funds toward an investment that could restore assets in place. As managers strive to maintain current and future high stock prices, this can lead to difficulties in taking advantage of all positive net present value projects, specifically those with low probabilities of success due to the initial upfront investment. This implies that firms with greater probability of investment success do not delay in making a necessary dividend reduction. They understand the need for change and act quickly to take advantage of high investment probability. Firms with low investment success probability do not have sufficient incentive to make an early dividend reduction, as this would reveal that they are experiencing financial difficulties. The decision to reduce dividends to restore assets in place is a costly signal, as current firm values are sacrificed for only a potential long-term gain. In equilibrium, firms with higher probability of success have greater incentive to eliminate dividends for investment purposes, and firms with lower success probability forego reinvestment for the opportunity to uphold short-term firm values. This entails that a firm's investment success probability determines whether the firm reduces dividends early enough to take advantage of a possible investment opportunity or delays the decision until there is no other option available but a dividend reduction.

Next, consider the industry-wide shock setting, where firms can seek external financing. Once again, the portion of the industry that retained assets in place, in equilibrium, has incentive to continue their regular dividend policy. Firms that have lost assets in place now have the option to access capital markets, by agreeing to pay a set interest rate. This means that all firm managers who have lost assets in place may take advantage of this opportunity, allowing them to both access capital markets for investment, and to maintain their current dividend policy. Firms with lower investment success probability choose not to access capital markets due to the cost of repaying the investment with interest, and thus will delay the dividend reduction until it is necessary to do so, allowing them to mimic firms that did not lose assets in place in the short-run.

Note that for either type of shock, some dividend reductions occur, not from firms choosing to make investments or firms running out of available cash, but due to the assumption that some firms are exposed to a particularly extreme version of the shock, which destroys all firm value; this occurs at the start of the game.

Given firm behavior in equilibrium, outside investors are able to gain important information concerning firms by observing a particular industry's dividend reduction timing. During an economy-wide shock, those firms that reduce dividends earlier have lost assets in place and have a high probability of successful investment, or are exposed to the extreme value-destroying shock. Firms that do not reduce dividends early have assets in place with some probability, or are low-success probability firms that have lost assets in place with the complementary probability. As time passes and the low-success probability firm's available cash runs out, the firm is forced to reduce dividends, a relatively late reduction compared to the early dividend reducers. This implies that all late dividend reductions will be from low-success probability firms running out of cash. Lastly, a re-instatement of dividend policy signals investment success, while the absence of this action signals investment failure, both with a probability of 1. In the industry shock setting, however, early dividend reducers are only those firms exposed to the extreme value-destroying shock, and late dividend reducers are either unsuccessful investing firms or firms that had low probability of investment success.

The analysis in this paper leads to implications for firms faced with potential dividend reductions. Specifically, during an economy-wide shock, a relatively early dividend reduction, as compared to others within a particular industry, can be an indicator of management reducing cash outflows to take advantage of positive net present value projects. In this same setting, a delayed or late dividend reduction can indicate a firm that reduces dividends due only to cash constraints rather than pursuit of positive net present value projects. Alternatively, outside of an economy-wide shock, a relatively early dividend reduction is not driven by firms pursuing positive NPV projects, but by firms being hit by an extreme value-destroying shock, while late dividend reducers are either unsuccessful investing firms or firms with low probability of investment success.

My model sets forth several testable predictions. First, it predicts that in an economy-wide shock, early dividend reducers on average engage in investment strategies, while late reducers do not. Second, within an economy-wide shock and with an additional parameter restriction, it is predicted that the announcement effect of a dividend reduction should be more favorable for early versus late dividend reducers. Third, also within an economy-wide shock and with an additional parameter restriction, it is predicted that early dividend reducers have higher total or long-term returns than late reducers. Fourth, for industry shocks (outside of economy-wide shocks), early versus late dividend reductions should have significantly lower announcement returns. Fifth, these late reducers should have higher total or long-term returns over early reducers. Sixth, there should be significantly higher announcement day and total or long-term returns for early dividend reductions that occur during an economy-wide shock versus an industry shock. Finally, the model suggests that dividend reductions are more numerous on a per-industry basis during economy-wide shocks rather than industry wide shocks.

In a related work, Hull (2013), using a sample of quarterly dividend paying firms, develops an empirical analysis of dividend reduction timing both during and outside of recessionary periods. Hull (2013) tests and provides support for five of the seven

³ This supposition is aligned with Covas and Den Haan (2011), which documents that debt and equity issuance is pro-cyclical for most firm types, with the exception that equity issuance tends to be countercyclical for the top 1% of firms. It is worth noting that firms that suffer a loss of assets in place in this model, by construction, would not be considered part of the top 1% of firms.

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