Is There a Dividend Month Premium? Evidence from Japan*

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Abstract. Defined by Hartzmark and Solomon (2012), dividend month premium is misvaluation of stocks in the months when companies are predicted to pay dividends. Following Hartzmark and Solomon methodology, this paper examines market reactions to Japanese companies in the dividend months. Portfolios consisting of companies with a predicted dividend and all other companies were formed and regressed under the CAPM, the Fama-French 3 factor and the 4 factor models. In a data sample consisting of 2263 Japanese companies from January 1991 to October 2014, no statistically significant abnormal returns were found in predicted dividend portfolio. Nonetheless, this study recorded significant negative abnormal returns of dividend paying companies with respect to non-dividend payers.

Аннотация. По определению Hartzmark и Solomon (2012), премия дивидендного месяца – это ошибочное ценообразование акций в месяцах, в которых ожидается выплата дивидендов. Следуя методологии Hartzmark and Solomon, данная статья исследует рыночную реакцию на японские компании в дивидендных месяцах. Портфели, состоящие из акций компаний с ожидаемым дивидендом и остальных компаний, были сформированы и регрессированы в соответствии с двух-(CAPM), трех-(Fama-French), четырехфакторной (Carhart) моделями. В выборке из 2263 японских компаний в период с января 1991 года по октябрь 2014 года не были найдены статистически важные аномальные доходности в портфеле ожидаемых дивидендов. Тем не менее в данном исследовании были замечены статистически важные негативные аномальные доходности дивидендных компаний по отношению к недивидендным компаниям.

Keywords: Dividends, mispricing, market efficiency, price pressure.

1. INTRODUCTION

Traditional theoretical models in finance are built under the assumption of perfect financial markets with perfect liquidity and without transaction costs. Perfect or efficient markets are those that are able to incorporate instantaneously all publicly available information. In that sense, research on stock price reactions to corporate distributions play a prominent role, as they can examine real-world efficiency of capital markets. Not only are dividend announcements public corporate events, they are also of highly predictable and regular character and thus, as Jensen (1978) pointed out, profitable trading strategies based on that set of information should not exist. Moreover, as Miller and Modigliani (1961) stated, the dividend payout policy of a company is irrelevant to its investors, thus should not affect overall earnings of stocks.

However, an expanding body of research has documented empirical evidence of market inefficiencies, including abnormal returns around dividend announcement and ex dividend dates. To start with, Charest (1978) found asymmetrical stock market responses to announcement of dividend increases and decreases, which could presuppose arbitrage opportunities. Kalay and Lowenstein (1985) recorded a positive net dividend announcement effect. Following these papers, Eades, Hess and Kim (1985) documented similar market reactions to dividend announcement and in addition discovered an ex-dividend period effect. Moreover, they found no evidence of risk increases around declaration dates.

Shefrin and Statman (1984) introduced behavioral reasons behind managerial decisions on dividend policies and explained investors' preference towards cash dividends. Extending Shefrin and Statman's (1984) behavioral theory, Baker and Wurgler (2004 a & b) developed a theory of catering, which proposed that investors' sentiments and psychology are drivers for dividend demand. Market participants may prefer dividends, as they are a guaranteed source of revenue,

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and hence would buy dividend-paying stocks before ex-date and sell after. This would result in positive abnormal returns of subsequent stocks prior ex-date and negative abnormal returns after the ex-date.

Under the same intuition of dividend-paying stocks overpricing, Hartzmark and Solomon (2012) documented instances of market mispricing of US stocks in months when dividend is predicted. The authors presented evidence of high positive abnormal returns in predicted dividend months and argued this anomaly is unlikely to be explained by systemic risk. In addition, recorded anomalies are nearly as big as value premiums, but have lower standard deviations. Consistent with price pressure theory, Haltzmark and Solomon marked returns before ex-dividend dates and subsequent reversals after ex-dividend dates correlate with liquidity, and are higher in times of market stress and high volatility. Moreover, they argue that the dividend month premium is not driven by earnings announcement or seasonality effects.

Following Hartzmark and Solomon (2012), this paper is aimed at finding evidence of market inefficiencies with respect to corporate distribution events. Using a similar methodology applied on Japanese stock market, this study came to different results. To start, no return patterns with respect to dividend companies were identified. What is more, no evidence of abnormal returns of dividend paying companies was found. In contrary, in the sample of this research, dividend-paying companies had lower average returns than companies without a dividend. That led to the discovery of a dividend discount on the Japanese stock market, as a portfolio that goes long on companies with predicted dividend and short on all other companies has a significant negative abnormal return of -0.69% with respect to a 4 factor model. By isolating earnings announcements effects, the performance of the difference portfolio did not change, as it had significant negative abnormal return of –0,78%.

As most research on dividends were done on the US stock market, this paper contributes to the literature by exploring new instances of market inefficiencies, by examining market responses to dividend payments of companies listed on Tokyo Stock Exchange. The remainder of the paper is structured as follows. Section 2 describes the hypotheses. Section 3 discusses the data. Section 4 presents the main results of the paper, and section 5 concludes.

2. HYPOTHESES

The perfect capital market, or complete market, can be clearly defined through several essential properties. Firstly, there are no information asymmetries, meaning that all data is freely available to everyone. Furthermore, close substitutes to securities are available, and exercising the arbitrage strategy has no cost. All these characteristics allow a defense of the main property of a perfect capital market – the demand for stocks is horizontal, i.e. the price of a security is not dependent on the number of it being bought or sold on the market. Consider the example of an investor who operates at this type of market and decides to buy a large quantity of a certain stock. This bid would be fulfilled at a spread market price since any other price would result in an arbitrage opportunity. From the side of a market player performing the arbitrage, the situation can be described as an arbitrageur selling short the desired (by the investor) amount of the stock, and then buying the same amount of close substitutes, therefore performing the profit as a difference of an actual market price and the price that the investor was willing to pay. However, other arbitrageurs would also identify the opportunity and perform the same transactions, hence driving the asking price of the stock to converge with the spread market price and thus making the arbitrage profits converge to zero.

The most prominent alternative hypothesis related to corporate distributions, as in Hartzmark and Solomon (2008), states that returns are high due to the foreseeable price pressure preceding the dividend payment. In the course of this period of time, the supply-demand model of the dividend-paying shares is mostly explained by two factors – investors whose trading model is built around the dividends themselves, and secondly, by the market makers and arbitrageurs who are trying to benefit from the short-term price fluctuations. For example, those investors who get utility from dividends are more prone to buy the shares of firms that are going to pay dividends sooner (assuming positive interest rates). Therefore, these investors are more interested in buying (or not selling) the stock right before the dividend payments rather than immediately after. Nevertheless, this does not automatically mean that the same set of investors are buying the securities just before the payment day, and selling immediately after. It may be the case that investors are just going long for the same stocks they already were aiming to buy, and taking the opportunity to make the transaction prior to the ex-day (or postponing the projected sales until the payment day). If the supply provided by arbitrageurs and market makers is not enough to meet the demand by dividend-seeking investors, the situation of an excess demand for the dividend-paying shares will occur, thus bringing the price up to the new equilibrium. To summarize, we can state that the existence of a demand for dividends themselves (in other words – the desire of some investors to pay for dividends) stays behind the phenomenon of changes in supply and demand of dividend-paying assets.

3. DATA DESCRIPTION

The data on monthly returns were derived from monthly stock prices extracted from Bloomberg, while data on dividends was collected from Datastream. Monthly return data runs from January 1991 to October 2014. Historical prices were adjusted to reflect regular quarterly, semiannual, annual cash distribution, also stock splits, consolidations, spin-offs, stock dividends and rights offerings. For this study only stocks listed on the Tokyo Stock Exchange were used. Only common stocks of Japanese companies were considered and thus, ADRs, various ownership units, REITs, and stocks of companies incorporated outside Japan, were excluded. Besides, stocks were excluded that were listed after January 2004 and those that have prices below 200 Japanese yen as of October 2014. Also stocks that did not contain data on dividends were not included in the final sample.

For dividend payments, only ordinary cash dividends paid in Japanese yen were considered. As the purpose of this study is to examine market reaction to regular and predictable events, abnormal and non-recurring dividends were excluded. 23.75% of dividend observations are annual, 75.97% are semi-annual and 0.28% quarterly.

4. METHODOLOGY AND RESULTS

PREDICTED DIVIDEND MONTH AND RAW RETURNS

In this section, we are trying to find any patterns in raw returns of dividend paying stocks in the months of expected dividend. As pointed out by Bernheim (1991), firms are usually persistent in their dividend policy, meaning that companies which pay semiannual dividends or annual dividends, as it is in our case, will most likely distribute cash to shareholders every six or twelve months. Hartzmark and Solomon (2012) introduce the term "predicted dividend" on the notion that future dividend payments time can be forecasted by past corporate distributions. In other words, if a firm paid annual dividends 12 months ago, or semi-annual dividends 6 and 12 months ago it will have a "predicted dividend" in the current month.

As Eades, Hess and Kim (1986) and Hartzmark and Solomon (2012) noted, dividend announcements have a predictable component, thereby market reactions to these corporate events should have a more consistent nature and evidences of market inefficiencies, if they exist, would have a more reliable interpretation. Using these argumentations, raw returns of dividend paying companies were sorted with respect to their dividend month in order to find some pattern in dividend payers' pricing.

Table A presents the monthly stock returns of companies according to the timing of the past dividend payments, using monthly data from January 1991 to December 2011. Table A examines the average returns of dividend payment in the current month based on payment of dividends in previous months. In Table A, averages are taken over all firm/month combinations. Months lagged indicates a company had a dividend lagged the indicated number of months in the past.

Table A presents mean and standard deviation of returns following dividend payment. Similar to Haltzmark and Solomon (2013), we observe highest average returns 3, 9 and 12 months after the dividend payment (1.98%, 1.58% and 1.40%, respectively). However, as this study used different sample companies, which pay annual or biannual dividends, these findings have different implications. If a dividend premium existed, we would observe highest mean returns 6 and 12 months after the dividend. What is more, there is no evidence of lower risk during dividend months, or higher risk in months preceding predicted dividend, as indicated by standard deviation.

According to Baker and Wurgler (2003), dividend premium is the difference in average market-to-book ratios between dividend payers and non-dividend payers. Using the concept of predicted dividend, portfolios with a strategy of exploiting possible dividend payers' mispricings were formed. Thus in this study, under the term dividend premium, we understand the differences in performance of companies that have a predicted dividend and companies that are predicted not to pay dividends.

Table B shows the distribution of returns of formed portfolios. The results are contradicting to the

Table A. Raw returns with respect to dividend month.

Months since dividend payment	Returns in Current Month Given Dividend Payment N Months Ago	
	Mean return	Standard deviation
1	0.17	10.84
2	0.19	11.69
3	1.98	10.90
4	0.76	10.33
5	-0.05	10.50
6	0.38	10.93
7	-0.23	10.86
8	-0.56	11.48
9	1.52	12.84
10	1.08	10.62
11	0.47	10.65
12	1.40	10.86

findings of Hartzmark and Solomon (2013): instead of a dividend premium, some evidence of a dividend discount can be seen. The portfolio compiled of predicted dividend payers has mean return of 0.02% and standard deviation of 5.36%. Months without a predicted dividend have an average return of 0.44% and a standard deviation of 5.84%. Even after eliminating outliers1, the predicted dividend portfolio still has a lower return than a portfolio consisting of all other companies.

ABNORMAL RETURNS IN DIVIDEND MONTHS

As it was observed, the dividend portfolio has a lower volatility than the portfolio of all other companies, so according to central asset pricing theory, lower returns of dividend-paying companies are costs associated with lower risks that are important to investors. Shiller (1981) noted that dividends tend to have less fluctuations than stock prices. Using behavioral arguments of Baker and Wugler (2004) and Li and Lie (2006), it can be suggested that dividends can be perceived as a safer asset that is more robust to systematic risk.

Following Hartzmark and Solomon (2012), portfolios of predicted payers, predicted non-payers and their difference, are tested with respect to standard asset pricing models. Returns of above-mentioned portfolios are regressed under the CAPM, the Fama-French 3 factor model and the Carhart 4 factor model:

$$R_{PredDiv,t} - R_f = \alpha + \beta_{Mkt\text{-}Rf} * R_{Mkt\text{-}Rf,t} + \varepsilon_t \quad (1)$$

$$R_{PredDiv,t} - R_f = \alpha + \beta_{Mkt\text{-}Rf} * R_{Mkt\text{-}Rf,t} + м_{SMB} * R_{SMB,t} + \beta_{HML} * R_{HML,t} + \varepsilon_t \quad (2)$$

$$R_{PredDiv,t} - R_f = \alpha + \beta_{Mkt\text{-}Rf} * R_{Mkt\text{-}Rf,t} + \beta_{SMB} * R_{SMB,t} + \beta_{HML} * R_{HML,t} + \beta_{UMD} * R_{UMD,t} + \varepsilon_t \quad (3)$$

Table C represents the results of regressions with respect to excessive market return factors. The long portfolio is an equal-weighted average return of companies that are predicted to issue dividend in the current month. The short portfolio is an equal-weighted average return of companies that are not predicted to pay dividends. The difference is a portfolio that goes long on companies that have predicted dividend and goes short on companies that are not supposed to pay dividend in the current month.

Table C.1 presents the results of regressions of Japanese monthly stock returns based on predicted dividend payment. Portfolios of stock returns are formed based predicted dividend payments, which are then used for regressions of excess portfolio returns on a CAPM model (excess market returns only), 3 factor regressions (excess market returns, SMB, and HML), 4 factor regressions (excess market returns, SMB, HML and UMD). Portfolios are equally weighted. A predicted dividend month has a semi-annual dividend 6 or 12 months ago, or an annual dividend 12 months ago. Stocks with monthly dividends in the previous 12 months are excluded from the analysis. For the short portfolios, "All Other Companies" contains all companies not included in the long portfolio. Regressions are run on returns derived from monthly prices of TSE common shares, from January 1991 to October 2014. The top number is the coefficient, the lower number in parentheses is the t-statistic, and *, ** and *** indicate statistical significance at the 10%, 5% and 1% level respectively.

The portfolio of dividend payers has negative abnormal returns of -0.22% under the CAPM model, -0.29% under Fama French 3 factor model, and -0.21% under the 4 factor model. The portfolio of all other companies on the other

[1] The distribution of the second portfolio looks skewed to the right, so a suggestion would be that outliers on the right tail could have affected the mean return of the portfolio. Outliers were all the returns bigger than 15% or smaller than –15%.

Table B. Returns based on predicted dividends.

	Mean return	standard deviation	1%	5%	10%	median	90%	95%	99%
[1] Predicted dividend	0.02	5.36	–13.99	–8.10	–6.30	–.25	6.67	9.80	13.77
[2] All other companies	0.44	5.84	–15.35	–8.56	–6.32	0.20	7.39	9.91	18.02
[3] Predicted dividend w/o outliers	–0.03	5.06	–13.52	–8.07	–6.28	–0.28	5.98	9.61	12.86
[4] All other companies w/o outliers	0.37	5.24	–12.43	–8.06	–5.95	0.20	7.01	9.21	13.52
Portfolio Long [1] Short [2]	–0.41	2.37	–7.57	–4.65	–3.21	–0.36	2.06	3.06	4.56
Portfolio Long [3] Short [4]	–0.42	2.08	–6.64	–3.91	–3.03	–0.40	2.10	3.06	4.42

Table C.1. Factor Loadings from Fama French 4 Factor Difference Portfolios.
Long Predicted Dividend, Short All Other Companies.

	CAPM Alpha	3-Factor Alpha	4-Factor Alpha	MktRf	SMB	HML	UMD
Long	−0.22 (−1.03)	−0.29 (−1.53)	−0.21 (−1.10)	0.58*** (17.25)	0.58*** (10.25)	0.17*** (2.42)	−0.022 (−0.51)
Short	0.21 (0.97)	0.11 (0.66)	0.20 (1.20)	0.69*** (23.21)	0.66*** (13.19)	0.24 (4.04)	−0.08 (−2.25)
Difference	−0.69*** (−5.27)	−0.65*** (−7.81)	−0.68*** (−4.97)	−0.10*** (−4.68)	−0.07** (−1.81)	−0.08* (−1.65)	0.06 (−1.59)

hand has positive abnormal returns of 0.21% under the CAPM model, 0.11% under Fama French 3 factor model and 0.20% under the 4 factor model. However, these results turned out to be statistically insignificant and therefore it is not sufficient to say that companies with predicted dividends underperform the market. More importantly, betas for MktRF, SMB and HML factors are positive and significant, which suggest that the negative return of the predicted dividend portfolio is not achieved with reduction to systemic risks.

What is striking is that, contrary to Hartzmark and Solomon (2012), "between companies" difference portfolio have significant negative returns. Dividend payers with respect to non-dividend payers return -0.69% under CAPM (t-statistic -5.27), -0.65% under the Fama French 3 factor model (t-statistic -7.81) and -0.68% (t-statistic -4.97). Even after eliminating outliers in returns of companies predicted dividend and all other companies, the results are nearly the same. What is more, the abnormal returns of the difference portfolio do not associate with any systemic risks. Factor loadings on market and value risks are -0.10 and -0.07 with t-statistic of -4.68 and -1.74 respectively. While companies in dividend months have less systemic risks than other companies, the difference is small.

EARNINGS ANNOUNCEMENTS EFFECT

As Charest (1978) found evidence of net positive earnings announcement effect on stock prices, it is essential to isolate market responses only to dividend events. In the sample of this study, companies in most cases do not pay dividends in the same month when earnings reports are issued. That could cause a skew in the returns of the long-short portfolio, as during earning announcement months the short position in non-dividend payers would have excess returns due to the earnings effect. That is why we examine stock returns of dividend payers and non-dividend payers in months without financial reporting. Using the same method as above, the portfolio of companies with predicted dividend and the portfolio of companies without a predicted dividend both in non-earnings months are regressed under the 4 factor model.

Table D presents the results of the 4 factor regressions of Japanese monthly stock returns based on predicted dividend payment. Portfolios of stock returns are formed based predicted dividend payments, which are then used for regressions of excess portfolio returns on 4 factor regressions (excess market returns, SMB, HML and UMD). Portfolios are equally weighted. A predicted dividend month has a semi-annual dividend 6 or 12 months ago, or an annual dividend 12 months ago. Stocks with monthly dividends in the previous 12 months are excluded from the analysis. For the short portfolios, "All Other Companies" contains all companies not included in the long portfolio. Non-earnings months indicate a month that a company did not report earnings. Regressions are run on returns derived from monthly prices of TSE common shares, from January 1991 to October 2014. The top number is the coefficient, the lower number in parentheses is the t-statistic, and *, ** and *** indicate statistical significance at the 10%, 5% and 1% level respectively.

Table D.1 returns the betas for the returns of mentioned portfolios. Excluding earnings months from the regression does not change the results. The difference portfolio still has a negative abnormal return of -0.78% with t-statistic of -4.92. It can be inferred

Table D. Factor Loadings from 4 Factor Difference Portfolios in Non-Earnings Months.
Long Predicted Dividend, Short All Other Companies

	4-Factor Alpha	MktRf	SMB	HML	UMD
Long	−0.34 (−1.10)	0.58*** (13.25)	0.58*** (8.06)	0.20*** (2.66)	−0.01 (0.25)
Short	0.25 (1.20)	0.71*** (18.21)	0.66*** (10.59)	0.27 (3.93)	−0.06 (−1.45)
Difference	−0.78*** (−4.92)	−0.12*** (−4.20)	−0.08** (−1.70)	−0.07 (−1.28)	0.08 (2.08)

Table C.2. Factor Loadings from Fama French 4 Factor Difference Portfolios With Outlier Returns Excluded

	CAPM Alpha	3-Factor Alpha	4-Factor Alpha	MktRf	SMB	HML	UMD
Long	−0.22 (−1.03)	−0.29 (−1.53)	−0.21 (−1.10)	0.58*** (17.25)	0.58*** (10.25)	0.17 (2.42)	−0.022 (−0.51)
Short	0.21 (0.97)	0.11 (0.66)	0.20 (1.20)	0.69*** (23.21)	0.66*** (13.19)	0.24 (4.04)	−0.08 (−2.25)
Difference	−0.69*** (−5.88)	−0.66*** (−5.68)	−0.68*** (−5.84)	−0.10*** (−4.68)	−0.07** (−1.74)	−0.05 (−1.25)	0.04 (1.59)

that dividend premium (discount) has its own nature and is not largely affected by earnings news.

5. CONCLUSION

Stock market responses to public corporate events, such as dividend announcements, have been a very popular subject of research. However, most of past studies were focused on stock markets of common law countries, such as the USA and the UK. This paper focuses on stock market responses to corporate distribution events of companies listed on Tokyo Stock Exchange.

At first, monthly returns of dividend-paying companies were sorted with respect to month, when the latest dividend payment occurred. Unlike Harztmark and Solomon (2013), no prominent returns pattern of companies with predicted dividend were found. Then portfolios of dividend payers and non-dividend payers were formed. First glance on raw returns of these portfolios pointed out to suggestion that Japanese stock market reacts differently from US stock market.

In order to examine market efficiency, respected portfolios were regressed under the CAPM, the Fama-French 3 factor and Carhart 4 factor models. Separately portfolio of companies with predicted dividend and portfolio of all other companies did not have statistically significant abnormal returns. Nonetheless, the difference portfolio that goes long on dividend payers and short on non-dividend payers showed statistically significant return with negative sign. Even after eliminating the effect of outliers and earnings announcement effect, neither significance, nor size of abnormal returns were reduced. The results of this paper not only record instances of market inefficiency, but also contradict findings of past research on dividend month premium. It is important to note that the purpose of this paper is to find evidences of abnormal market reactions. Further studies analyzing larger samples could give better understanding of these phenomena.

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APPENDIX

Table C.2 presents the results of regressions of Japanese monthly stock returns based on predicted dividend payment. Portfolios of stock returns are formed based predicted dividend payments, which are then used for regressions of excess portfolio returns on a CAPM model (excess market returns only), 3 factor regressions (excess market returns, SMB, and HML), 4 factor regressions (excess market returns, SMB, HML and UMD). Portfolios are equally weighted. A predicted dividend month has a semi-annual dividend 6 or 12 months ago, or an annual dividend 12 months ago. Stocks with monthly dividends in the previous 12 months are excluded from the analysis. For the short portfolios, "All Other Companies" contains all companies not included in the long portfolio. Outliers were all the returns bigger than 15% or smaller than -15%. Regressions are run on returns derived from monthly prices of TSE common shares, from January 1991 to October 2014. The top number is the coefficient, the lower number in parentheses is the t-statistic, and *, ** and *** indicate statistical significance at the 10%, 5% and 1% level respectively.