A Discussion on the Signaling Hypothesis of Dividend Policy

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Abstract: This paper discusses the signaling hypothesis of corporate dividend policy. We discuss this traditionally important matter in the field of corporate finance by introducing both classic and newest related studies. There seem to be some general agreements on the dividend-signaling hypothesis; however, our discussions include the following new viewpoints. First is the possibility of the firm risk changes after dividend policy changes. Second is the linkage between market efficiency and dividend policy. Third is the reality of dividend policy changes as signals by corporate managers. We consider that our many-sided discussions on the dividend-signaling hypothesis with reviewing both classic and newest literature contribute to theoretical and empirical future related research in this field.

Keywords: Dividend policy, information content of dividends, market efficiency, signaling hypothesis.

I. INTRODUCTION

What is the information content of dividends? Theoretical models such as those developed by Bhattacharya [1] and Miller and Rock [2] suggest that dividend policy changes convey news regarding future cash flows. They developed theoretical models by using an important economic notion of asymmetric information between managers and investors. There also exist other theoretical studies such as John and Williams [3], Ross [4], and Dionne and Ouederni [5]. In general, the dividend-signaling hypothesis, which is the central notion in this paper, implies that (1) a positive relationship between dividend changes and the price reaction to dividend changes; (2) a positive relationship between dividend changes and the future firm earnings; (3) a positive relationship between dividend changes and the analysts' earnings forecasts of the firm. This dividend-signaling hypothesis is one of the key issues of the field of corporate finance; therefore, survey and discussion on this issue by incorporating several new viewpoints are valuable for us.

Based on the excellent survey by Allen and Michaely [6] and Kalay and Lemmon [7], this paper aims at providing interesting and new information from literature reviews, which include newest studies, as to the dividend-signaling hypothesis, and discussing the related important issues regarding this hypothesis. Therefore, the goal of this review and discussion paper is (1) to discuss the empirical results of dividend signaling hypothesis and (2) to derive several new important viewpoints as to this hypothesis.

Traditionally, many existing studies questioned the following matters. Namely, how is the response of the stock prices to the dividend policy changes? How do the future earnings change after the dividend policy changes? Further, how do the analysts' earnings forecasts change by the dividend policy changes? In addition to the above, this paper discusses three additional viewpoints: possibility of the firm risk changes after dividend policy changes; the linkage between market efficiency and dividend policy; reality of dividend policy changes as signals by corporate managers.

Our contribution in this paper is as follows. First, we comprehensively argue the dividend-signaling hypothesis by adding new perspectives mentioned above. Second, we introduce the research evidence including that of latest studies along with our discussions. We consider that these our contributions will lead to novel future research with new interesting viewpoints. These are our contributions and differences from other existing related papers.

The rest of the paper is organized as follows. Section II briefly explains the dividend signaling hypothesis, Section III introduces the classic and new empirical evidence from existing studies, Section IV discusses new perspectives of signaling hypothesis, and Section V concludes the paper.

II. DIVIDEND−SIGNALING HYPOTHESIS

Traditional paper by Miller and Modigliani [8] suggested 'the information content of dividends', which means that if managements' future earnings expectations affect their current dividend payouts decisions, then dividend changes will convey information to the market regarding future earnings. Allen and Michaely [6] carefully described that this notion had been formalized in two ways. First is that dividends are used as an ex-ante signal of future cash flow as in Bhattacharya [1]. Second, dividends supply information regarding earnings as a description of the sources and uses of funds identity as in Miller and Rock [2]. Allen and Michaely [6] point out that the distinction is important for interpreting empirical results since the second alternative can be considered as stating that the fact that dividends convey information does not necessarily mean that dividends are being used as a signal by managers. Allen and Michaely [6, pp.386] also documented that the dividend-information/ signaling hypotheses included three important implications that had been empirically examined:

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1. Unanticipated dividend changes should be accompanied by stock-price changes in the same direction.
2. Dividend changes should be followed by subsequent earnings changes in the same direction.
3. Unanticipated changes in dividends should be followed by revisions in the market's expectations of future earnings in the same direction as the dividend change.

Next section introduces the empirical evidence provided by the traditional and newest research.

III. EMPIRICAL EVIDENCE

1. Dividend Changes and Stock Price Changes

Many empirical studies have tested the implication that unexpected dividend changes are related to stock price changes in the same direction. Using a comprehensive sample, whose dividends change at least 10% over the period of 1967 to 1993, Grullon *et al*., [9] clarified that the average abnormal return to dividend increases was 1.34% and the average abnormal market return to dividend decreases was –3.71%. Table **1** shows some dividend changing firms' characteristics. This table indicates that first, dividend-increasing firms are much larger in their sizes than dividend-decreasing firms. Second, market-to-book ratios of dividend-increasing firms are higher than dividend-decreasing firms.

Table 1. Firm Characteristics of Dividend-Changing Firms

Panel A: Dividend Increases	
CHGDIV %	30.1
CAR %	1.34
SIZE	1,185.1
M/B	1.43
DY %	3.74
Panel B: Dividend Decreases	
CHGDIV %	−44.8
CAR %	− 3.71
SIZE	757.4
M/B	1.23
DY %	3.29

Notes: This table is from Grullon *et al.,* [9, table 1 (pp.395)] and reports the firm characteristics for the sample of firms that change their cash dividends over the period from 1967 to 1993. They note that to be included in their sample, the observation must satisfy the following criteria: (1) the firm's financial data are available on CRSP and Compustat, (2) the cash dividend announcement is not accompanied by other nondividend events, (3) only quarterly cash dividends are considered, (4) cash dividends changes less than 12.5% or greater than 500% are excluded, (5) cash dividend initiations and omissions are excluded, (6) the previous cash dividend payment was paid within a window of 20–90 trading days prior to the current dividend announcement. Further, they also note that CHGDIV denotes percentage change in the cash dividend payment, CAR is 3-day cumulative NYSE/AMEX value-weighted abnormal return around the dividend announcement, SIZE denotes market value of equity at the time of the announcement of the cash dividend change, M/B denotes market-to-book ratio at the beginning of the year of the announcement, and DY is dividend yield at the time of the announcement of the cash dividend change.

Further, research by Asquith and Mullins [10] (dividend initiations), Healy and Palepu [11], and Michaely *et al*., [12] (dividend initiations and omissions) focused on extreme dividend policy changes. They clarified that the market reactions to those announcements were 3.4% average excess return for dividend initiations and –7% for omissions. Moreover, Michaely *et al*., [12] reported that the announcement of a dividend omission impacted on prices larger than an initiation announcement. Based on these results, Allen and Michaely [6, pp.387] documented that there seemed to be the general agreement among researchers as follows.

1. Dividend changes are associated with changes in stock price of the same sign around the dividend change announcement.
2. The immediate price reaction is related to the magnitude of the dividend.
3. The price reaction is not symmetric for increases and reductions of dividends. Announcements of reductions per se have a larger price impact than announcements of increases.

A recent study by Fuller and Goldstein [13] noted the asymmetric price reactions, and they studied the role of dividends in declining markets. Table **2** is the result from Fuller and Goldstein [13], and they performed the following regression.

$$r_{it} - r_{Ft} = \alpha_{it} + \gamma_{it}\beta_t + \mu_{it} Ln\left(Mktcap\right)_t + \eta_{it} Ln\left(BVEquity\right)_t + \delta_{it} DIV_t + \varepsilon_{it},$$

where r_{it}–r_{Ft} is the return on a stock in month t minus the three-month Treasury-bill return for month t, β is the firm's beta measured for the prior year for month t, Ln(Mktcap) is the natural log of the firm's market capitalization for month t, Ln(BVEquity) is the natural log of the firm's book value of equity for month t, and DIV is an indicator variable that equals one if the firm is classified as a dividend-paying firm in month t and zero if the firm is classified as a non-dividend-paying firm in month t.

Table **2** reviews the basic results of above their regressions. This table shows that at the 1% level, the coefficient for DIV is significantly greater in declining market months (0.0076) than in advancing market months (−0.0040). Fuller and Goldstein [13] documented that this result indicated that in declining markets, dividend-paying firms outperformed non-dividend-paying firms by approximately 1.2% each month more than in advancing months. Furthermore, they interpreted the results showing that investors valued dividend-paying firms more in declining markets than in advancing markets.

Further, a new study by Liu *et al*., [14] analyzed the post-announcement abnormal returns for firms that reduced or omitted their cash dividends. For this purpose, they derived the post-announcement average abnormal monthly stock returns using the rolling portfolio returns and the well-known Fama and French [15] three-factor model:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_p\left(R_{m,t} - R_{f,t}\right) + s_p SMB_t + h_p HML_t + e_{p,t}.$$

They presented these abnormal stock returns for rolling periods that extended from 1 to 3 years and for post event years 1, 2, and 3, separately, to determine the duration of the announcements' effect. As shown in Table **3**, they found statistically significant negative post-announcement abnormal stock returns to the dividend-reducing or -omitting firms. They reported that these abnormal returns were robust to the choice of equal or value-weighting and the OLS or WLS estimation procedure and they emphasized that the statistically significant abnormal robust returns were confined to the first post-announcement year only.

Table 2. Regressions with Dividend in Declining and Advancing Markets

Panel A: Declining Markets	
Intercept	−0.0261**
BETA	−0.0370**
Ln(Mktcap)	0.0022**
Ln(BVEquity)	−0.0140**
DIV	0.0076**
Panel B: Advancing Markets	
Intercept	0.0092*
BETA	0.0256**
Ln(Mktcap)	0.0000
Ln(BVEquity)	−0.0180**
DIV	−0.0040**

Notes: This table is from Fuller and Goldstein [13, table 3 (pp.463)] and this table contains the average coefficients of monthly ordinary least squares of dividend-paying and non-dividend-paying firms. They run the regressions cross-sectionally each month for every firm. The coefficients reported are the average coefficients for each group (i.e., declining markets or advancing markets, defined later). Their regressions take the form:

$r_{it}-r_{Ft} = \alpha_{it} + \gamma_{it}\beta_t + \mu_{it}\text{Ln(Mktcap)}_t + \eta_{it}\text{Ln(BVEquity)}_t + \delta_{it}\text{DIV}_t + \varepsilon_{it}$,

where $r_{it}-r_{Ft}$ is the return on a stock in month t minus the three-month Treasury-bill return for month t, β is the firm's beta measured for the prior year for month t, Ln(Mktcap) is the natural log of the firm's market capitalization for month t, Ln(BVEquity) is the natural log of the firm's book value of equity for month t, and DIV is an indicator variable that equals one if the firm is classified as a dividend-paying firm in month t and zero if the firm is classified as a non-dividend-paying firm in month t. Fuller and Goldstein [13] note that the data are from CRSP and Compustat and the sample period is from January 1970 to December 2007. They define that advancing markets are when the S&P 500 index return is greater than zero and declining markets are when the S&P 500 index return is zero or less. Further, they note that ** (*) indicates that t-test is significant at the 1% (5%) level.

2. Dividend Changes and Earnings Changes

Next fundamental implication of the signaling models to be tested is whether dividend changes and future earnings changes move in the same direction.

Using the Fama and French's [16] methodology, Benartzi *et al.,* [17] re-examined the relation between dividends and earnings changes. As a result, they found no evidence that dividend changes contained information about future one-year or two-year earnings growth. Specifically, even for predictions of first year earnings growth, the coefficients for the dividend changes were significant at the 10% level in only 4 out of 34 years of the sample. For year 2 earnings they were significantly positive at the 10% level in just 5 out of 34 years. They therefore concluded that dividend changes were very unreliable predictors of future earnings.

On the other hand, Nissim and Ziv [18] advocated the inclusion of ROE to improve the model of expected earnings, and using their methodology, they suggested that the dividend coefficients were significant in about 50% of the cases when next year's earnings are included as the dependent variables.

Recently, Skinner and Soltes [19] performed empirical tests by estimating the following two models.

$$\left(E_{it+1}/TA_{it-1}\right) = \alpha_0 + \alpha_1 DP_{it} + \alpha_2\left(E_{it}/TA_{it-1}\right) + \alpha_3 DP_{it}\left(E_{it}/TA_{it-1}\right) + \varepsilon_{it},$$

$$\left(E_{it+2}/TA_{it-1}\right) = \alpha_0 + \alpha_1 DP_{it} + \alpha_2\left(E_{it}/TA_{it-1}\right) + \alpha_3 DP_{it}\left(E_{it}/TA_{it-1}\right) + \varepsilon_{it},$$

where E_{it} is earnings in year t, TA_{it-1} is total asset at the end of year $t-1$, and DP_{it} is an indicator variable that is set to 1 if the firm declares a regular cash dividend in year t and 0 otherwise.

Their results are in Table **4**. Panels A and B show that the coefficients on DP_{it} are positive and statistically significant in two periods of 1984−1993 and 1994−2005. In addition, it is shown that the coefficients on $DP_{it}(E_{it}/TA_{it-1})$ are positive and significant in all periods in Panel A. These results indicate that earnings are more strongly and positively related for dividend payers.

Further, a recent study by Jensen *et al.,* [20] reported the operating performance for the dividend reduction sample and the control sample. Based on Benartzi *et al.,* [17], they evaluated operating performance using ROA, which was measured as EBITDA divided by total assets. Their results are shown in Table **5**.

Consistent with previous evidence as in Healy and Palepu [11] and Benartzi *et al.,* [17], they identified the rebound in earnings that occurred in the years following the dividend reduction. They reported that while the ROA for drop firms increased significantly in 3 years following the dividend drop (+3.31%), the ROA for the control firms (competitors) experienced a relatively small increase in the post-drop period of 3 years (+0.48%) as shown in Panel B of Table **5**. Specifically, they emphasized that the relative rebound in ROA for the sample firms in the post-event period of 3 years was +2.83% and was highly statistically significant. Thus, they concluded that the ROA rebound for the dividend drop firms could not be attributed to a general rebound in the industry.

3. Dividend Changes and Market Forecast Changes

Third implication of the information/signaling hypothesis is that unanticipated changes in dividends should be followed by revisions in the market's expectations of future earnings in the same direction as the dividend changes (Allen and Michaely [6]). By looking at the Wall Street's analysts' earnings estimates, we can test the above third implication.

Ofer and Siegel [21] used 781 events of dividend changes in order to examine how analysts alter their forecast of the current year earnings in response to the dividend changes. They reported that analysts revised their forecast of current year earnings by an amount which was positively associated with the size of the announced dividend change. They also found that analysts' revision had a positive relation with the market reaction to the announced dividend.

Recently, Officer [22] considered related matters. As shown in Table **6**, Officer [22] investigated and exhibited median standardized unexpected forecast revisions for the full sample (Panel A) and for subsamples conditioned on Tobin's Q and cash flow from operations (Panel B). This paper reported that the median forecast revision for the full sample of dividend initiating firms (0.0303) was significantly different from zero at the 1% level as in Panel A. Further, this study also reported that when restricting the analysis to low Q firms only (Panel B), forecast revisions for low Q/low cash flow initiating firms were extremely positive at the median (0.1872). Officer [22] emphasized that this was significantly different from zero and substantially higher

Table 3. Post-Announcement Average Abnormal Monthly Returns for Firms that Reduce or Omit Their Cash Dividend

Event Portfolio Return	Parameter Estimation Method	Statistic	Panel A: Post-Announcement Period		
			1 Year	2 Years	3 Years
Equally Weighted	OLS	α_p (%) *t*-statistic	−0.97 −6.1***	−0.50 −3.7***	−0.30 −2.4**
	WLS	α_p (%) *t*-statistic	−0.72 −5.8***	−0.31 −3.1***	−0.17 −1.9*
Value Weighted	OLS	α_p (%) *t*-statistic	−0.86 −4.3***	−0.30 −1.7*	−0.20 −1.3
	WLS	α_p (%) *t*-statistic	−0.59 −3.9***	−0.18 −1.4	−0.11 −1.0
Event Portfolio Return	**Parameter Estimation Method**	**Statistic**	**Panel B: Post-Announcement Year**		
			1st Year	**2nd Year**	**3rd Year**
Equally Weighted	OLS	α_p (%) *t*-statistic	−0.97 −6.1***	0.10 0.7	0.23 1.5
	WLS	α_p (%) *t*-statistic	−0.72 −5.8***	0.11 1.0	0.14 1.3
Value Weighted	OLS	α_p (%) *t*-statistic	−0.86 −4.3***	0.29 1.7*	0.05 0.3
	WLS	α_p (%) *t*-statistic	−0.59 −3.9***	0.24 1.7*	0.02 0.2

Notes: This table is from Liu *et al.,* [14, table 3 (pp.995)] and this table reports the post-announcement average abnormal monthly returns (α_p), which are estimated using the rolling portfolio method. For every month, the equally and value-weighted returns on the portfolio, which contains all firms that reduced or omitted their cash dividend payment during the preceding 12, 24, or 36 calendar months, are estimated. Then, the calendar-time event portfolio returns are used in the following Fama and French [15] three-factor model to estimate the portfolio's abnormal returns:

$R_{p,t} - R_{f,t} = \alpha_p + \beta_p(R_{m,t} - R_{f,t}) + s_pSMB_t + h_pHML_t + e_{p,t}$,

where $R_{p,t}$ represents the return on the event portfolio in month t; $R_{f,t}$ is the 1-month U.S. Treasury bill rate in month t; $R_{m,t}$ is the return on the value-weighted index of all NYSE, AMEX, and NASDAQ listed stocks in month t; SMB_t is the Fama-French's size factor, HML_t is the Fama-French's value factor. The intercept α_p is then interpreted as the average abnormal monthly return of the event portfolio across all 12, 24, or 36 months, as corresponds to the rolling portfolio. They note that OLS means ordinary least squares (OLS) and WLS means weighted least squares (WLS) estimates. The sample consists of 2,337 cash dividend reduction or omission announcements made in the period from February 1927 through December 1999 (i.e., 875 calendar months). They also note that the statistical significance of each of the average abnormal monthly returns (α_p) are tested using the parametric *t*-test, and that the null hypothesis tested is that the estimate of α_p is equal to zero. ***, **, and * denote significance at the 1, 5, and 10% levels, respectively, in a two-tailed test.

than the median revision for low Q/high cash flow initiators (0.0296).

Table 4. Earnings Persistence Regressions for Dividend Payers and Non-Payers

	Panel A: One Year Ahead Earnings Persistence		
	Periods	α_1	α_3
Estimated Coefficients	1974−1983 1984−1993 1994−2005	0.00137 0.0308*** 0.0386***	0.0314*** 0.0795*** 0.0643***
	Panel B: Two Year Ahead Earnings Persistence		
	Periods	α_1	α_3
Estimated Coefficients	1974−1983 1984−1993 1994−2005	−0.00588 0.0344*** 0.0607***	0.0245 0.0985*** 0.0992***

Notes: This table is from Skinner and Soltes [19, table 3] and this table reports the coefficients of the variable DP_{it} and $DP_{it}(E_{it}/TA_{it-1})$ from the following their regressions. The regression for Panel A is as follows.

$(E_{it+1}/TA_{it-1}) = \alpha_0 + \alpha_1 DP_{it} + \alpha_2(E_{it}/TA_{it-1}) + \alpha_3 DP_{it}(E_{it}/TA_{it-1}) + \varepsilon_{it}$.

And the regression for Panel B is as follows.

$(E_{it+2}/TA_{it-1}) = \alpha_0 + \alpha_1 DP_{it} + \alpha_2(E_{it}/TA_{it-1}) + \alpha_3 DP_{it}(E_{it}/TA_{it-1}) + \varepsilon_{it}$.

Where E_{it} is earnings in year t, TA_{it-1} is total asset at the end of year $t-1$, and DP_{it} is an indicator variable that is set to 1 if the firm declares a regular cash dividend in year t and 0 otherwise. They note that *** indicates the statistical significance at 1% level.

As above, Officer [22] described that the most significant positive revisions in analysts' earnings forecasts around dividend initiations were found for low Q/low cash flow dividend initiating firms. Officer [22] interpreted that the results was consistent with the notion that the combination of low Q and low pre-initiation cash flow captures low future cash flow expectations, which analysts revised upwards considerably following initiations.

IV. DISCUSSIONS

1. Dividend Policy Changes and Market Efficiency

The post-dividend-change performance is important from both the corporate finance and the market efficiency perspectives as Allen and Michaely [6] pointed out. Charest [23] clarified a 4% abnormal return in the two years after dividend increase announcements and a negative 8% for dividend-decreasing firms. Using the Fama-French three-factor model, Grullon *et al.,* [9] also found a three-year abnormal statistically significant return of 8.3% for dividend increases although they did not find any abnormal performance for dividend-decreasing firms. Further, Michaely *et al.,* [12] also found a market-adjusted return of almost 25% in the three years after dividend initiations and a negative abnormal return of 15% in the three years after omissions.

Table 5. Operating Performance for Firms That Reduced Their Established Dividend

Panel A: Yearly ROA			
Year	**Sample Firm ROA**	**Control Firm ROA**	**ROA Difference**
−3	13.46%	13.41%	0.05% (0.768)
−2	12.42%	13.21%	−0.79%*** (0.001)
−1	9.95%	12.81%	−2.86%*** (0.000)
0	7.28%	12.32%	−5.04%*** (0.000)
1	9.44%	11.91%	−2.47%*** (0.000)
2	10.90%	12.47%	−1.57%*** (0.000)
3	11.42%	12.46%	−1.04%*** (0.001)
Panel B: Temporal ROA Changes			
−3 to 0	−5.55% (0.129)	−1.04%*** (0.000)	−4.51%*** (0.000)
0 to +3	+3.31%*** (0.000)	+0.48%*** (0.000)	+2.83%*** (0.000)

Notes: This table is from Jensen *et al.,* [20, table 4]. In this table, years are reported relative to the year in which the dividend drop occurred (event year 0). They note that ROA is measured as EBITDA divided by total assets and the median value is reported. Panel B of the table reports data on the temporal changes in the ROA values during the sample period. They also note that *p*-values are reported in parentheses for two-tailed Wilcoxon Signed-Rank tests. *** denotes the significance at the 1% levels.

On the other hand, the above mentioned study of Liu *et al.,* [14] found statistically significant negative post-announcement abnormal stock returns to the dividend-reducing or -omitting firms as in Table **3**; however, they insisted that the statistically significant abnormal robust returns were confined to the first post-announcement year only. In addition, they further stated that the initial reaction, which was measured by the 2-day announcement-period abnormal return, was not followed by a long-term abnormal return. Furthermore, they also described that it was also found that the price drift was likely confined to smaller-sized high cost (illiquidity) firms, which suggests that the price drift observed following their dividend event is not necessarily inconsistent with market efficiency. Finally they concluded that the post-earnings-announcement price drift fell within the parameters of an efficient market. Highly importantly, if stock markets are efficient, managers' dividend-signaling efforts are rewarded; however, if markets are inefficient, managers' signals are not reflected in markets. Therefore, market (in)efficiency is significantly important for considering dividend-signaling hypothesis.

Further, as Liu *et al.,* [14] indicated, the post-dividend-change performance is considered to depend on the firms' states. More generally, stock price reactions may depend on firms' characteristics such as firms' financial conditions, firms' illiquidity, firms' life cycle stages, firms' sizes, and firms' market valuations. Therefore, regarding the issue of linkage between dividend policy changes and market (in)efficiency, we should more carefully scrutinize each case by conditioning the characteristics of dividend-changing firms to derive more exact conclusion.

2. Dividend Policy Changes and Firm Risk

With regard to firm risk, Grullon *et al.,* [9] investigated the relation between dividend policy changes and changes of risk of the firm. Their sample period is from 1968 to 1993 and their sample includes 7,642 dividend changes announced in the sample period. Using the CAPM or Fama-French three-factor model, they clarified that the systematic risk of firms that increased dividends significantly declined, while the systematic risk of firms that decreased dividends significantly increased. Grullon *et al.,* [9] further pointed out that firms that increased dividends also experienced a significant decline in their return on assets (ROA).

If there is a risk-return trade-off in the real financial markets in general, the above results are consistent with this trade-off notion. This is because the results of Grullon *et al.,* [9] insisted that risk-declined firms (dividend increased firms) had lower returns (ROA) after their dividend policy changes. This viewpoint of risk changes of the dividend-changing firms is quite interesting and important. We also

Table 6. Changes in Analyst Earnings Forecasts Around Dividend Initiation Announcements

Panel A: Full Sample			
Median Standardized Unexpected Revision in Forecasts of EPS			0.0303*** (191)
Panel B: Q Less than Industry/Year Median, Bisected by (Pre-initiation) Cash Flow from Operations			
Median Standardized Unexpected Revision in Forecasts of EPS	Cash Flow from Operations (Pre-Initiation)		
	≤Industry/Year Median	>Industry/Year Median	*p*-value for Difference in Columns
	0.1872** (22)	0.0296 (33)	0.11

Notes: This table is from Officer [22, table 7, pp.722] and this table presents median standardized unexpected analysts' forecast revisions for the full sample of dividend initiating firms (Panel A) and for subsamples conditioned on Tobin's Q and cash flow from operations (Panel B). Further, they note as follows. Analysts' forecasts are of one-year-ahead earnings-per-share (EPS) from the IBES database, and revisions are calculated as the change in the median analyst's EPS forecast from one month prior to one month after dividend initiations (holding the forecast period constant). Each change in the median forecast is scaled by the initiating firm's stock price two days prior to initiation and standardized unexpected forecast revisions are calculated as the standardized forecast revision minus the expected standardized forecast revision. The number of observations in each cell is in parentheses. ***, or ** indicates that the median standardized unexpected revision in forecasts of EPS is statistically significantly different from zero at the 1%, or, 5% level (respectively) using a Wilcoxon signed-rank test. The *p*-values for differences in columns are from Wilcoxon tests for differences in medians.

consider that firm risk should be measured carefully by multiple measures. We consider that more future research focusing on the firm risk changes is needed in the context of dividend policy.

3. Dividend Policy Changes as Managers' Signals

Are managers really or always use the dividend change as a signal to tell the future firms' states to investors as Bhattacharya [1] insisted? Miller [24] expresses that dividends are better described as lagging earnings than as leading earnings. Further, Miller and Rock [2] suggests that dividends convey information about current earnings through the sources and uses of funds identity, not because of signaling.

Allen and Michaely [6] document that the empirical results of the long-term price drift and the lack of positive relation between dividend changes and future changes in earnings raise serious questions regarding the validity of the dividend signaling hypothesis in the sense of Bhattacharya [1]. Based on such studies as Benartzi *et al.,* [17] and Jensen *et al.,* [20], it is not a signal as to future same directional changes in earnings or cash flows as dividend changes, even if firms are sending a signal through dividends. However, according to the results by Liu *et al.,* [14] and Grullon *et al.,* [9], stock prices react in the same direction to the dividend changes. Then to what information do markets react by firms' dividend changes?

We also view that managers might try to send signals to convey their confident by increasing dividends, however, would they really like to send any signals when firms should decline their dividends for firms' future? Moreover, in determining the increase of dividends, it is really difficult for managers to foresee the future firms' states perfectly and rationally. Some managers might be somewhat overconfident in the dividend increasing decision-making. Furthermore, as we mentioned, market reactions to dividend policy changes depend on the firms' characteristics or states. We therefore consider that this signaling role of dividend changes in the meaning of Bhattacharya [1] needs more many-sided and detailed research to finally conclude.

CONCLUSIONS

The empirical evidence provides many different and sometimes opposite evidence from the predictions of theoretical dividend-signaling models. Based on these situations, this paper has provided many-sided arguments with a review of related academic research including newest studies. Moreover, in addition to the traditional questions, we have discussed three additional matters as follows.

First important viewpoint is the linkage between market (in)efficiency and dividend policy. As the results of Liu *et al.,* [14] indicate, stock price reactions to firms' dividend policies depend on firms' characteristics. Therefore, regarding the issue of linkage between dividend policy changes and market (in)efficiency, we should more carefully scrutinize samples by conditioning the dividend-changing firms' characteristics such as their financial conditions, illiquidity, life cycle stages, sizes, and market valuations to derive more exact conclusion.

Second significant viewpoint is the possibility of the firm risk changes after dividend policy changes. According to Grullon *et al.,* [9], risk-declined firms (dividend increased firms) had lower returns (ROA) after their dividend policy changes. This viewpoint of risk changes of the dividend-changing firms is quite interesting. We also suggest that firm risk should be measured carefully by multiple measures. We consider that more future research focusing on the relation between dividend policy changes and firm risk changes is needed.

Third important issue is the reality of dividend policy changes as signals by corporate managers. As stated, we do not always support the view that managers try to send any signals when firms should decrease their dividends. We therefore consider that this signaling role of dividend changes in the meaning of Bhattacharya [1] needs more detailed research to finally conclude. Sending questionnaires to firm managers may be effective for clarifying this issue.

Furthermore, based on above our in-depth discussions, we derive and document some additional matters as follows.

Fourth, it is certain that the estimation methodologies and model specifications are different in preceding studies. In addition, sample sizes may affect the results. As existing studies that we reviewed in this paper are all peer-reviewed articles, we do not consider that they include serious methodological problems. However, in the future research, depending on the research contexts and objectives, we should carefully select and specify the methodologies and models. This is important to derive more sound and robust results from empirical studies that include above our discussed new perspectives.

Finally, for future research, we point out that even if managers could use dividend changes as signals to outside investors our inability to read dividend signals is recently increasing because of so much multi-dimensional noise in unstable global stock markets. Especially, after subprime mortgage crisis in 2007, Lehman shock in 2008, and Greek debt crisis in 2010, the recent structural economic changes require firms to modify their business models and financial policies to keep up with dynamic competition under recent harsh economic conditions. This difficulty may prevent managers and investors from behaving rationally, and this situation matches the concept of behavioral finance. Thus this dynamic economic viewpoint is also significant for future research.

It is considered that the above our discussions and derived implications will lead to new future research of this important traditional topic of the dividend-signaling hypothesis with new significant viewpoints. Future related academic studies using many datasets with new perspectives will be valuable, and these are our future task.

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CONFLICT OF INTEREST

Declared none.

REFERENCES

[1] Bhattacharya S. Imperfect information, dividend policy, and 'the bird in the hand' fallacy. Bell J Econ 1979; 10: 259-70.

[2] Miller MH, Rock K. Dividend policy under asymmetric information. J Financ 1985; 40: 1031- 51.

[3] John K, Williams J. Dividends, dilution, and taxes: A signalling equilibrium. J Financ 1985; 40: 1053-70.

[4] Ross SA, The determination of financial structure: The incentive signaling approach. Bell J Econ 1977; 8: 23- 40.

[5] Dionne G, Ouederni K. Corporate risk management and dividend signaling theory. Financ Res Lett 2011; 8: 188-95.

[6] Allen F, Michaely R. Payout policy. In: Constantinides GM, Harris M, Stulz RM, Eds. Handbook of the economics of finance. Vol. 1A: Corporate Finance. Chapter 7. North-Holland. Amsterdam: Elsevier 2003; pp. 337-429.

[7] Kalay A, Lemmon M. Payout policy. In: Eckbo BE, Ed. Handbook of corporate finance: empirical corporate Finance. Vol. 2, Chapter 10. North-Holland, Amsterdam: Elsevier 2008; pp. 3-57.

[8] Miller MH, Modigliani F. Dividend policy, growth and the valuation of shares. J Bus 1961; 34: 411- 33.

[9] Grullon G, Michaely R, Swaminathan B. Are dividend changes a sign of firm maturity? J Bus 2002; 75: 387-424.

[10] Asquith P, Mullins DW Jr. The impact of initiating dividend payments on shareholders' wealth. J Bus 1983; 56: 77-96.

[11] Healy PM, Palepu KG. Earnings information conveyed by dividend initiations and omissions. J Financ Econ 1988; 21: 149-76.

[12] Michaely R, Thaler RH, Womack K. Price reactions to dividend initiations and omissions: overreactions or drift? J Financ 1995; 50: 573- 608.

[13] Fuller KP, Goldstein MA. Do dividends matter more in declining markets? J Corp Financ 2011; 17: 457-73.

[14] Liu Y, Szewczyk SH, Zantout Z. Underreaction to Dividend Reductions and Omissions? J Financ 2008; 63: 987-1020.

[15] Fama EF, French KR. Common risk factors in the returns on stocks and bonds. J Financ Econ 1993; 33: 3-56.

[16] Fama EF, French KR. Forecasting profitability and earnings. J Bus 2000; 73: 161-175.

[17] Benartzi S, Grullon G, Michaely R, Thaler RH. Dividend Changes Do Not Signal Changes in Future Profitability. J Bus 2005; 78: 1659- 82.

[18] Nissim D, Ziv A. Dividend Changes and Future Profitability. J Financ 2001; 56: 2111-33.

[19] Skinner DJ, Soltes E. What do dividends tell us about earnings quality? Rev Account Stud 2011; 16: 1-28.

[20] Jensen GR, Lundstrum LL, Miller RE. What do dividend reductions signal? J Corp Financ 2010; 16: 736-47.

[21] Ofer AR, Siegel DR. Corporate financial policy, information, and market expectations: an empirical investigation of dividends. J Financ 1987; 42: 889-911.

[22] Officer MS. Overinvestment, corporate governance, and dividend initiations. J Corp Financ 2011; 17: 710- 24.

[23] Charest G. Dividend information, stock returns and market efficiency−II. J Financ Econ 1978; 6: 297- 330.

[24] Miller M. The information content of dividends. In: Bossons J, Dornbush R, Fischer S, Eds. Macroeconomics: essays in honor of Franco Modigliani. Cambridge MA: MIT Press 1987; pp. 37-61.

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