

**Monitoring and Dividend Policies of REITs
under Asymmetric Information**

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Considering the extent to which a REIT is monitored may affect our explanation for REIT dividends, especially for those dividends paid in excess of the mandatory payout level. The REIT empirical literature currently offers two competing reasons for the level of REIT dividend payouts under asymmetric information: (1) signaling explanations (supported by Bradley, Capozza, and Seguin, 1998) and (2) agency-cost explanations (supported by Wang, Erickson, and Gau, 1993). When we consider only the excess dividends above the mandatory level and when we evaluate the extent of non-dividend monitoring, agency-cost explanations dominate signaling explanations for relatively less monitored firms.

KEYWORDS: REIT, Dividend Policy, Signaling, Agency Cost, and Monitoring

1. Introduction

Under the assumption that the capital market is perfect and investment decisions are independent, dividends are irrelevant to firms' values because investors could create their own dividends by selling or borrowing against their portfolios. Despite this, we observe that firms pay out dividends, and their stock prices change upon their dividend announcements.

Considering that managers have information unavailable to external market participants, finance researchers have proposed agency costs and signaling to explain dividend policies. The two competing explanations both receive empirical support, in particular, in the industry of real estate investment trusts (REITs). In their examination of REITS, Bradley, Capozza, and Seguin (1998; BCS hereafter) find a negative relationship between cash flow volatilities and dividend distribution and conclude that signaling explanations dominate agency cost explanations for dividend policies of REITs. In contrast, Wang, Erickson, and Gau (1993; WEG hereafter) support agency cost theories.

In this paper, we attempt to add to this discussion by (1) nesting the two individual models into a single model, and (2) extending the nested model by considering additional factors that may account for some of the differences in the findings of WEG and BCS. Specifically we nest the two models within a single model and extend the analysis by considering two additional effects: (1) the effect of the mandatory payout requirement, and (2) the effect of monitoring.

The first additional effect we consider is the REIT payout requirement. REITs are required to pay out at 95% (90% beginning in 2001) of their taxable income in the form of dividends to retain their REIT status. Second, we consider the effect of monitoring by incorporating Easterbrook's (1984) monitoring rationale for paying dividends. Neither of the two previous studies account for the explainable portion of the dividend nor the effect of monitoring.

We argue that the dominance between the two dividend policy explanations provided in the existing literature may be reversed for firms that are not effectively monitored based on two reasons. First, Easterbrook's (1984) rationale of substitution among agency cost control devices suggests the agency cost explanations are valid only for firms that are not effectively monitored. This rationale implies that samples in both Filbeck and Mullineaux (1993 and 1999)¹ and BCS (1998) are potentially biased against the agency cost explanations and in favor of the signaling explanations. Second, BCS's (1998) signaling model implicitly assumes that managers are maximizing shareholders' wealth and the market knows it. Under this assumption, the market can infer firms' private information from their managers' actions. We relax this assumption and allow for asymmetric information. In other words, the managers may not be able to communicate credible signals to the market. For instance, managers with compensation closely tied with current firm value have incentives to send false signals with larger dividends. Managers working in firms that are not effectively monitored may be more likely to maximize their own wealth instead of the shareholders' wealth compared to managers in effectively monitored firms. Therefore, firms that are not effectively monitored may be less likely to signal credibly. This reasoning implies the signaling explanations may be dominated by the agency cost explanations in explaining dividend policies for firms that are not effectively monitored.

In further contrast to BCS (1998), we do not rely solely on cash flow volatilities to distinguish the dominance between the signaling explanations and the agency cost explanations. Following Noronha, Shome, and Morgan (1996, NSM hereafter), we stratify firms into "non-monitored firms" and "monitored firms" to take into account Easterbrook's (1984) rationale. Adopting this

¹ Filbeck and Mullineaux (1993) examine bank holding companies that are highly monitored by regulators and conclude that dividend announcements support signaling explanations. Filbeck and Millineaux (1999) later find that agency costs are almost irrelevant to dividend payouts for bank holding companies. Altogether, Filbeck and Mullineaux (1993, 1999) provide evidence that the signaling explanations dominate the agency cost explanations for the dividend policies of effectively monitored firms.

encompassing principle, we artificially nest the models for the two explanations to examine their dominance for monitored firms and non-monitored firms separately.²

The next section explains the substitution between dividend monitoring and non-dividend monitoring devices in the framework of agency cost explanations. The third section presents our reason for not using cash flow volatilities alone to distinguish the signaling explanations and the agency cost explanations. The fourth section describes the sample and empirical methodology in detail. The fifth section presents the empirical results. The last section contains conclusions.

2. Substitution between dividend monitoring and non-dividend monitoring

The dividend monitoring rationale states that paying dividends reduces the resources under managers' control, and thus precipitates firms to issue new securities resulting in capital market monitoring, thereby reducing agency costs (Rozeff, 1982; Easterbrook, 1984; Jensen, 1986). Several studies have presented empirical evidence supporting the explanation. Examples are Rozeff (1982), Dempsey and Laber (1992), WEG (1993), and NSM (1996). The existing evidence shows that the explanation works over different economic conditions (Dempsey and Laber, 1992).

Because all form of monitoring devices themselves are costly, Easterbrook (1984) furthermore postulates the substitution concept between dividends and non-dividend monitoring devices. That is, the use of a costly dividend payout mechanism to induce capital market monitoring is less likely when a non-dividend monitoring mechanism is in place (NSM, 1996). In addition, firms are likely driven to the capital market by other conditions such as the need for finance high growth (Easterbrook, 1984; NSM, 1996). Therefore, it is likely that only part of firms base their dividend decision on agency cost considerations (NSM, 1996).

Based on the substitution concept, NSM (1996) hypothesizes that the validity of the monitoring rationale for dividends depends on the characteristics of the firms that relate to the growth

² By "artificially nest", we mean that nest two non-nested models into an encompassing model (Greene, 2000, p.301).

opportunities and the existence of non-dividend mechanisms for controlling agency costs. Stratifying industrial firms according to the presence of non-dividend mechanisms or growth-induced capital market monitoring, NSM (1996) show that dividends as an agency cost control device are validity only for firms with low growth opportunity or without the presence of alternative no-dividend monitoring devices. In addition to NSM (1996), Filbeck and Millineaux (1999) also produce evidence consistent with the substitution concept. Specifically they find that agency costs are almost irrelevant to dividend payouts for bank holding companies that are highly monitored by regulators.

3. Cash flow volatilities and dividends

Cash flow volatility has been used as a determining factor to distinguish signaling explanations from agency costs explanations. In this section, we present our reasons for considering additional variables to distinguish signaling explanations from agency cost explanations. This section is comprised of two parts. The first part discusses the negative relationship between dividend distribution and cash flow volatilities in the dividend-signaling framework. The second part discusses the ambiguous relation in the agency cost framework. The discussion concludes that the agency cost explanations of dividends predict an ambiguous relationship between dividend paying and cash flow volatilities.

3.1. Cash flow volatilities in the dividend-signaling framework

At least three dividend-signaling papers discuss the relation between dividend distribution and cash flow volatilities: Eades (1982), Kale and Noe (1990), and BCS (1998).³ All three dividend-signaling papers assume either explicitly or implicitly that the managers are perfectly aligned with current shareholders. In other words, the managers are maximizing their firms' values that are equivalent to their current shareholders' wealth.⁴ In this case, we can divide agents into two groups:

³ Actually, Eades (1982) stated the relation between dividends and variance of liquidation value of a firm in their one-period signaling model. Since the liquidation value is the only cash flow at the end of one period, the relation can be viewed as one between dividends and cash flow volatility. Kale and Noe (1990) share this same interpretation.

⁴ Current shareholders' wealth is not necessarily equal to their firm's current market price under asymmetric information.

firms (managers and current shareholders) and the market (remaining agents). Firms have information unavailable to the market. Firms signal the asymmetric information to the market with dividend distribution. Nevertheless, the asymmetric information is different in the three papers. Specifically, dividends signal expected future cash flows both in Eades' (1982) paper and BCS's (1998) paper, and cash flow volatilities in Kale and Noe's (1990) paper.

In Eades' (1982) and BCS's (1998) models, the asymmetric information is information about the expected future cash flows. However, both firms and the market know the variances of the future cash flows. Firms signal the expected cash flows to the market to maximize their current firm values by distributing dividends. The market infers the expected cash flows from the promised dividends. Firms incur market-imposed penalties when realized future cash flows are short of the promised dividends. The market-imposed penalties are the signaling costs that increase with the shortfalls between realized future cash flows and the promised dividends. Increases in the expected cash flows lower the expected costs of signaling by reducing the expected shortfall and, thus, raise dividends required for credible signaling. This implies a positive relationship between dividends and the expected cash flows. On the other hand, firms with known higher cash flow volatilities are more likely to have larger shortfalls with given levels of dividend; thus, firms need smaller dividends to send credible signals. This implies a negative relationship between dividends and the cash flow volatilities.

In contrast to Eades' (1982) and BCS's (1998) models, both firms and the market know the expected future cash flows in Kale and Noe's (1990) model. However, the asymmetric information in Kale and Noe (1990) is defined as the volatilities of the expected future cash flows. So the information content that firms want to signal and the market wants to infer from dividends is the cash flow volatilities. Nevertheless, the intuition behind the relationship between dividends and the cash flow volatilities, as well as the expected future cash flows, is very similar to those in Eades' (1982) model. Firms have to obtain external financing to meet the shortfalls between realized future cash

flows and the promised dividends. The external financing costs that increase with the shortfalls are the signaling costs. Increases in cash flow volatilities raise the expected external financing cost associated with given levels of dividend, which lowers dividends necessary for credible signaling.⁵ On the other hand, firms with known higher expected future cash flows are less likely to incur the signaling costs and, therefore, require larger dividends to signal credibly.

Overall, the three dividend signaling models all predict a negative (positive) relationship between dividends and cash flow volatilities (expected future cash flows). In addition to the theoretical predictions, Eades (1982) and BCS (1998) also provide empirical evidence that supports the negative (positive) relationship. Therefore, we conclude that the relationship between dividends and cash flow volatilities are negative in the signaling framework.

⁵ Actually, Kale and Noe's (1990) separate cash flow volatilities into systematic risk and unsystematic risk. They predict a negative relation between dividends and unsystematic risk. But they do not give a deterministic prediction about the sign of the relation between dividends and systematic risk. Nevertheless, the existing empirical evidence also suggests a negative relation between dividends and systematic risk (see BCS, 1998).

3.2. Cash flow volatilities in the agency-cost framework

At least two studies discuss the relation between cash flow volatilities and dividend distribution in the agency-cost framework: Rozeff (1982) and BCS (1998). Nevertheless, the two studies have different predictions about the relationship. Rozeff (1982) predicts a negative relationship between dividends and cash flow volatilities in the agency-cost framework.⁶ Notice Rozeff's (1982) prediction is the same as the prediction of the three signaling models discussed before. In other words, both the signaling models of Eades (1982), Kale and Noe (1990), as well as BCS (1998), and the agency-cost model of Rozeff (1982) predict a negative relationship between dividends and cash flow volatilities. On the other hand, BCS (1998) predict a positive relationship between cash flow volatilities and dividend distribution in the agency-cost framework.

Rozeff (1982) argues that cash flow volatilities increase a firms' dependence on external financing given fixed investment opportunities. External financing is costly compared to internal financing. Dividend payments reduce the available amount of internal financing when needed for investment. Therefore, the opportunity costs of dividends for firms with higher cash flow volatilities are higher than firms with lower volatilities. The transaction cost effect induces a negative relationship between cash flow volatilities and dividend payouts.

An increase in cash flow volatility, however, also increases over-investment risk. Over-investment risk increases because investors attribute with less precision the deviation in cash flows to the actions of corporate management or to the factors beyond management's control. Dividend payments reduce the funds under management's discretion. Hence, dividend distribution reduces over-investment risk. From this point of view, BCS (1998) argue that a positive relationship exists between cash flow volatilities and dividend payouts under agency-cost explanations.⁷

⁶ See page 254 in Rozeff (1982).

⁷ See page 556 in BCS (1998).

Agency cost explanations, therefore, overall do not yield a determinate prediction about the relationship between cash flow volatilities and dividend distribution. As a result, examining the link between cash flow volatilities and dividend distribution *alone cannot* clearly distinguish agency cost and signaling theories of dividends. Therefore, we differ from BCS (1998) and do not only use the sign of the relationship to determine the dominance between the signaling explanations and the agency-cost explanations.

4. Sample and empirical methodology

This section consists of two parts. The first part describes our data selection and the properties of the data. The second part explains the empirical methodology used in this study.

4.1 Sample selection

We obtained the initial list of REITs for this study from Research Insight by searching companies with SIC code 6798. We then collected relevant annual firm-specific data for REITs from the Research Insight and the Academic Universe for the period 1988 through 1998. Dividends, taxable income, market values of assets, leverage ratios, trading volumes, numbers of common shares, returns on total assets, and numbers of common stockholders are from the Research Insight.⁸ Funds from operations (FFO) are computed annually following Graham and Knight (2000) from the Research Insight files as well.⁹ The other annual data comes from the Academic Universe. Real estate investment information and managers' and directors' stock holdings are from 10-K reports and proxy statements. Equity, mortgage, or hybrid REITs are identified from balance sheets in 10-K reports to shareholders. All hybrid REITs and mortgage REITs are dropped. REITs in merger or liquidating processes are also dropped. This leads to a final sample consisting of 332 firm-year observations of

⁸ Pretax income, taxable income in concept, reported in the Research Insight is used as a proxy for taxable income reported by REITs to the Internal Revenue Service.

⁹ Graham and Knight (2000) consider FFO as a cash flow measure for REITs and define FFO as net income plus depreciation, minority interest income, extraordinary items, and excluding gain or loss on sales of property, plant, and equipment.

equity REITs. Specifically we have 17, 19, 20, 12, 1, 12, 33, 44, 87, and 87 observations in 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, and 1998 respectively.

Table 1 contains descriptive statistics for all firm-years of REITs used in this study and shows that there is significant variation in REIT dividend policies. Specifically, there are 19 out of 332 (5.72%) firm-year observations paying no cash dividends. The firm-years of REITs pay \$31.86 million of dividends a year on average with a standard deviation of \$38.82 million. There are 252 out of 332 (75.90%) firm-year observations paying dividends more than the mandatory 95% payout requirement. Excess dividends above the 95% requirement have a mean of \$7.17 million and a standard deviation of \$12.17 million.

For the firm-years of REITs, dividends per share on average are \$4.50. Dividend yields are 9.95% of share price on average. On average, dividend payouts measured in net income before extraordinary items are 126.60%. Dividend payouts expressed as a proportion of funds from operations (FFO) have a mean of 77.95%. This mean is consistent with the 70% industry norm reported by Brandon (1997). The average dividend payouts are 99.42% of taxable income. This payout ratio is consistent with the 100% industry norm reported by Brandon (1997).

4.2 Empirical methodology

To empirically take into account the mandatory 95% (90% beginning in 2001) payout requirement for REIT taxable income, we construct the equation of the dividend-signaling explanations with the expected sign for each independent variable in the parentheses as Equation (1).

$$EXDV = F^s(EXFFO, Lagged EXFFO, MV, LEVER, STATE, INCENTIVE) \quad (1)$$

where

$EXDV$ = Annual cash dividends paid for common stocks in excess of the mandatory payout requirement (million dollars) during a fiscal year¹⁰;

¹⁰ The three signaling models suggest the total dividends as the dependent variable. Some studies use dividend yields as

EXFFO = Funds from operations in excess of the cash flows needed for the mandatory payout requirement for the current fiscal year (million dollars) (+);

Lagged EXFFO = *EXFFO* for the previous fiscal year (million dollars) (*none*);

MV = Market value of assets (million dollars) at the end of the previous fiscal year (+);

LEVER = Leverage ratio (book debt-to-asset ratio) in percentage at the end of the previous fiscal year (-);

STATE = Geographic diversification measured by the number of states with real estate investment for a REIT at the end of the previous fiscal year (+);

INCENTIVE = Signaling incentive measured by the trading volume of a firm shares normalized for shares outstanding in the previous year (annual fiscal trading volume / annual common shares for basic earnings per share)(+).

As concluded in Section 2.1, the three dividend-signaling explanations hypothesize that dividends are positively correlated with expected cash flows and negatively correlated with cash flow volatilities. We include five proxies for expected cash flows and cash flow volatilities in Equation (1). The first two independent variables, *EXFFO* and *lagged EXFFO*, are used to account for expected future cash flows in excess of the cash flows needed to retain a REIT status. Including the two variables separately is similar to including previous cash flows and the actual changes in cash flows in BCS (1998).¹¹ A positive coefficient is hypothesized for *EXFFO*, and no sign is hypothesized for the coefficient for *lagged EXFFO*.

the dependent variable. This dividend yield approach is equivalent to scale total dividends with expected future cash flows in the denominator of the dependent variable or to include expected future cash flows as an independent variable (Eades, 1982).

¹¹ Including the two variables separately are the same as including previous cash flows and the actual changes in cash flows. However, including current and previous cash flows separately allows us to nest the signaling model with the agency cost model specified later within the text.

The next three variables, *MV*, *LEVER*, and *STATE*, are proxies for cash-flow volatilities. The use of *MV* and *LEVER* are followed from BCS (1998). *MV* is expected to be negatively correlated with cash flow volatilities and, therefore, is hypothesized to have a positive coefficient. This expectation arises because REITs with larger market values are associated with larger portfolios that contain a larger number of discrete assets. If cash flows to these assets are not perfectly correlated, portfolios with a larger number of discrete assets will experience lower volatilities of cash flows from operations. *LEVER* is expected to be positively correlated with cash flow volatilities and, thus, is hypothesized to have a negative coefficient. This hypothesis is based on the positive effect of financial leverage on volatility of cash flows to shareholders, holding the cash flows from operation constant.

In addition to the naïve diversification considered in *MV*, the systematic diversification adopted by REITs reduces cash flow volatility as well. BCS (1998) construct geographic and property-type Herfendahl indices to account for systematic diversification. They find that only the geographic indices are significantly related to REIT dividends. Imitating the number of segments used in the finance diversification literature, we measure the geographic diversification with the number of states where an equity REIT has real estate investments.¹² This index can vary from 1 for a geographically-concentrated equity REIT to 50 for a well-diversified equity REIT.

In the one-period models of Eades (1982) and BCS (1998), there is equivalently only one type of shareholder who has the same objective function of balancing signaling benefits and signaling costs, thus having the same incentive to signal. In the two-period model of Kale and Noe (1990), there are two types of shareholders: sellers and stayers. Sellers, who plan to sell out their shares, have an incentive to signal to have a higher current market price for their shares. On the other hand, stayers, who plan to hold their shares for the longer run, have an incentive to avoid signaling costs. Facing the

¹² We were not able to use the Herfendahl index because we do not have enough data to do the calculation.

potential conflicts of interest between their current shareholders, managers maximize weighted averages of the intrinsic values and the current market values of individual firms.¹³ When placing more weight on the current market values of their firms, managers will distribute more dividends (Kale and Noe, 1990). To account for this effect, we include *INCENTIVE*, which is a proxy for the weight on the current market value in Equation (1), in addition to proxies for expected future cash flows and cash flow volatilities.

We construct the equation of the agency cost explanations with the expected sign for each independent variable in the parentheses as Equation (2).

$$EXDV = F^a (EXFFO, MV, LEVER, STATE, GR, ROA, STOCK, INS) \quad (2)$$

where

GR = Realized growth rate of total assets for the previous fiscal year (−);

ROA = Return on total assets for the previous fiscal year (−);

STOCK = Outsiders' ownership dispersion measured by the number of common stockholders (thousands) at the end of previous fiscal year (+)¹⁴;

INS = Insiders' ownership measured by the fraction of voting shares held by insiders at the end of the previous fiscal year or the beginning of the current fiscal year (−).

Unlike the three dividend-signaling models, managers are not perfect agents for shareholders because they pursue their own interests whenever they can in agency-cost models (Easterbrook, 1984). In the agency cost framework, dividend policies balance the agency costs of external equity and transaction costs of external financing (Rozeff, 1982). A positive relationship between dividends and *EXFFO* is hypothesized. This hypothesis arises because more cash flows in excess of the cash flows

¹³ The intrinsic value of a firm equals the market value of the firm under full information.

¹⁴ The 100-shareholder test for qualifying as a REIT applies to the total number of both common shareholders and preferred shareholders (Brandon, 1997).

needed for the mandatory payout requirement give managers more discretion to over-invest in non-positive net present value projects.¹⁵ As a result, shareholders demand more dividends than they would otherwise. Including the cash flow variable as an explanatory variable and dividends as the dependent variable is similar to putting dividend payouts as the dependent variable in other studies. However, our approach allows us to nest the agency cost model with the signaling model specified before. As discussed in Section 2-2, cash flow volatility influences dividend policies in two opposing ways. Cash flow volatility increases over-investment risk but also expected costs of external financing. Therefore, unlike signaling explanations, no determinate signs are hypothesized for the next three variables, *MV*, *LEVER*, and *STATE*, that are proxies for cash-flow volatility.

Following Rozeff (1982) and WEG (1993), we include *GR* in the equation of agency-cost explanations. A negative relationship is hypothesized between dividends and *GR*. Rozeff (1982) and WEG (1993) hypothesize this negative relationship because firms experiencing or anticipating rapid asset growth would tend to retain funds to minimize the frequency of raising new capital. We also include *ROA* in Equation (2) because WEG (1993) also hypothesize and show a negative relationship between *ROA* and dividend distribution. The negative relationship is hypothesized because shareholders may feel less pressure to monitor the investment decisions of managers when their firms have superior historical investment performance.

In addition, we also include *STOCK* and *INS*, following Rozeff (1982). A positive relationship between *STOCK* and dividends and a negative relation between *INS* and dividend distribution are hypothesized. The positive relationship for *STOCK* is hypothesized because outside shareholders with more concentration of ownership are more likely to influence insiders' behavior, thereby reducing agency costs and leading to lower dividend distribution. The negative relationship for *INS*

¹⁵ Mooradian and Yang (2001) also measure the cash flows in excess of the cash flow needed for the mandatory payout requirement as cash flow under REIT managers' discretion in their study.

is hypothesized because as outside equity holders own a larger share of the equity, they will demand larger dividends as part of the optimum-monitoring package.

Although Eades (1982), Kale and Noe (1990), and BCS (1998) all implicitly assume in their signaling models that managers are perfect agents for shareholders, agency problems do not necessarily and completely invalidate credibility of dividend-signals sent by managers. In fact, Ross (1977) develops an incentive-signaling model of capital structure. In Ross's (1977) model, corporate managers are not perfect agents for shareholders and are able to send credible signals because managers bear some signal costs. Since agency cost explanations and signaling explanations do not preclude each other, we nest Equations (1) and (2) into Equation (3).¹⁶

$$EXDV = F(EXFFO, Lagged EXFFO, MV, LEVER, STATE, GR, ROA, STOCK, INS, INCENTIVE) \quad (3)$$

To control heteroskedasticity and the auto-correlation of errors, we estimate Equation (3) with Tobit regression with year dummies and weighted by *MV* for all observations.¹⁷

To accommodate Easterbrook's (1984) monitoring rationale for paying dividends, we follow NSM (1996) and stratify observations into "non-monitored firm-years" or "monitored firm-years" as shown in Figure 1. The non-monitored firm-years do not have non-dividend monitoring, and the monitored firm-years are monitored with non-dividend devices. Empirically, the non-dividend monitoring devices are price-to-book (PTB) ratios and outside blockholders' ownership (BLOCK).¹⁸ PTB is used as a measure of investment opportunities. Higher future investment opportunities indicate greater need for external financing, and thus are more likely to drive firms to capital market and to induce capital market monitoring (Easterbrook, 1984; NSM, 1996).

¹⁶ Even if signaling explanations and agency-cost explanations preclude each other, artificially nesting the two explanations may help us to determine their dominance (Greene, 2000).

¹⁷ Among the 332 observations, 19 (5.7%) observations pay no dividends and 80 (24.1%) observations pay dividends no more than the 95% requirement.

¹⁸ We do not consider all non-dividend monitoring devices in this study. Nevertheless, ignoring the other non-dividend monitoring devices create bias against us to find the dominance of agency cost explanations over signaling explanations for our non-monitored firms. On the other hand, ignoring the other non-dividend monitoring devices should create bias against us to find the dominance of signaling explanations over agency cost explanations for our monitored firms. As a result, our findings are stronger than they appear.

To maintain enough observations for both non-monitored firm-years and monitored firm-years and to increase their structural distinction, we define non-monitored firm-years as observations with both PTB ratios and BLOCK below their 60 percentiles and monitored firm-years as observation with either PTB ratios and BLOCK above their 70 percentiles. This procedure potentially creates bias against us to find evidence that the agency-cost explanations dominate the signaling explanations for non-monitored firm-years. Finally, we have 130 observations for non-monitored firm-years and 165 observations for monitored firm-years.¹⁹

We next estimate Equation (3) with Tobit regression first for non-monitored firms and then for monitored firms.²⁰ For non-monitored firms, we expect to find distinct supporting evidence for the agency-cost explanations but not for the signaling explanations. On the other hand, for monitored firms, we expect to find distinct evidence supporting the signaling explanations but not supporting the agency-cost explanations. In other words, as shown in Figure 2, the agency cost explanations are hypothesized to dominate the signaling explanations for the non-monitored firms and vice versa for the monitored firms.

¹⁹ A Chow test not reported here confirms a structural difference between non-monitored firms and monitored firms.

²⁰ . For non-monitored firm-years, there are 10 (7.7%) observations paying no dividends and 36 (27.7%) observations paying dividends no more than the 95% requirement. For monitored firm-years, 6 (3.7%) observations pay no dividends, and 36 (21.8%) observations pay dividends no more than the 95% requirement.

5. Empirical results

This section presents the empirical results of Tobit models weighted by *MV* and with fixed time effect for Equation (3) in Table 2.^{21,22} The first part describes the results for all observations in Model 1 that disregards the non-dividend monitoring devices. The second part presents the results for non-monitored firm-years in Model 2 and discusses the results for monitored firm-years in Model 3. Together Model 2 and Model 3 shows the empirical effects of the non-dividend monitoring devices. Overall our results are consistent with the substitution concept suggested by Easterbrook (1984).

5.1 Empirical results when disregarding the non-dividend monitoring devices

When disregarding the non-monitoring devices, we have mixed evidence both for the signaling and the agency cost explanations. Model 1 presents the mixed evidence. Specifically *EXFFO* has a significant and positive marginal effect (slope hereafter). The slope of *EXFFO* is consistent with both the signaling and the agency cost explanations. This slope is consistent with the hypothesis in the signaling explanations that expected cash flows increase dividends needed for credible signals. This slope estimate is also consistent with the hypothesis that more cash flows give managers more discretion to over-invest in non-positive net-present value projects.

Two of the four proxies of cash flow volatility have significant marginal effects. Particularly both *MV* and *LEVER* have significant and negative slopes. In the agency cost framework, we have no expected signs for them as discussed in Section 3. However, we expected a positive relationship between cash flow volatility and dividend payments in the signaling framework. Therefore, the negative slope of *MV* is not consistent with the joint hypothesis that larger portfolios are subject to a smaller unsystematic risk and that firms with less volatile cash flows pay out larger dividends (BCS,

²¹ We also exclude firm-years that do not paying dividends and estimate Equation (3) with weighted least squares with *MV* as the weight and with year dummies. The results for all firm-years, non-monitored firm-years, and monitored firm-years are similar to the results from Tobit regressions reported below in the text.

²² In addition, we examine the results disregarding both the mandatory payout requirement and the non-monitoring devices. We have results consistent with signaling explanations but inconsistent with agency cost explanations from Tobit regression weighted with *MV* and with year dummies. On the other hand, we have evidence consistent with both signaling and agency cost explanations from weighted least squared with *MV* as the weight and with year dummies.

1998). On the other hand, the negative slope of *LEVER* is consistent with the joint hypothesis that the volatility of cash flows available to shareholders increases with financial leverage and that dividend payouts vary with the perceived riskiness of these cash flows (BCS, 1998).

There are three additional variables having significant marginal effects. These variables are *GR*, *STOCK*, and *INS*. Contrary to agency cost explanations, *GR* has a significant and positive slope. The positive slope of *GR* is contrary to the hypothesis that firms experiencing or anticipating rapid growth tend to retain funds to minimize the frequency of raising new capital. As hypothesized by the agency cost explanations, *STOCK* has a significant and positive slope and *INS* has a significant and negative slope. The positive slope of *STOCK* agrees with the hypothesis that outside shareholders with more concentration of ownership are more likely to influence insider behavior, thereby reducing agency costs and leading to lower dividend distribution. The negative slope estimate *INS* is consistent with the hypothesis that outside equity holders demand larger dividends as part of an optimal monitoring package when they own a larger share of the equity (Rozeff, 1982).

5.2 Empirical results when considering non-dividend monitoring devices

When considering the non-monitoring devices, our evidence shows that the agency cost explanations dominate the signaling explanations for non-monitored observations. However the evidence for effectively monitored observations is mixed.

Model 2 exhibits the empirical estimation results for non-monitored observations. The results are consistent with the agency cost explanations and mixed with the signaling explanations. Specifically *EXFFO*, *MV*, *LEVER*, *STATE*, and *STOCK* have significant slopes with signs consistent with the agency cost explanations. Particularly the significant and positive slope of *STOCK* provides distinct evidence in support of the agency cost explanations. *EXFFO*, *LEVER*, *STATE*, and *INCENTIVE* have slopes consistent with the signaling explanations. The significant and positive slope associated with *INCENTIVE* is consistent with the hypothesis that managers distribute smaller dividends when

placing more weight on the current market value of their firms (Kale and Now, 1990). However *MV* has a significant and negative slope. Contrary to the signaling explanations, this slope suggests that cash flow volatility increases dividend payouts.

Therefore, the evidence indicates that the agency cost explanations dominate the signaling explanations when firms are not effectively monitored. As hypothesized earlier, this dominant relationship is opposite to the relationship documented in the existing studies that do not take into account Easterbrook's (1984) rationale or the mandatory payout requirement for REITs.

Model 3 exhibits the empirical estimation results for monitored observations. The evidence here is mixed for both the signaling and the agency cost explanations. In particular, for the signaling explanations, we have *EXFFO* and *LEVER* with hypothesized slopes and *INCENTIVE* with slopes against our hypothesis. For the agency cost explanations, the significant slopes of *EXFFO* and *LEVER* have consistent signs and *INS* has a hypothesized sign. However the significant and positive slope of *GR* is against our hypothesis.

To summarize, we have mixed evidence for both the signaling and the agency cost explanations for monitored firms. There are two possible explanations for having the mixed evidence here. One potential reason is the grouping itself of monitored observations. The other likely reason is that other ways of maximizing shareholders' wealth may provide more net benefits than signaling expected cash flows or cash flow volatilities. One such way is to balance corporate tax savings and shareholders' personal tax costs when REIT managers distribute dividends (Lee and Kau, 1987).

6. Conclusion

The REIT empirical literature offers two competing theories for the level of dividend payouts under asymmetric information without considering the mandatory 95% (90% beginning in 2001) payout requirement for taxable income. WEG (1993) provide evidence supporting the agency-cost explanations for REIT dividend policies. On the other hand, BCS (1998) have evidence supporting the signaling explanations.

Nevertheless, we obtain different evidence when considering non-mandatory dividends and non-dividend monitoring. We have mixed evidence for both the signaling and the agency cost explanations. One likely reason is that balancing corporate tax savings and shareholders' personal tax costs may provide more net benefits than signaling expected cash flows or cash flow volatilities to shareholders when distributing dividends (Lee and Kau, 1987). On the other hand, we have evidence against the signaling explanations and in support of the agency cost explanations for inefficiently monitored REITs. Our evidence suggests that the agency-cost explanations dominate signaling explanations for dividends policies of inefficiently monitored REITs.

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Table 1: Summary Statistics

Variable	Label	<i>n</i>	Mean	Std Dev	Minimum	Maximum
Dividend (\$ millions)	DV	332	31.861	38.821	0.000	350.183
Excess dividend (\$ millions)	EXDV	332	7.177	12.175	0.000	107.717
Dividend per share (\$)	DIVPS	332	4.505	33.140	0.000	540.120
Dividend yield (%)	DY	332	9.954	43.797	0.000	801.778
Dividend payout (%)	DP	332	126.602	246.681	-1,935.100	1,909.370
Dividends / funds from operations (%)	DV/FFO	332	77.954	136.073	-1,165.782	1,769.731
Dividends / taxable income (%)	DV/TI	332	99.415	225.212	-1,935.093	1,369.412
Fund from operations (\$ millions)	FFO	332	47.472	66.366	-15.160	676.310
Net income (\$ millions)	NI	332	25.913	36.069	-13.000	349.029
Taxable income (\$ millions)	TI	332	30.286	40.726	-11.302	394.875
Market value (\$ millions)	MV	332	449.239	678.620	1.043	7,875.600
Leverage ratio (%)	LEVER	332	43.013	18.813	0.000	92.160
States with real estate investment	STATE	332	10.280	8.153	1.000	43.000
Trading volume/ number of common shares	INCENTIVE	332	56.224	42.540	4.542	518.100
Asset growth ratio (%)	GR	332	111.803	118.209	-35.332	1,456.030
ROA (%)	ROA	332	3.325	5.078	-55.151	15.974
Insider ownership (%)	INS	332	13.768	14.765	0.079	77.900
Price to book ratio (%)	PTB	332	184.366	156.787	11.900	1,547.850
Number of common shareholders (thousands)	STOCK	332	6.960	16.298	0.019	161.640
Blockholders' ownership (%)	BLOCK	332	14.437	14.988	0.000	77.010

Table 2: Tobit Regression for Dividend Distribution and Mandatory Payout Requirement for Taxable Income

	Signaling Explanations	Agency Cost Explanations	Model 1 (All Observations)		Model 2 (Non-monitored Observations)		Model 3 (Monitored Observations)	
Dependent Variable			EXDV		EXDV		EXDV	
Independent Variables	Hypothesized Sign	Hypothesized Sign	Marginal Effects	Z	Marginal Effects	Z	Marginal Effects	Z
Constant	No	No	6.385	0.859	-5.361	-0.541	6.388	0.649
EXFFO	+	+	0.124	3.150***	0.530	7.180***	0.167	3.033***
Lagged EXFFO	No		0.509	6.482***	0.540	5.930***	0.282	3.658***
MV	+	No	-0.010	-5.746***	-0.026	-10.051***	-0.002	-1.166
LEVER	-	No	-0.159	-2.678***	0.165	1.890*	-0.194	-2.367**
STATE	+	No	-0.025	-0.273	0.225	1.704*	0.218	1.625
INCENTIVE	+		-0.036	-1.213	0.083	2.209**	-0.095	-1.744*
GR		-	0.021	1.909*	-0.026	-1.395	0.047	2.916***
ROA		-	0.112	0.313	0.812	1.130	0.009	0.020
STOCK		+	0.115	2.878***	0.126	4.275***	-0.108	-0.872
INS		-	-1.171	-2.335**	-0.196	-1.548	-0.166	-1.757*
Log-L			-1,183.393		-408.207		-566.663	
<i>k</i>			20		19		20	
<i>n</i>			332		130		165	

Note:

1. All models contain dummy variables of time fix effect and weighted by MV.
2. The value of *k* is 19 instead of 20 because of no non-monitored observations in 1993.
3. DV stands for cash dividends paid for common stocks.
4. EXDV stands for cash dividends paid for common stock in excess the 95% payout requirement.
5. EXFFO stands for FFO in excess of 95% of taxable income.
6. Marginal effects here are unconditional marginal effects.

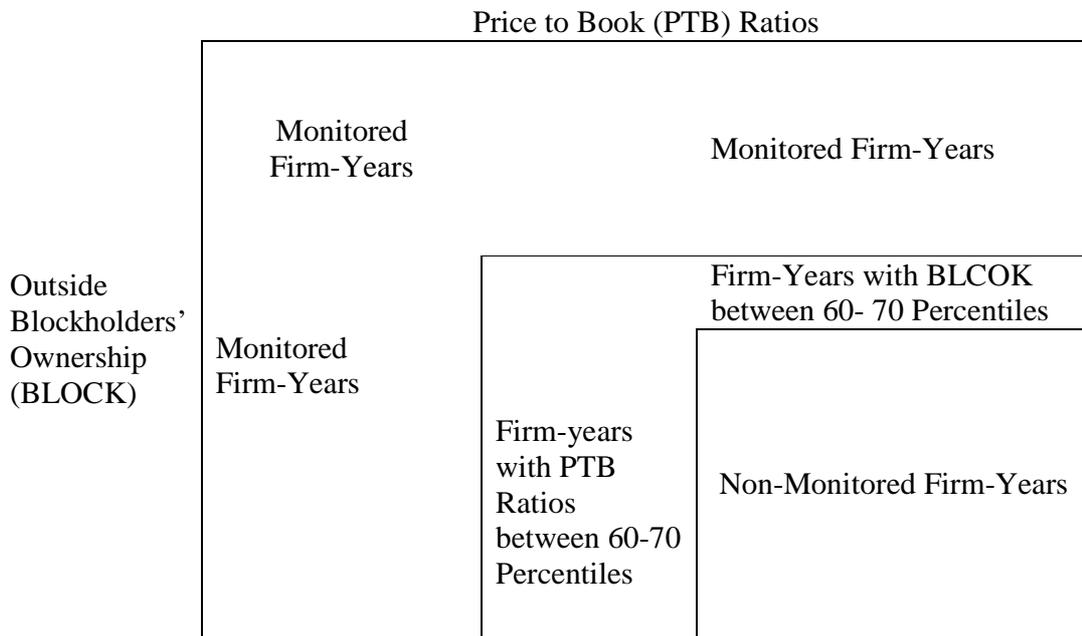


Figure 1: Classification of Non-Monitored Firm-Years and Monitored Firm-Years

	Non-Monitored Firm-Years	Monitored Firm-Years
Signaling Explanations	No Distinct Supporting Evidence	Distinct Supporting Evidence
Agency Cost Explanations	Distinct Supporting Evidence	No Distinct Supporting Evidence
Dominance	Agency Cost Explanations	Signaling Explanations

Figure 2: Monitoring and Expected Dominance between the Signaling and the Agency Cost Explanations