Complete Dividend Signal

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Abstract

Dividend theory suggests that dividend is sticky and it can be used to signal quality of the firms. However, empirical evidences do not strongly support the signaling efficiency of dividend to future firms' performance. Specifically, when dividend surprise is measured in terms of differences from past dividend, empirical research can not find strong relationship between dividend surprise in current period and future firm performance. We show that dividend payment can be used as a signaling tool for future firms' performance when dividend surprise is measured in terms of differences from analysts' expectation. We also show that using such measurement of dividend surprise is also affect the firms' stock prices at the time the market realized the surprise magnitude and direction. We explain that the signaling of dividend from analysts' expectation is a 'complete dividend signal' since the forecasted dividend used to evaluate the dividend surprise in our research is the benchmark which considers both past dividend and current market performance.

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1. Rationale and Motivation

In their seminal paper, Modiglianni and Miller (1961) proposed a prominent theory of dividend suggested that dividend payment does not have any relationship with firm's stock valuation. Their theory requires strong setting of market conditions such as a perfect market with no tax, no agency problems among participants or no asymmetric information between firms and market. These market setting conditions are further relaxed and results many theoretical models.

Prior to the proposed irrelevance theory of Modigliani and Miller (1961), Lintner (1956) proposed another approach of dividend theory which his model becomes a prototype model on the dividend asymmetric information. Lintner (1956) model suggests that dividend payment is relevant to earning performance of firms. From Lintner (1956), firms will increase dividend payment when manager is confident over firms' future performance but they will reluctant to decrease dividend payment unless they have much and enough information of permanently decline of firms' future performance. These evidences yield a prominent suggestion on dividend payment characteristic which is called 'sticky of dividend' . Lintner's model further suggested that firms cannot disguise the signal by increasing the payout when they do not have 'true' increasing on firms' performance.

However, prior researches can not find strong support over the signaling dividend theory. Specifically, their research results can not agreeably show that dividend changes are indicative of future firms' profit (see for examples, Watts (1973), Gonedes (1978) and Benartzi, Michaely and Thaler (1997)). Dividend signal used in the previous researches are changes of dividend payment from past dividend or dividend surprise (from previously-pay dividend). Underlying assumption of using previously-pay dividend as 'dividend surprise' lies in the fact that current situation of market is stable. Thus, investors perceive differences of dividend from previous payment as only a single signaling tool to the future performance.

We suggest in this paper that only past dividend payment may not enough to justify the surprising dividend according to the signaling theory. Practically, in the real world where market condition is not static, expectation on changes of dividend may depend on current market situation such as market growth or industry's

performance. Investors form their belief (expectation) of firms' current-coming dividend base on dynamic set of relevant information. Analysts' forecasted of dividend are used to capture such expectation. Instead of using deviation from past dividend to signal of future firms' performance, we propose of using deviation from analysts forecast of dividend or 'dividend surprise from analysts forecasted' to test the signaling relationship of dividend and future firms' performance.

Our results show that dividend surprise from analysts forecasted has statistical explanation power over prediction of future firms' earnings. On the other hand, conventional dividend surprise (changes of dividend from past dividend) does not have statistical explanations power over prediction on future firms' earnings.

Further analysis on the stock price reaction to dividend announcement when dividend surprise is measured in term of deviation from expectation shows that on dividend announcement dates which are the same dates of realization of the surprise direction and magnitude, stock prices react accordingly to the direction of surprise. For example, stock price significantly increase (decrease) as the market realize surprise to be positive (negative).

Our results, therefore, support the signaling theory that current dividend have indicative power to future firms' performance when dividend is measure in terms of deviation from analysts' expectation. We call such dividend surprise as 'complete dividend signal' since analysts' forecast of dividend is the effective surprise benchmark. Forecasted dividend value is made after consideration of previous dividend and market situation. So, deviations from analyst's forecast are more complete in causing 'surprise' to investors relative to conventional dividend surprise.

This research uses data on the Thai stock market which is one of the prominent emerging stock market. In this market, most investors are individual investors which cannot access to firms specific information as well as institutional investors. Also, analysis capability of individual investors is not compatible to institution investors. Such market characteristic is appropriate to test the signaling theory since investors need specific information or 'signal' that can indicate future performance. In other words, we claim that the Thai stock market is more sensitive to signal since individual investors have not much information to decide as much as informed investors.

The paper is organized as follows; the first part is motivation of the paper, the second part covers the literature relevant to the dividend signaling theory. The third

part explains the conceptual frameworks, data and methodology. The fourth part shows the results. Finally, the fifth part concludes and summarizes the overall paper.

2. Literature

Dividend policy is important policy for managers in all firms. Managers have to decide whether to pay dividend or not and if they decide to pay dividend for that year, they will face a further question of how much they should pay for that year. Neutral dividend policy base on Modigliani and Miller (1961) model shows that dividend is irrelevant. Their model suggests that dividend policy has nothing to decide since it is not relate to firms' value. Firms can pay dividend as much as they need without considering firms valuation variable such as earning. They can use external sources of fund to finance the debt without causing effect to firms' value. Modigliani and Miller (1961) model relies on ideal assumptions about market setting and investor's characteristics. For example market has to be perfect with no taxes; no friction on the trading; no information difference between firms and investors. In this ideal market, investors can invest and get the returns indifferently compare to firms' investment. Later dividend theories are theories that try to relax the assumptions of Modigliani and Miller (1961)'s model which cause them finding results deviations from irrelevant dividend theory. Example of these dividend theories are the dividend theories that concern the tax level of investors, dividend payment policy that relies on inequalities of firms information and investors information or dividend policy that relies on costs of obtaining funds from different sources.

Prior to the Modigliani and Miller (1961) dividend theory, Lintner (1956) model propose the dividend policy based on stylize facts about dividend payment. Lintner (1956) suggests that firms are reluctant to increase dividend payment since increase dividend payment can lead investors to interpret that future firms' performances are 'prosperous'. However, they will reverse their belief on good performance as soon as firms decrease payment. Lintner (1956)'s model shows that stock will increase when firms pay increase dividend. Lintner (1956) model is, therefore, the prior version of relaxing model on Modigliani and Miller (1961) regarding information differences between firms and investors. Lintner (1956)'s stylize fact yield the specific characteristic of dividend which is called 'sticky of dividend'. The formal asymmetric information model realize after Ross (1977) proposes that cash flow information between firms and investors may not be equally

known as set up assumption in the Modigliani and Miller's model. Ross (1977) proposed that investors form their expectation about future value of firm base on changes in capital structure and dividend policy. When firms change the policy on capital structure or dividend policy, investors will adjust their perception on the future values of firms. Ross (1977) is therefore the formal acceptance of signaling information of dividend. Lintner (1956) and Ross (1977) can be regarded as the origination on the dividend information asymmetric models.

Asymmetric information model for dividend policy predicts a relationship between unanticipated changes, announcement period stock returns, and future earnings. Theories regarding the asymmetric information model suggest that announcement of dividend payment different from expectation of investors contain information on future earnings. These models also suggest that stock prices will adjust to reflect the unexpected changes of dividend. See for example, the models of Bhattacharya (1979), Miller and Rock (1985), John and Williams (1985), and Allen, Bernardo, and Welch (2000). Empirical studies testing on these models have focused on two dimension: the market reaction to dividend announcements and the relation between dividend changes and contemporaneous and future earnings. On the first dimension, empirical evidences are consistent with theory. Studies document that stock prices tend to increase (decrease) when dividends are increase (decrease). However, on the second dimension, empirical researches cannot significantly conclude that changes in dividend are related to future earnings. For example, Nissim and Ziv (2001) suggests that dividend changes convey information about future earnings or Benartzi, Michaely and Thaler (1997), Benartzi, Brullon, Michaely, and Thaler (2002) and Koch and Sun (2004) argue that dividends still continue to signal the past and not the future.

3. Data, Research Framework and Methodology

3.1 Data

We use data of listed firms on the stock exchange of Thailand to test for the relationship between current dividend surprise and future earnings. Data included in our tests are dividend forecast information and actual payment of dividends, earning per share, dividend announcement dates and other relevant data. We use yearly analysts' forecasts accumulated by Institutional Broker Estimated System or I/B/E/S on dividends to be forecasted information on dividends. Forecasted on

dividends is average to be consensus information on yearly basis. According to I/B/E/S, forecasted dividends are released from analysts for next year (FY1), next two year (FY2), next three year (FY3) and next four year (FY4). On each year, analysts continually release their dividend forecasts for each stock on average 1 month per recommendation. We call the first recommendation on each year forecast as 'First' and call last forecasts on each year as 'Last'.

Actual dividend payment and earning per share data are also collected from the I/B/E/S database. We use dividend surprise from analysts to test the relationship between such surprise and future firms' performance. For investors to realize the surprise, they have to notice the dividend payment which is announced on shareholders' meeting dates. Therefore, we use the shareholders meeting dates from the SET SMART database provided by the Stock Exchange of Thailand to be the announcement dates. Most of dividend payments are made on quarterly basis. To match the two types of dividend payment (forecasted and actual dividend payment), we transform the yearly forecasted dividend to quarterly dividend simply by dividing the yearly dividend by four. This method of computing the quarterly dividend does not significantly affect the surprise concept of dividend in our test. Investors automatically adjust the yearly forecasted dividend down to quarterly basis simply by dividing by 4 and use this figure as benchmarks for dividend payment for that period. Other relevant data such as stock prices, market prices, and trading volume are from DATASTREAM database.

3.2 Research Frameworks

This research can be decomposed into two dependent sections. The first section examines relationship between dividend changes and future firms' performance. The second section investigates stock price adjustment on the dividend announcement dates.

Lintner (1956)'s stylize fact model concludes that dividend is 'sticky' since managers are reluctant to changes dividend payment level. Also, the model suggests that firms can use dividend as a signaling mechanism to future performance. We can write the signaling concept derived from this model as

$$\Delta EPS_t \approx \Delta Div_{t-1} \quad (1)$$

where ΔEPS_t is changes on future performance or earning per shares in period t and ΔDiv_{t-1} is changes in dividend payment level in period $t-1$.

Empirical researches using changes in dividends from previous payment as the signaling tool seems not to align well with theoretical prediction (Benartzi, Michaely and Thaler (1997), Benartzi, Brullon, Michaely, and Thaler (2002) and Koch and Sun (2004)). Using only past dividend as benchmarks for dividend surprise evaluation has the underlying assumption that only past dividend payment provides the source of dividend surprise magnitude (and direction). This assumption may be corrected under the static market condition which other relevant information does not affect investors' expectation on dividend payment. However, in a dynamic market environment, investors will adjust their dividend expectation based on current market or industry information. Using conventional surprising scheme, raising dividend payment from previously-pay dividend may not surprise investor when over all market performance increase. Therefore, the conventional signal may not effectively signal future performance. For investors to surprise on the dividend payment, dividend level should be deviate from what they expect not what the past is. Investors will take dividend surprise base on benchmarks that capture current market environment as 'complete surprise'. We propose of using analysts' forecasts of dividend as benchmarks to show dividend surprise since dividend information from analysts' forecasts consist of both previous dividend payment level and current market environment. Our conceptual frameworks can be written as

$$\Delta \text{EPS}_t \approx \Delta \text{Div}_{sp} \qquad (2)$$

where

ΔDiv_{sp} is the dividend payment level which is different from analyst's forecast.

Regression analysis is used to test the relationship in equation (2) as follows.

$$\Delta EPS_{j,t} = \beta_0 + \beta_1 \Delta DIV_{j,sp} + \beta_2 EYS_{j,t-1} + \varepsilon_{j,t} \qquad (3)$$

Where

$\Delta EPS_{j,t}$ is the changes of earning per share occur in year t divided by earning per share in year $t-1$, or $\Delta EPS_{j,t} = \dfrac{EPS_{j,t} - EPS_{j,t-1}}{EPS_{j,t-1}}$. EPS_t is earning per share observe at the end of year t.

$\Delta DIV_{j,sp}$ is the deviation of actual dividend payment from forecasted dividend payment scaled by dividing with dividend forecasted, or $\Delta DIV_{j,sp} = \frac{DIV_{ac,t-1} - DIV_{fc,t-1}}{DIV_{fc,t-1}}$. Dividend forecasted values are taken from the I/B/E/S database.

$EYS_{j,t-1}$ is the earning yields observed at year $t-1$ for stock j computed by using earning per share at the end of year $t-1$ divided by stock price at the same period.

$\varepsilon_{j,t}$ is a stochastic variable or residual term observed at t, and

$\beta_0, \beta_1, \beta_3$ are regression coefficients.

From equation (3), we hypothesize that dividend surprise measured at time $t-1$ has explanatory power over prediction the earning changes for next period. If dividend surprise from analysts' forecasted is positive, this deviation mean manager decide to pay higher dividend than dividend forecasted by analysts. Notice that the surprise in our context is subjective to manager decision to pay dividend. This assumption is not far from real practice which managers will consider what the market prediction about the firms' dividend before making decision to pay dividend. If they decide to pay higher than analysts' forecast, they are optimistic over the future performance or earning of the firms. But, if they are pessimistic over the future performance, they will decide to pay lower dividend than forecasted dividend value. Their dividend policy, in this case, can not be disguise since disguising on the signal cause more extra cost to disguised firms. For example, if bad firms selected to pay higher than analysts' expectation to release false signal to market. Investor may upward their belief only for short periods before earning announcement. But when actual performance is realized, the reversal will cause high selling pressure to the firms' stock prices. Moreover, if they continually release false signal to market, their signaling tool (dividend payment, in this case) will become impotent in the future. Following this argument, we hypothesize that $\Delta DIV_{j,sp}$ is positive correlated with $\Delta EPS_{j,t}$ or

H_1: $\beta_1 > 0$

The second section examines the stock prices reaction to dividend announcement on the dividend announcement dates (shareholders' meeting dates)

We use conventional event study to show stock prices reaction to dividend surprise. If dividend signal is perceived by market, stock prices will adjust to reflect the magnitude and level of surprise. We classified dividend surprise into favorable surprise (positive surprise) and unfavorable surprise (negative surprise) and observe the stock prices reaction to these two types of event. So, the second hypothesis is that on the event dates, stock prices will react accordingly to the direction of dividend surprise. If AR_t is the abnormal returns found on the event dates, we hypothesize that

$$H2: \quad AR_T > 0, \quad \text{เมื่อ } \Delta \text{Div}_{sp} > 0$$
$$AR_T < 0, \quad \text{เมื่อ } \Delta \text{Div}_{sp} < 0$$

Event dates, in this test, is the dates of dividend announcement which we use the dates that shareholder meeting date to represent such event. Window period used to examine the abnormal returns is divided into three periods. Pre-event covers the 30 days range before event date (t-30 to t-2), event date covers the two days range around the dividend announcement date (t – 2 to t + 2) and post-event date covers the 30 days period range follow the event dates. We use buy and hold returns of stock that pay dividend to measure the abnormal returns. Specifically,

$$r_{i,t} = \frac{(p_{i,t} - p_{i,t-1})}{p_{i,t-1}} \qquad (4)$$

where $r_{i,t}$ is the daily returns of stock i at date t

$p_{i,t}$ is the prices of stock i at date t

$p_{i,t-1}$ is the prices of stock i at date $t-1$

The abnormal returns over the event three window periods are measured using the market adjusted model. The SET Index is used to represent market prices and returns. The returns of stock i ($R_{i,T}$) and the market returns ($R_{M,T}$) over T days buy-and-hold periods are as follows;

$$R_{i,T} = \prod_{t=1}^{T} (1 + r_{i,t}) - 1 \qquad (5)$$

$$R_{M,T} = \prod_{t=1}^{T} (1 + r_{M,t}) - 1 \qquad (6)$$

Holding-period abnormal returns (CAR_i) over x to y period base on market adjusted returns can be written as;

$$CAR_i = \left[\prod_{t=-x}^{t=+y} \left(\frac{1+R_{i,t}}{1+R_{M,t}} \right) - 1 \right] \quad (7)$$

We also compute the holding-period abnormal returns on pre- and post-events dates as in equation (7). The average cumulative market-adjusted abnormal returns (AR_T) are computed as

$$AR_T = \frac{1}{n} \sum_{t=1}^{n} CAR_{i,} \quad (8)$$

Where n is number of securities.

4. Empirical Results

4.1 Descriptive of the data

Table 1 presents the forecasted dividend data for the Thai stock market observed in the I/B/E/S database during 1994 to 2004 and categorized by industry group.

[Insert Table 1]

Forecasted dividend data show that 356 firms are included in the database during 1994 to 2004 which is equal to 79.29% of total listed companies (449 companies). The industry that has maximum number of forecasted dividend data is 'Finance' (23.60%). From Table 2, on yearly basis, maximum number of forecasted dividend data occurs in year 2005 which the number of forecasted dividend data are 282 companies and cover 22.56% of listed firms. Lowest forecasted dividends occur in year 1998 and 1999. For these two years, the numbers of forecasted dividends are 17 and 18 firms respectively. Notice that the numbers of forecasted dividend change according to market situation. In the bear market periods which are the period of financial crisis, numbers of dividend forecasted are small relative to the bull market periods.

[Insert Table 2]

Table 3 examines historical dividend payment of total listed firms during 1994 -2004 (11 consecutive years). During this period, only one firm that constantly pay dividend every year. Firms that do not pay dividend during this period have the

number of 93 firms or 20.17% of total firms. Maximum number of firms pay dividend is found for firms pay dividend 3 times or 3 years of 11 years and the number of firms is 123 firms (equal to 27.29%)

[Insert Table 3]

The cumulative figures in Table 3 show that more than 70% of firms pay dividend less than or equal to 3 years out of 11 years. These firms are counted as 322 firms. We can explain from Table 3 that more than half of the firms in our sample pay dividend less than 3 times. Also, we can notice that most firms in the Thai stock market inconsistently pay dividend.

The I/B/E/S database present the dividend forecast information that continually release from financial analysts. The database contain the dividend forecasted information for 1 year (called FY1), 2 year (FY2), 3 year and 4 year in advance. Table 4 summarized the descriptive of forecasted dividend each year ahead up to 4 years by categorized the forecasted dividend by industry. Results show that industry that have maximum number of forecasted information is 'Finance' industry, the second largest number of firms fall on 'consumer duration' and 'consumer services' We show descriptive data for the first-time release of forecasted dividend (First) , last-time release of dividend (Last) in Table 5. Last-time forecasted date should be closest to the date of known actual dividend or announcing date.

Table 5 shows that the numbers of negative surprise dividend forecasted (true value of dividend payment is less than forecasted dividend value) are more than the numbers of positive surprise dividend forecasted both in the first-time release and last-time release forecasted. The table also shows that most forecasts are conducted for 1 year ahead.

A comparison between first-time- release dividend forecasted and last-time-release dividend forecasted information shows that the number of corrected dividend forecasted (forecasted equal to actual) increase from 222 for the first-time release forecasted to 328 for the last-time-release dividend forecasted. This evidence can be explained that accuracy of forecast is dependent on the time apart of forecasted. The more lead time forecasted, the less accuracy of dividend forecasted.

We also compute average dividend forecasted for each year ahead (Mean) and show the value of average forecasted dividend in Table 6.

[Insert Table 5, Table 6]

Table 7 shows the average value of dividend forecasted deviation for each year forecasted ahead. Positive value or positive surprise indicates that true value of dividend payment is more than forecasted value. We deliberately used positive surprise rather than positive bias of analysts. As explain in our conceptual frameworks, we claim that manager can decide on dividend payment level so as to cause 'surprise' in direction they consider can effect investors. Therefore, negative value indicates that the true value of dividend is less than the forecasted value. For one-year ahead forecasted surprise, the absolute average value of positive surprise is 0.33 which is less than the value of negative surprise (0.56). On the other next years ahead forecasted, magnitude of surprise for positive surprise is also less than magnitude of negative surprise except for the next 4-year forecasted ahead. We call this smaller magnitude of surprise as 'asymmetric signaling of dividend'. We explain this evidence in the context of signaling choice that manager can signal good news only for a smaller number than when they want to signal bad news. Or, signal for bad news is not as sensitive as signal for good news. This argument is also confirmed in our test on stocks reaction to good news found on the next section.

4.2 Empirical Results: Signaling Effect Results

Table 8 presents the descriptive data used in the regression analysis (equation 3). Panel a) are descriptive statistics of changes in earning per share value ($\Delta EPS_{j,t}$), surprise of dividend from analysts' forecast ($\Delta DIV_{j,sp}$) and earning yields for year $t-1$. And, panel b) of Table 8 shows correlation coefficients among these three variables.

[Insert Table 8]

Regression results are presented in Table 9. From Table 9) we can see that β_1 coefficient is significantly positive at 0.167 (significant level is 0.05). The coefficient of β_2 is also positive but not significant. This result supports our hypothesis that surprise of dividend is positively correlated with changes in the firms' earnings. For robustness check, we test equation 3 again but replace dividend surprise based on analysts' forecasted by dividend surprise based on previously-pay dividend as in conventional empirical research. For this regression results, we do not find

significantly and positively correlate between dividend changes and earning changes. Regression results are presented in Table 10.

[Table 9, 10]

The regression results on Table 9 and Table 10 support the notion that dividend payment has the explanatory power on prediction future earnings of the firms. Our results support the signaling dividend theory. The effective dividend signal is the surprise dividend based on analysts' expectation. We move on further to check whether this signal is realized by market or not by observing the stock prices reaction to dividend announcement dates.

4.3 Dividend Announcement Effect

We further test the behavior of stock price changes around the announcement of dividend. Dividend announcement is made on the meeting dates which normally shareholder will arrange a meeting quarterly. We, therefore, use dividend announcement on quarterly basis. The total number of event dates (announcement dates) for 356 firms is 1,150 dates. Abnormal returns results on total dividend announcement are presented in Table 11.

[Insert Table 11]

The abnormal returns for overall dividend announcement (no matter what direction of surprise) around the dividend announcement dates (Event-date window period) are significant and positive. The average returns for 1-day and 2-day (t-2 to t+2 and t-1 to t+1) event windows are 0.0060 and 0.0054 respectively. Prior to event dates, the 3-days period (t-5 to t-2) shows significant and positive abnormal returns. The average returns are 0.0040. Results indicate that dividend is realized by market a few days prior to formal disclosure of dividend and reflect positive to that dividend payment. Post-event dated abnormal returns show that the market response unfavorably to the dividend announcement over the 3-day period (t + 2 to t + 5). The 3-day period cumulative abnormal returns are significant and positive at -0.0038. However, the other window returns do not show statistically significant. The results on this test indicate that investors in the market overreact to the dividend announcement.

[Insert Table 12]

Table 12 separates the announcement effect of dividend payment by direction of surprise. We divide the direction of surprise into two categories. Positive surprise (Panel a) is the case when actual dividend payment known at the meeting date is greater than forecasted dividend. To compute quarterly forecasted dividend, we use the average consensus dividend through out the year and divided by four to get the quarterly payment of dividend. And, negative surprise (Panel b) is the date of announcement when dividend payment is lower than forecasted dividend.

Positive dividend surprise announcement effects on stock price at the event dates are significant and positive. The 2-day window around the announcement date is .0171 (t value is 6.62) and the 1-day window period is .0148 (t value is 7.24). Prior to event dates, the 3-day window period is also positive and significant at 0.0040 (t value is 2.18). Post to event dates, is also significant and positive for 3 day window period (t +2 to t + 5). The cumulative abnormal returns on this window are 0.0048 (t value is 2.14).

Panel b of Table 12 shows the stock prices effects on negative dividend surprise. As in positive surprise, the stock price react significant unfavorably to the negative dividend surprise on the event dates (t-2 to t+2, t-1 to t + 1) and 3-day post event date (t + 2 to t + 5). The cumulative abnormal returns of the 2-day window period are -0.0054 (t value is -2.08). The 1-day period abnormal returns are –0.0042 (t value is -0.0126).

A comparison on the two effects of surprise (Panel a) and Panel b)) indicates that post announcement returns on the positive surprise decline more rapidly relatively to the negative surprise. For positive surprise, the abnormal returns fall from 0.0148 to 0.0048) but for negative surprise, the changes of abnormal returns increase from (-.0042 to -.0126). Results indicate symptoms of overreaction for positive surprise.

Figure 1 confirms the results on Table 11 and Table 12 which we can observe graphically the event-date abnormal returns that are affected by dividend announcement surprise for positive, negative and all cases. Clearly illustrated in this figure, positive surprise magnitude on the event dates of positive surprise are greater than negative cases. This result support our earlier finding that positive surprise signal is more sensitive for investors to interpret the signal. For better performance firms, manager can release positive signal to market by paying a small amount of dividend

higher than forecasted dividend relative to an amount of dividend pay for negative surprise during declining of firms' performance. The small positive surprise affects investors stronger than negative surprise. We call this finding as 'the stronger positive signal effect'.

[Insert Figure 1]

5. Conclusion

Our paper test the signaling effect of dividend to future firms' performance as constructed theoretically by Lintner (1956) and Ross (1977). We show that dividend signal is 'complete' or 'effective' when it is measured in terms of 'surprise from analyst forecast' rather than 'surprise from the past dividend'. We show that when dividend surprise is measured by the deviation of actual dividend from analysts' expectation of dividend, the dividend surprise can have explanatory power on prediction future firms' earning. But, when we use the conventional dividend surprise or the surprise of dividend from past dividend, we can not see the relationship between current dividend surprise and future earnings. We call the dividend surprise from analysts' forecast as 'a complete dividend signals' since the dividend forecasts by analysts consider both past dividend and current industry situation. We also show that stock prices react accordingly to dividend surprise from analysts. Positive (negative) dividend surprise on the announcement dates are correlated positively (negatively) and significantly to abnormal returns around the event dates and a few days prior and post to event dates. However, the positive effect of dividend surprise is explicitly more than the negative effect which we call it as 'the stronger positive signal effect'.

In a market where asymmetric information is stylized fact, manager of the firms can inform market participant about the true value of firms by paying dividend. Amount of dividend different from market expectation is the most effective tools to signal their quality of the firms. Our paper, therefore, supports the dividend signaling theory.

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Table 1. I/B/E/S data of dividend paying firms in the Thai stock market

The information of forecasted dividend payment is from I/B/E/S database during 1994 to 2004.

Sector (IBES)*	Total no. of Listed Firms	%	No. of Covered Firms	%	As a % of Listed Firms
Finance	100	22.27	84	23.60	84.00
Health Care	9	2.00	8	2.25	88.89
Consumer non-Durables	77	17.15	68	19.10	88.31
Consumer Services	74	16.48	62	17.42	83.78
Consumer Durables	16	3.56	10	2.81	62.50
Energy	10	2.23	7	1.97	70.00
Transportation	8	1.78	8	2.25	100.00
Technology	25	5.57	16	4.49	64.00
Basic Industries	52	11.58	37	10.39	71.15
Capital Goods	62	13.81	47	13.20	75.81
Public Utilities	16	3.56	9	2.53	56.25
TOTAL	449	100.00	356	100.00	79.29

*Industries classification are follow the I/B/E/S system

Table 2. Number of listed firms and covered firms in the I/B/E/S by year

The table shows listed firms and listed firms that have dividend forecasted covered in the I/B/E/S database during 1994 to 2004.

Year	No. of Listed Firms	%	No. of Covered Firms	%	As a % of Listed Firms
1994	389	8.65	268	21.44	68.89
1995	416	9.25	282	22.56	67.79
1996	454	10.09	244	19.52	53.74
1997	431	9.58	33	2.64	7.66
1998	418	9.29	17	1.36	4.07
1999	392	8.71	18	1.44	4.59
2000	381	8.47	47	3.76	12.34
2001	382	8.49	58	4.64	15.18
2002	389	8.65	104	8.32	26.74
2003	407	9.05	135	10.80	33.17
2004	439	9.76	44	3.52	10.02

Table 3 Statistics of dividend payment

From Table 3, the payment frequency is the number of time that listed firms pay dividend during 1994 to 2004. No. of Firms is the numbers of firms that pay dividend correspond to that frequency. Cum. Firms is the cumulative of firms that pay dividend correspond to that frequency. The 'percentage' means the percentage of firms on pay dividend on that frequency relative to overall firms. Finally, the cumulative percentage is the number of firms that pay dividend cumulative correspond to that frequency.

Payment Frequency	No. of Firms	Cum. Firms	Percentage	Cumulative Percentage
0	93	93	20.71	20,71
1	47	140	10.47	31.18
2	59	199	13.14	44.32
3	123	322	27.39	71.71
4	44	366	9.80	81.51
5	27	393	6.01	87.52
6	18	411	4.01	91.53
7	19	430	4.23	95.76
8	11	441	2.45	98.21
9	5	446	1.11	99.32
10	2	448	0.45	99.77
11	1	449	0.23	100.00
TOTAL	449	449	100.00	100.00

Table 4 Descriptive Data of Forecasted Firms by Industry Sector

Industry used in this table follows the I/B/E/S industry code, No. of Listed firms means number of firms listed in the Stock Exchange of Thailand. No. of Covered firms is a numbers of firms that have payment forecasted in the I/B/E/S. FY1, FY2, FY3 and FY4 represent the dividend forecasted information 1-year, 2-year, 3-year and 4-year ahead respectively.

Sector (IBES)	No. of Listed Firms	%	FY1 (1-Year Forecast)			FY2 (2-Years Forecast)			FY3 (3-Years Forecast)			FY4 (4-Years Forecast)		
			No. of Covered Firms	%	As a % of Listed Firms	No. of Covered Firms	%	As a % of Listed Firms	No. of Covered Firms	%	As a % of Listed Firms	No. of Covered Firms	%	As a % of Listed Firms
Finance	100	22.27	97	22.72	97.00	88	23.47	88.00	79	23.03	79.00	26	27.08	26.00
Health Care	9	2.00	9	2.11	100.00	8	2.13	88.89	6	1.75	66.67	1	1.04	11.11
Consumer non-Durables	77	17.15	76	17.80	98.70	72	19.20	93.51	70	20.41	90.91	10	10.42	12.99
Consumer Services	74	16.48	72	16.86	97.30	68	18.13	91.89	61	17.78	82.43	15	15.63	20.27
Consumer Durables	16	3.56	15	3.51	93.75	11	2.93	68.75	8	2.33	50.00	1	1.04	6.25
Energy	10	2.23	9	2.11	90.00	7	1.87	70.00	6	1.75	60.00	6	6.25	60.00
Transportation	8	1.78	8	1.87	100.00	7	1.87	87.50	7	2.04	87.50	3	3.13	37.50
Technology	25	5.57	24	5.62	96.00	12	3.20	48.00	11	3.21	44.00	7	7.29	28.00
Basic Industries	52	11.58	48	11.24	92.31	42	11.20	80.77	40	11.66	76.92	9	9.38	17.31
Capital Goods	62	13.81	56	13.11	90.32	48	12.80	77.42	43	12.54	69.35	9	9.38	14.52
Public Utilities	16	3.56	13	3.04	81.25	12	3.20	75.00	12	3.50	75.00	9	9.38	56.25
TOTAL	449	100.00	427	100.00	95.10	375	100.00	83.52	343	100.00	76.39	96	100.00	21.38

Table 5. Number of First and Last Time Forecasted Dividend in the I/B/E/S

Positive Surprise is the number of cases when actual dividend payment greater than forecasted value. Negative surprise is when actual dividend less than forecasted dividend. No surprise is when actual dividend is equal to forecasted dividend. FY1, FY2, FY3 and FY4 are forecasted year which represent the dividend forecasted information 1-year, 2-year, 3-year and 4-year ahead respectively. 'First' is numbers of forecasted dividend shown in the database first time for each forecasted year. 'Last' means numbers of forecasted dividend shown in the database last time period for each forecasted year.

Type	First				Last			
	Positive Surprise	Negative Surprise	No Surprise	Total	Positive Surprise	Negative Surprise	No Surprise	Total
FY1 (1-Year Forecast)	530	740	222	1492	573	591	328	1492
(%)	(35.52)	(49.60)	(14.88)	(100.00)	(38.40)	(39.61)	(21.98)	(100.00)
FY2 (2-Years Forecast)	319	628	128	1075	356	575	144	1075
(%)	(29.67)	(58.42)	(11.91)	(100.00)	(33.12)	(53.49)	(13.40)	(100.00)
FY3 (3-Year Forecast)	182	402	100	684	190	403	91	684
(%)	(26.61)	(58.77)	(14.62)	(100.00)	(27.78)	(58.92)	(13.30)	(100.00)
FY4 (4-Year Forecast)	58	74	32	164	61	72	31	164
(%)	(35.37)	(45.12)	(19.51)	(100.00)	(37.20)	(43.90)	(18.90)	(100.00)

ตารางที่ 6. **Number of average Forecasted Dividend each year in the I/B/E/S**

Positive Surprise is the number of cases when actual dividend payment greater than forecasted value. Negative surprise is when actual dividend less than forecasted dividend. No surprise is when actual dividend is equal to forecasted dividend. FY1, FY2, FY3 and FY4 are forecasted year which represent the dividend forecasted information 1-year, 2-year, 3-year and 4-year ahead respectively. 'Mean' is average numbers of forecasted dividend shown in the database first time for each forecasted year.

Type	Mean			
	Positive Surprise	Negative Surprise	No Surprise	Total
FY1 (1-Year Forecast)	574	755	163	1492
(%)	(38.47)	(50.60)	(10.92)	(100.00)
FY2 (2-Years Forecast)	340	642	93	1075
(%)	(31.63)	(59.72)	(8.65)	(100.00)
FY3 (3-Year Forecast)	188	429	67	684
(%)	(27.49)	(62.72)	(9.80)	(100.00)
FY4 (4-Year Forecast)	62	74	28	16[4
(%)	(37.80)	(45.12)	(17.07)	(100.00)

Table 7. Dividend Surprise Value

Values in this table are dividend surprise magnitudes which are difference between actual value of dividend payment and forecasted dividend divided by forecasted dividend or $\Delta DIV_{j,SP} = \frac{DIV_{ac,t-1} - DIV_{fc,t-1}}{DIV_{fc,t-1}}$. Positive Surprise is when actual dividend greater than forecasted dividend. Negative Surprise is when actual dividend surprise is less than forecasted dividend. FY1, FY2, FY3 and FY4 are forecasted year which represent the dividend forecasted information 1-year, 2-year, 3-year and 4-year ahead respectively. Max is the maximum value, Min is the minimum value, and SD is the standard deviation. We use dividend forecast last time for our dividend surprise calculation.

Type	Positive Surprise				Negative Surprise			
	Max	Min	Average	SD	Max	Min	Average	SD
FY1 (1-Year Forecast)	1.00	0.00	0.33	0.28	0.00	-16.75	-0.56	1.30
FY2 (2-Years Forecast)	1.00	0.01	0.45	0.31	0.00	-10.00	-0.99	1.46
FY3 (3-Year Forecast)	1.00	0.01	0.53	0.31	-0.01	-9.60	-1.18	1.50
FY4 (4-Year Forecast)	1.00	0.06	0.67	0.30	-0.04	-1.73	-0.57	0.46

Table 8. Descriptive statistics of variables used in the regression analysis

This table shows descriptive information of variables used in the regression analysis. $\Delta EPS_{j,t}$ is the change in earning per share of firm j in year t and divided by earning per share at the beginning of year, or $\Delta EPS_{j,t} = \frac{EPS_{j,t} - EPS_{j,t-1}}{EPS_{j,t-1}}$. $\Delta DIV_{j,sp}$ is the different value between actual dividend and forecasted dividend divided by forecasted dividend in year t -1 , or $\Delta DIV_{j,t-1} = \frac{DIV_{ac,t-1} - DIV_{fc,t-1}}{DIV_{fc,t-1}}$. $EYS_{j,t-1}$ earning yield in period (t - 1) which can be computed by using the earning per share in year t – 1 divided by the price in the year t – 1. Panel a) presents the descriptive data of the variables. Panel b) presents the correlation matrix.

Panel a) Descriptive Statistics

value	$\Delta EPS_{j,t}$	$\Delta DIV_{j,sp}$	$EYS_{j,t-1}$
mean	-0.536	0.140	0.100
Median	-0.250	0.000	0.076
Max	22.483	14.000	7.053
Min	-31.182	-1.000	-8.278
SD	2.864	1.258	0.444

Panel b) Correlation Coefficient

variables	$\Delta EPS_{j,t}$	$\Delta DIV_{j,sp}$	$EYS_{j,t-1}$
$\Delta EPS_{j,t}$	1		
$\Delta DIV_{j,sp}$	0.071278	1	
$EYS_{j,t-1}$	0.008824	0.039138	1

Table 9 Regression Analysis Results on Dividend Surprise from Forecasted Dividend

Regression analysis used is $\Delta EPS_{j,t} = \beta_0 + \beta_1 \Delta DIV_{j,sp} + \beta_2 EYS_{j,t-1} + \varepsilon_{j,t}$. $\Delta EPS_{j,t}$ is the change in earning per share of firm j in year t and divided by earning per share at the beginning of year, or $\Delta EPS_{j,t} = \frac{EPS_{j,t} - EPS_{j,t-1}}{EPS_{j,t-1}}$. $\Delta DIV_{j,sp}$ is the different value between actual dividend and forecasted dividend divided by forecasted dividend in year t -1 , or $\Delta DIV_{j,t-1} = \frac{DIV_{ac,t-1} - DIV_{fc,t-1}}{DIV_{fc,t-1}}$. $EYS_{j,t-1}$ earning yield in period (t - 1) which can be computed by using the earning per share in year t – 1 divided by the price in the year t – 1. Number of sample used in the test are 1,150.

VARIABLES	COEFFICIENTS	T-STAT	P-VALUE
Intercepts	-0.56281	-6.48048	1.35E-10
β_1	0.16175	2.410333	0.016095
β_2	0.038962	0.205047	0.837572
R^2	0.005117		
Adjusted R^2	0.003382		
F-value	2.949737		
Number	1,150		

Table 10. Regression Analysis Results on Dividend Surprise from Past Dividend

Regression analysis used is $\Delta EPS_{j,t} = \lambda_0 + \lambda_1 \Delta DIVL_{j,sp} + \lambda_2 EYS_{j,t-1} + \varepsilon_{j,t}$ $\Delta EPS_{j,t}$ is the change in earning per share of firm j in year t and divided by earning per share at the beginning of year, or $\Delta EPS_{j,t} = \frac{EPS_{j,t} - EPS_{j,t-1}}{EPS_{j,t-1}}$. $\Delta DIV_{j,t-1}$ is the different value between actual dividend and forecasted dividend in year t divided by actual dividend in year t -1 , or $\Delta DIV_{j,t-1} = \frac{DIV_{ac,t-1} - DIV_{ac,t-1}}{DIV_{ac,t-1}}$. $EYS_{j,t-1}$ earning yield in period (t - 1) which can be computed by using the earning per share in year t – 1 divided by the price in the year t – 1. Number of sample used in the test are 1,150.

VARIABLES	COEFFICIENTS	T-STAT	P-VALUE
λ_0 Intercepts	-0.544	-6.27547	4.93E-10
λ_1	-0.00017	-0.59625	0.551123
λ_2	0.057645	0.302876	0.762039
R^2	0.000388		
Adjusted R^2	-0.00136		
F-value	0.222431		
Number	1,150		

Table 11. Abnormal Returns on the Dividend Announcement Date: All surprise

This Table shows the cumulative average abnormal returns (AR) on the dividend announcement date for all cases. AR can be computed as $AR_T = \frac{1}{n}\sum_{t=1}^{n} CAR_{i,}$ when CAR_i is the abnormal return cumulative over n period, or $CAR_i = \left[\prod_{t=-1}^{t=+1}\left(\frac{1+R_{i,t}}{1+R_{M,t}}\right)-1\right]$. $R_{i,t}$ and $R_{M,t}$ are daily returns on for stock i and market. We use the SET index returns to proxy for market returns

All Surprise	AR	Max	Min	Median	S.D.	n	t-stat
Pre-event date (day -30 to day -2)	-0.0055	0.7080	-0.5585	-0.0110	0.1201	1,121	-1.5397
Pre-event date (day -20 to day -2)	-0.0048	0.6543	-0.5100	-0.0167	0.1171	1,121	-1.3746
Pre-event date (day -10 to day -2)	-0.0003	0.3059	-0.3480	0.0018	0.0670	1,121	-0.1472
Pre-event date (day -5 to day -2)	0.0040	0.2862	-0.3194	0.0055	0.0453	1,121	2.9257
Event date (day -2 to day +2)	0.0060	0.3993	-0.5527	0.0052	0.0623	1,121	3.2088
Event date (day -1 to day +1)	0.0054	0.3208	-0.3592	0.0045	0.0481	1,121	3.7579
Post-event date (day +2 to day +5)	-0.0038	0.4440	-0.5213	-0.0028	0.0628	1,121	-2.0185
Post-event date (day +2 to day +10)	0.0033	0.9719	-0.5506	-0.0054	0.1027	1,121	1.0672
Post-event date (day +2 to day +20)	0.0059	1.1799	-0.6272	-0.0030	0.1472	1,121	1.3481
Post-event date (day +2 to day +30)	0.0045	1.2287	-0.5859	-0.0068	0.1774	1,121	0.8580

** Significant at 0.05

*Significant at 0.10

Table 11. Abnormal Returns on the Dividend Announcement Date

This Table presents the Abnormal returns (AR) on the dividend announcement date classified by the surprise direction. Panel a) is the positive surprise and Panel b) is the negative surprise. AR can be computed as $AR_T = \frac{1}{n}\sum_{t=1}^{n} CAR_{i,}$ when CAR_i is the abnormal return cumulative over n period, or $CAR_i = \left[\prod_{t=-1}^{t=+1}\left(\frac{1+R_{i,t}}{1+R_{M,t}}\right)-1\right]$. $R_{i,t}$ and $R_{M,t}$ are daily returns on for stock i and market. We use the SET index returns to proxy for market returns

Panel a) Positive Surprise

Positive Surprise	AR	Max	Min	Median	S.D.	n	t-stat
Pre-event date (day -30 to day -2)	-0.0027	0.7080	-0.4544	-0.0125	0.1158	566	-0.5449
Pre-event date (day -20 to day -2)	-0.0057	0.6543	-0.4386	-0.0179	0.1137	566	-1.1914
Pre-event date (day -10 to day -2)	0.0020	0.2654	-0.3480	0.0031	0.0679	566	0.7076
Pre-event date (day -5 to day -2)	0.0040**	0.1841	-0.2483	0.0056	0.0436	566	2.1813
Event date (day -2 to day +2)	0.0171**	0.3993	-0.3069	0.0159	0.0616	566	6.6211
Event date (day -1 to day +1)	0.0148**	0.3208	-0.1739	0.0133	0.0487	566	7.2477
Post-event date (day +2 to day +5)	0.0048**	0.4162	-0.2471	0.0075	0.0536	566	2.1360
Post-event date (day +2 to day +10)	0.0063	0.5421	-0.2982	-0.0042	0.0877	566	1.7046
Post-event date (day +2 to day +20)	0.0096	1.0619	-0.4839	-0.0012	0.1375	566	1.6634
Post-event date (day +2 to day +30)	0.0092	1.1324	-0.4464	-0.0106	0.1623	566	1.3536

Panel b) Negative Surprise

Negative Surprise	AR	Max	Min	Median	S.D.	n	t-stat
Pre-event date (day -30 to day -2)	-0.0084	0.4995	-0.5585	-0.0082	0.1244	555	-1.6007
Pre-event date (day -20 to day -2)	-0.0039	0.6410	-0.5100	-0.0140	0.1205	555	-0.7626
Pre-event date (day -10 to day -2)	-0.0027	0.3059	-0.2582	0.0003	0.0661	555	-0.9459
Pre-event date (day -5 to day -2)	0.0039*	0.2862	-0.3194	0.0055	0.0471	555	1.9641
Event date (day -2 to day +2)	-0.0054**	0.2419	-0.5527	-0.0035	0.0611	555	-2.0835
Event date (day -1 to day +1)	-0.0042**	0.2223	-0.3592	-0.0035	0.0456	555	-2.1783
Post-event date (day +2 to day +5)	-0.0126**	0.4440	-0.5213	-0.0109	0.0698	555	-4.2337
Post-event date (day +2 to day +10)	0.0002	0.9719	-0.5506	-0.0076	0.1159	555	0.0405
Post-event date (day +2 to day +20)	0.0022	1.1799	-0.6272	-0.0049	0.1564	555	0.3256
Post-event date (day +2 to day +30)	-0.0002	1.2287	-0.5859	-0.0049	0.1915	555	-0.0296

** Significant at 0.05

*Significant at 0.10

Figure 1. Abnormal Returns on the Dividend Announcement Date

The Figure summarize the abnormal returns (AR) on the dividend announcement dates by classified the abnormal returns into three cases, positive surprise, negative surprise and all cases.