A STUDY OF PRICE-CHANGED-TO-DIVIDEND RATIO ON EX-DIVIDEND DATES: THE CASE STUDY OF STOCK EXCHANGE OF THAILAND IN 2012-2014

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Abstract: Most of studies had a similar conclusion that the average stock prices on ex-dividend dates tend to be declined according to the corresponding amount of dividend even though it is the Book Value, BV, which is declined by the amount of dividend. As many stock traders did not achieve their results based on this conclusion, the research methodology was repeated to assert the myth. Because none of researches were based on data from the Stock Exchange of Thailand, the research methodology was repeated, only on cash dividends, for years of 2012-2014. Finally, the results were compared with the previous study and test on their difference among industries and years. The result showed that the ratio of different countries, e.g. United States, Japan and Thailand are not the same. However, the result showed no different among industries and years.

Keywords: Cash Dividend, Ex-Dividend Date, Stock Price, Thailand.

1. INTRODUCTION

Cash dividend is one of major concerned in stock trading decisions. As many stock traders performance relied on the relationship between the average stocks price drop-off on the ex-dividend date and the amount of the dividend, the research methodology was performed to assert that.

Campbell & Berarek (1955) found that the average stock price tended to be declined about 90 percent of the amount of the dividend on their ex-dividend dates. Finnerty (1981) presents empirical evidence that lends strong support to the buying-the-dividend hypothesis for electric utility common stocks. In reviewing all of Boyd and Jagannathan (1994) result, it is striking that, at the margin, percentage price drop is almost exactly equal to dividend yield. This result was obtained in a number of different tests-the only significant exception being those tests after negotiated commission rates and with low dividend yield data points excluded. Kato and Loewenstein (1995) calculate the price-changed-to-dividend ratio on the ex-day.

Campbell & Berarek (1955) stated that traders in a 25 percent tax bracket would find equal advantage in trades before and after an ex-dividend date if the price drop-off were 75 to 85 percent of the dividend, while those in a 50 percent bracket would find equal advantage if the drop-off were 50 percent to 66 2/3 percent. This suggests that a fully rational market might make the drop-off between 65 and 75 percent of the dividend-taking into account a market composed of high-bracket individuals, low-bracket individuals, and all manner of corporations, institutions, and fiduciaries. On balance, a tax-paying individual will do better to sell before an ex-dividend date but to buy after it. For a tax-exempt institution, the rule is exactly the reverse.

Finnerty (1981) shown that the relatively high yields that electric utility common stocks afford are attractive to two classes of investors but for different reasons. First, taxable institutions that can claim the 85% dividends received deduction buy electric utility common stocks before the ex-dividend date, hold them long enough to

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qualify for the deduction, and then dispose of the shares. Second, investors in electric utility common stocks, particularly individual investors seeking a regular income flow, are attracted by the high yields these stocks afford.

His results have an important implication for pricing new issues of electric utility common stocks. The buying pressure prior to the ex-dividend date and the selling pressure thereafter imply that the new issue should be priced before rather than just after the ex-dividend date. Waiting until after the ex-dividend date to price will expose the issuer to the risk that the price will be depressed by more than the amount of the dividend, whereas pricing before the ex-dividend date will enable the utility to take advantage of the positive effects that dividend buying and dividend preference generally have on the common stock price.

Kato and Loewenstein (1995) found that return patterns around ex-dividend days are dominated by the institutional regularity of many of the ex-dividend days coinciding with the first trading day of record of a new fiscal year. This conclusion accounts, on average, for excess returns of almost 1 percent independent of any dividend-related considerations.

To summarize, these recommendations were derived from studies of the relationship between dividends and stock prices on ex-dividend dates.

**Statement of Problem**

One of the fundamental models of common stock valuation holds that a company's share price is equal to the discounted value of its future dividend stream, Finnerty (1981). Durand & May (1960) also stated that the stock price on xd date drop by the amount dividend.

For more updated result, the research methodology was repeated to assert that "the average stock price drop-off on the ex-dividend date tends to be about 90 percent of the amount of the dividend when the stock market is otherwise stable."

**2. LITERATURE REVIEWS**

The behavior of stock prices around ex-dividend dates is of interest to many financial researchers. It is quite convincing that the price of equity on XD-date is declined by the amount of dividend paid even though it is the Book Value, BV, that is declined by the amount of dividend. Many researchers, i.e., Campbell & Beranek (1955), Durand & May (1960), and Finnerty (1981), concluded that the average stock prices on ex-dividend dates tend to be declined by approximately 90 percent of the amount of dividend.

Two bits of evidence from Campbell & Berarek (1955) point to the conclusion that the stock exchange practice of marking down open bids on the ex-dividend day by the full amount of the dividend is a significant factor in the price drops. This situation makes it advisable for a tax-paying prospective seller to sell before rather than after an ex-dividend date, other things being equal, since our data indicate a probable price drop-off on the ex-date of about 90 percent of the dividend. The major conclusions to be derived from the foregoing data have already been stated. However, one item will bear repetition: on balance, a tax-paying individual will do better to sell before an ex-dividend date but to buy after it. For a tax-exempt institution, the rule is exactly the reverse.

Finnerty (1981) showed that the relatively high yields that electric utility common stocks afford are attractive to two classes of investors but for different reasons. First, taxable institutions that can claim the 85% dividends received deduction buy electric utility common stocks before the ex-dividend date, hold them long enough to qualify for the deduction, and then dispose of the shares. Second, investors in electric utility common stocks, particularly individual investors seeking a regular
income flow, are attracted by the high yields these stocks afford.

The results presented here have an important implication for pricing new issues of electric utility common stocks. The buying pressure prior to the ex-dividend date and the selling pressure thereafter imply that the new issue should be priced before rather than just after the ex-dividend date. Waiting until after the ex-dividend date to price will expose the issuer to the risk that the price will be depressed by more than the amount of the dividend, whereas pricing before the ex-dividend date will enable the utility to take advantage of the positive effects that dividend buying and dividend preference generally have on the common stock price.

In reviewing all of Boyd and Jagannathan (1994) result, it is striking that, at the margin, percentage price drop is almost exactly equal to dividend yield. This result was obtained in a number of different tests—the only significant exception being those tests after negotiated commission rates and with low dividend yield data points excluded.

Kato and Loewenstein (1995) stated that the price-changed-to-dividend ratio is most negative for low-yield securities and increases gradually as the mean dividend yield increases, becoming positive (0.165) for the highest dividend yield quintile.

Because none of researches were based on data from the Stock Exchange of Thailand, the research methodology was repeated, only on cash dividends, for years of 2012-2014. Finally, the results were compared with the previous study and test on their difference among industries and years.

3. RESEARCH DESIGN

There are many researches provides recommendations based on studies of the relationship between dividends and stock prices on ex-dividend dates.

Campbell & Bererek (1955) stated that traders in a 25 percent tax bracket would find equal advantage in trades before and after an ex-dividend date if the price drop-off were 75 to 85 percent of the dividend, while those in a 50 percent bracket would find equal advantage if the drop-off were 50 percent to 66 2/3 percent. This suggests that a fully rational market might make the drop-off between 65 and 75 percent of the dividend-taking into account a market composed of high-bracket individuals, low-bracket individuals, and all manner of corporations, institutions, and fiduciaries. On balance, a tax-paying individual will do better to sell before an ex-dividend date but to buy after it. For a tax-exempt institution, the rule is exactly the reverse.

Kato and Loewenstein (1995) found that return patterns around ex-dividend days are dominated by the institutional regularity of many of the ex-dividend days coinciding with the first trading day of record of a new fiscal year. This conclusion accounts, on average, for excess returns of almost 1 percent independent of any dividend-related considerations.

3.1 Theoretical Framework

Kato and Loewenstein (1995) calculate the price-changed-to-dividend ratio on the ex-day. This ratio is calculated with closing prices on the cum-dividend day and opening prices on the ex-day.

Finnerty (1981) test the dividend preference hypothesis by examining the size of the decline in price of utility common stocks on their ex-dividend date relative to the size of the dividend:

\[ y = \frac{Y_t}{D_t} \]

where \( Y_t \) is the difference between the closing prices on the ex-dividend date and the next preceding trading day, and \( D_t \) is the amount of the dividend paid at \( t \).

3.2 Conceptual Framework

H1: An average price-changed-to-dividend ratio is equal to -0.9.

This hypothesis aims to assert whether an inferential estimation of price-changed-to-dividend ratio is equal to -0.9.
The opening Average on the ex-dividend day did not suffer from the previous day's close by more than this amount. In this test all stock price changes were measured from the closing price of the preceding day to the opening price on the ex-dividend day. This test shows a median price drop-off of approximately 92 percent of the dividend, with about 89 percent for 104 50-cent dividends and 95 percent for 95 larger dividends.

The 1953 test was based on 200 dividends, 20 cases each of amounts of $.375, $.50, $.625, $.75, $.875, $1.00, $1.25, $1.50, $1.75, and $2.00. In this instance the price changes were measured in two ways: (a) between the ex-dividend opening sale and the previous day's close and (b) between the averages of the high-low prices for the two days. No attempt was made to select dates on which the general market was stable, a factor which may have caused the average price drop-off to be minutely smaller than it would otherwise have been. Median drop-offs on these 200 cases were 96 percent on the closing-to-opening basis and 83 percent on the average-price basis. The individual percentages were again widely scattered, with no significant modal tendency; moreover, out of 200 cases studied, 14 stocks actually rose in price when they sold ex-dividend, and 14 declined by 200 percent of the dividend or more.

To test the buying-the-dividend hypothesis, Finnerty (1981) added eight dummy variables, and then tested the relationship using the 164 sample periods. Each dummy variable \( d_j \) equals one at time \( x = j \) and zero otherwise. The coefficient of the dummy variable \( d_j \) measures the degree of deviation of the actual observations from the exponential time path at time \( x = j \). This degree of deviation serves as a proxy for the degree of abnormal buying pressure in each of the weeks immediately preceding the ex-dividend date and the degree of abnormal selling pressure in each of the weeks immediately following the ex-dividend date.
Boyd and Jagannathan (1994) use daily closing prices for individual stocks for the period from July 1962 to December 1987 from the CRSP Daily Master, along with information regarding the date on which the stock went ex-dividend and the amount and tax status of the dividends. The sample is limited to ordinary, taxable, cash dividends. There were a total of 142,589 such dividends. For some of the stocks that paid cash dividends, part of the dividend was taxable and part tax-exempt. Also, for some stocks that were going ex-dividend, there was more than one type of dividend being paid. We omitted 10,532 ex-dividend days that had this feature. This left a total of 132,057 ex-dividend days.

In this study, all dividend payment data were collected from Icedos (2012-2014). The Microsoft Excel 2007 is used to perform all Data Analysis. The missing prices are filled with the price of nearest day.

4. RESULTS

Out of 674 registered companies, there were 406, 438, and 466 companies paid totals of 626, 684, and 787 cash dividend, respectively.

Fig.1. Amount of companies with their corresponding amount of dividend payments

From Figure 1, most companies paid dividend once a year, some paid twice a year, and there were more companies paid dividend quarterly than either 3 or 5 times a year.

Fig.2. Percentage Distribution of ex-dividend dates by day of the week

Compared with Panels B in Boyd's Table 1, Figure 2 reports the day of the week. Whereas Monday is, by far, the most common day of the week in his study, Tuesday is, however, the most common day of the week in this study.

Fig.3. Percentage Distribution of ex-dividend dates by month
Compare with Boyd's Panels C in Table 1, Figure 3 reports the seasonal patterns in the occurrence of ex-dividend days. Relatively larger fractions of the ex-days occur in the months of February, May, August, and November. This quarterly pattern is expected since, for a relatively large fraction of stocks, fiscal and calendar quarters coincide. For such firms the ex-dividend days tend to occur one month after the end of the quarter.

H1: An average price-changed-to-dividend ratio is equal to -0.9.

The average price-changed-to-dividend ratio in 2012-2014 is -5.377, with standard deviation equal to 56.950.

The two sided interval estimation with 5% alpha is -5.377 +/- 0.05431 so there is sufficient evidences to reject the null hypothesis. Therefore, an average price-changed-to-dividend ratio is not equal to -0.9.

H2: An average price-changed-to-dividend ratio is equal to all previous studies.

The two sided p-value is 0.0002 which is lower than 5% alpha so there is sufficient evidences to reject the null hypothesis. Therefore, an average price-changed-to-dividend ratio is not equal to Boyd's one.

H3: Thai average price-changed-to-dividend ratios are all equal regardless of the industry.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Amount</th>
<th>Mean</th>
<th>StdDev</th>
<th>CoD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Products</td>
<td>133</td>
<td>-2.176</td>
<td>6.201</td>
<td>284.995</td>
</tr>
<tr>
<td>Industrials</td>
<td>299</td>
<td>-3.416</td>
<td>13.021</td>
<td>381.196</td>
</tr>
<tr>
<td>Agro &amp; Food Industry</td>
<td>165</td>
<td>-2.689</td>
<td>13.403</td>
<td>498.430</td>
</tr>
<tr>
<td>Resources</td>
<td>141</td>
<td>-5.556</td>
<td>25.541</td>
<td>459.664</td>
</tr>
<tr>
<td>Technology</td>
<td>161</td>
<td>-5.872</td>
<td>24.403</td>
<td>415.565</td>
</tr>
<tr>
<td>Financials</td>
<td>216</td>
<td>15.449</td>
<td>166.722</td>
<td>1079.129</td>
</tr>
<tr>
<td>Services</td>
<td>376</td>
<td>-5.957</td>
<td>21.979</td>
<td>368.971</td>
</tr>
<tr>
<td>Others (ETF,MAI)</td>
<td>22</td>
<td>-4.822</td>
<td>9.169</td>
<td>190.149</td>
</tr>
<tr>
<td>Overall</td>
<td>2,097</td>
<td>-5.377</td>
<td>56.950</td>
<td>1059.172</td>
</tr>
</tbody>
</table>

Table 1: Comparison of average price-changed-to-dividend ratio and its standard deviation among previous studies

The average price-changed-to-dividend ratio is compared among industries in the Table 2.

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>27,613.445</td>
<td>8</td>
<td>3,451.681</td>
<td>0.125</td>
<td>0.998</td>
</tr>
<tr>
<td>Within</td>
<td>57,570,589.117</td>
<td>2,088</td>
<td>27,572.121</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>57,598,202.561</td>
<td>2,096</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Analysis of Variance

From Table 3, F-ratio is 0.125, with p-value is 0.998 which is higher than 5% alpha so there is not sufficient evidences to reject the null hypothesis. Therefore, average price-changed-to-dividend ratios in 2015 are all equal regardless of the industry.

H3: Annual average price-changed-to-dividend ratios are all equal regardless of the year.
Table 4: Comparison of average price-changed-to-dividend ratio and its standard deviation among years

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>626</td>
<td>684</td>
<td>787</td>
</tr>
<tr>
<td>Mean</td>
<td>-2.185</td>
<td>-9.336</td>
<td>-4.274</td>
</tr>
<tr>
<td>StDev</td>
<td>11.321</td>
<td>95.336</td>
<td>24.024</td>
</tr>
<tr>
<td>CoD (%)</td>
<td>519.84</td>
<td>1000.012</td>
<td>563.95</td>
</tr>
</tbody>
</table>

The average ratio of year 2013 is lower than others. This is because of the flood disaster in year 2013.

Table 5: Analysis of Variance

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>18,042.569</td>
<td>2</td>
<td>9,021.285</td>
<td>2.80</td>
<td>0.06</td>
</tr>
<tr>
<td>Within</td>
<td>6,741.548</td>
<td>609</td>
<td>2.09</td>
<td>60</td>
<td>0.06</td>
</tr>
<tr>
<td>Total</td>
<td>6,759.591</td>
<td>178</td>
<td>2.09</td>
<td>60</td>
<td>0.06</td>
</tr>
</tbody>
</table>

From Table 5, F-ratio is 2.802, with p-value is 0.061 which is higher than 5% alpha so there is not sufficient evidences to reject the null hypothesis. Therefore, annual average price-changed-to-dividend ratios are all equal regardless of the year.

DISCUSSIONS AND CONCLUSIONS

The results showed some significant point
1. An average price-changed-to-dividend ratio (-5.377) is less than -1. This result shows that investors exhibit a relative preference for dividends over capital gains.
2. Compared with -0.9 (Campbell and Beranek, 1955), -0.707 (Boyd and Jagannathan, 1994), and 0.5063, (Kato, 1995) an average price-changed-to-dividend ratio is not the same. This might be because of impacts from time, i.e. and place.
3. Average price-changed-to-dividend ratios are not different among industries. This imply that this ratio are not relied on industry different.
4. Although, annual average price-changed-to-dividend ratios are not different among years, there is a sign of different when a huge event occurred.
5. This imply the ratio would be effected more by event in that time of trading rather than the different of industry.

One limitation is that the stock price is continuously varied on ex-dividend date. The author can only captured the closing price, not all traded price. There are only 3 years of study, 2012-2014, so the result might not represent the other years. In addition, some stocks did not have any trade on ex-dividend date so we use the price of the nearest day after. All data are assumed to be normal distributed.

To summarize, the existing literature has isolated three important stylized facts about dividend buying decision. First, transactions costs affect pricing and must be taken into account in empirical research on this topic. Second, several classes of traders may trade around ex-dates, with systematically different taxes and/or transactions costs. Third, dividend capture activities represent a substantial amount of ex-day trading, primarily for high dividend yield stocks.

REFERENCES


