The Dividend Month Premium Uncovered

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Abstract

Hartzmark and Solomon (2013) documented abnormal returns on expected dividend months in the US market and attribute it to price pressure on expected dividend paying stocks. However, they are unable to pinpoint the source of price pressure is from tax-related clientele effects or from catering effects. The Australian dividend imputation system provides two classes of dividends (franked and unfranked) that allow for more rigorous tests to be performed. The imputation tax system provide an ideal setting to untangle the drivers of the dividend month anomaly. Results indicate that dividend month premium also exist in Australian market. These excess returns are not due to rises in systematic risk or volatility. They are caused by price pressures instigated by short-term dividend seeking investors who purchase dividend-yielding stocks. Our finding show that both tax-related clientele effects and catering effects are responsible for such price pressure. Price pressure also change when regulation on dividend changed and the magnitude of price pressure also depend on investor sentiment. These findings have wide-reaching implications for future studies of dividend pricing in both Australia and in the US, as well as the investment community given the importance of dividend payouts in trading strategies.

1. Introduction

The relationship between dividend and price movements has long been the subject of academic study, resulting in voluminous existing literature. The literature on dividend and share price movement is often divided into three stages. They are, in chronological order: dividend announcement date, interim period and ex-dividend date. Prior literature have documented a positive reactions in stock returns around the initial dividend announcement date (e.g., Kalay and Loewenstein, 1985; Eades, Hess and Kim, 1985). Such result is consistent with Easterbrook (1984) agency theory and agency theory proposed by Miller (1980). Chinmoy and Woolridge (1988) also shows that dividend cut or omission lead to reduction in stock price. The interim period is the time between and between the announcement day and the ex-dividend day.[1] In an efficient market assuming no new information is revealed to the market, the excess return should not exist during this period. However, Lakonishok and Vermaelen, (1986); Kalay and Michaely (2000) and Hartzmark and Solomon (2013) all report consistent abnormal return during this period. In the similar vein, there is evidence of price drops on the ex-dividend day. Campbell and Beranek (1955) observe that ex-day stock prices drop by less than the value of the dividend itself. Elton and Gruber (1970) discover that this is due to a tax-related clientele effect. Essentially, the after-tax value of the dividend is capitalized into market prices.

Hartzmark and Solomon (2013) document a relatively new concept named dividend month premium in the US market. Their dividend month strategy, which takes a long position in firms at their ex-dividend month and a short position in comparable firms at their non-dividend paying month, yields abnormal returns of 53 basis points per month. They suggest that price pressures instigated by short-term dividend seekers drive these abnormal returns rather than changes in risk. They are, however, unable to pinpoint the source of such price pressure and conclude that it is difficult to distinguish between tax-related clientele effects and catering effects in determining where the underlying source of demand for the dividends stems from.

The tax-related clientele effect suggests that dividends are demanded by investors because of the differential tax treatment they are offered from other forms of payout (Michaely, Vila, and Wang 1996; Allen, Bernardo, and Welch, 2000). Thus, tax-advantaged agents would have a greater desire for dividends as they are more valuable to them. Graham and Kumar

[1] This is the period during which an investor would purchase a share and still receive its declared dividend. The ex-dividend day is the first day upon which an investor purchasing a share which is not privy to the previously declared dividends. The abnormal return during this period is often referred to as dividend run up by investors.

(2006) and Jain (1999) find that there is an inverse relationship between an individual investor's marginal tax rate and the demand for dividends. This shows that the demand for dividends is influenced by investor tax consequences; as the relative tax implications of dividends decreases, the demand for dividends increases.

In contrast, the catering effect refers to the demand for dividends deriving from an investor's psychological needs (Baker and Wurgler, 2004; Li and Lie, 2006). Dividends are often considered "safe" (see, e.g., Brav, Graham, Harvey, and Michaely, 2005; Golubeva and Uysal, 2009) because once declared it represents a guaranteed cash return for the investor, whereas capital gains are not realised until the stock has been sold. Shiller (1981) finds that dividends tend to be less volatile than stock prices, together with the conservative nature of dividend payout policy, implies a relatively safe form of return when compared with capital gains. These may therefore lead to naive investors falling into the "bird-in-hand fallacy"[2] even if they may be tax-disadvantaged.

The main objective of this paper are twofold. First, we test whether such dividend premium also exist in Australian market. Second and more importantly, we aim to untangle the sources for the documented dividend month premium in Hartzmark and Solomon (2013) utilizing some unique characteristics in the tax environment of Australian market. There are two key legislative changes that make Australian market an ideal testing for our research questions. First, Australia had a classical taxation system in which company earnings paid out as dividends were essentially taxed twice, prior to 1987. This is similar to the current tax system in the US. The imputation tax system is introduced after 1987 to avoid double taxation. However, firm can choose to pay franked or unfranked dividend. The second change in Australian tax system that we could utilize is the 45-day holding period rule introduced on 1st July 1997. This require majority of investors to hold the share at least 45 days preceding the ex-dividend date to be eligible to receive franking credit.[3]

The current paper makes a number of contributions to the literature. As a starting point, we study the existence of the dividend month premium in Australian equities over period 1983 to 2010. The findings are unambiguous. Australian stocks in their dividend month earn significantly higher returns when compared to companies which are not in their dividend month

[2] Bhattacharya (1979) describes the "bird-in-hand fallacy" as the investors' preference of the guaranteed payout dividends offer as opposed to unrealized capital gains.

[3] Some exception applied for very small retail investors. We discuss this in more detail under section 3.4.

or have not paid dividend in the past 12 months. A hedge portfolio that takes long positions in dividend month stocks and short positions in non-dividend month stocks generate significant returns. These returns survive risk adjustment using the Fama-French five-factor model.

The second and most important contribution is to utilise the dividend imputation tax system in Australia to examine difference in magnitude of the dividend month premium for franked and un-franked dividends.[4] The tax-related clientele effect would suggest that investors prefer franked over un-franked dividends for tax purposes. In this case, the dividend month premium should be significantly stronger for franked dividends. However, if the catering effect dominates, the choice between franked and unfranked dividends would be less obvious and un-franked dividends would also exhibit strong dividend month premium. In short, the imputation tax system allows the current paper to explicitly examine the driving force of the document dividend month premium.

We find that prior to the introduction of imputation tax system in 1987, dividend month premium is strongly significant with the magnitude of 143 bps per month. Results for the period following the introduction of the imputation system in 1987 indicate that the dividend month premium is significant for franked dividends with a monthly premium of 91 basis points. In contrast, the unfranked dividend month premium hedge return is insignificant. This shows that once franking credits became available, investors quickly switched their attention to obtaining franking credits in order to offset their tax-obligations.

The other significant change in our sample period is the 45-day holding period introduced in July 1997. This regulation requires investors who wish to receive franking credit to hold the share for a minimum of 45 days prior to the ex-dividend date. Our third contribution is to further examine the driving forces of the dividend month premium based on this legislative change. This regulatory change presents two scenarios for dividend seeking investors. Investors can either purchase stocks 45 days before their expected ex-dividend date or give up the franking credit and purchase unfranked dividends which are exempt from the 45-day holding period rule. Unfranked dividends may now present a better option for these short-term dividend seekers because: (1) it is not necessary for these investors to anticipate an ex-dividend date 45

[4] From 1st July 1987, the dividend imputation system was introduced for resident individuals, non-resident individuals and corporate shareholders. This rule was then extended to institutions (e.g. superannuation funds, general insurance companies) on July 1st 1988. This system allows companies to distribute franked dividends by paying corporate taxes on profits and subsequently providing a franking credit to shareholders for the corporate tax paid. This franking credit can then be used to offset any income tax payable by shareholders.

days in advance; and (2) investors need not risk their capital by placing their money in the market at risk for a minimum of 45 days.[5] We find a significant change in price pressure behaviour surrounding ex-dividend dates. The franked dividend month premium decreases to 53 bps and significant at the 5% level. Interestingly, unfranked dividend month premium become strongly significant at 1% level with an economically meaningful return of 129 bps per month. The finding for the unfranked dividend premium suggests that a group of investor have chosen the second option.

Overall, we shows that after imputation tax is introduced, price pressure and indeed abnormal returns are only observed among franked dividend stocks. This result is to be expected given there is no downside in choosing franked dividend stocks. After the 45 days holding rule is introduced, investors now must consider the trade-off between the benefit franked credit and additional market risk from longer holding period. Our result reveal that both tax-related clientele effects and catering effects are responsible for such price pressure during dividend paying period. Although the timing of price pressure may be different between franked and unfranked stock and in different regulatory environment.

The remaining of this paper is organised as follow. Section 2 discusses the data and section 3 describe method used in the paper. Section 4 presents the main results of the paper. The robustness test ate presented in Section 5 and the conclusion is presented in Section 6.

2. Data and Method

2.1 Data

This study conducts analysis for the top 200 ordinary stocks traded on the Australian Securities Exchange (ASX) at the monthly level from January 1982 to December 2012. It is worth noting that the majority of listed firms in Australia are small in size and it is commonly accepted that companies outside the top 200 are not considered by money managers. Furthermore, these

[5] The literature seems to indirectly support this notion. Cannavan et al. (2004) studies the impact of the 45-day holding period rule and finds that the capitalization of franking credits decreased to almost zero. Consistent with this finding, Bellamy (2002) notes that after the initiation of the rule, there is an increasing trend in long-term traders seeking franked dividends as opposed to short-term franked dividend seekers.

larger companies have a higher frequency in paying dividends, which service the purpose of this study. As such, we focus on the top 200 firms in our main analysis.[6]

The primary data source is the Share Price & Price Relative (SPPR) database of the Securities Industry Research Centre of Asia-Pacific (SIRCA). This database includes monthly share price information such as monthly share prices, stock returns, market capitalizations, returns on market indices and the rate on 13-week Treasury notes. The dividend information used in this paper is also obtained from this database, which includes dividend payout dates, dividend amounts and franking credit for the dividend paid. Only stocks that pay ordinary cash dividends are included in the sample.

Accounting information required is manually collected from company annual reports issued between 1982 and 2006. For the period after 2006, we use the Aspect Huntley database. This accounting information is used to construct the Fama-French risk factors. In this study, we use the Fama-French five-factor model to adjust for risk. To construct the factors used in the Fama-French five-factor model, we require book-to-market ratios and measures of profitability and investment. Following Fama and French (1993) and prior Australian studies, we define the book value of equity as the total shareholders' equity minus the value of preference shares, outside equity interests and future tax benefits. We exclude companies with a negative book value of equity. The market value we use to calculate book-to-market ratios is obtained from SPPR. We then use asset growth as a proxy for investment and return on equity (ROE) to measure profitability.

To create the SMB (small minus big) and HML (high minus low) factors, we form six portfolios from the intersections of two size and three book-to-market portfolios. Specifically, at the end of December of year t, we first rank stocks according to their market capitalization. Then we allocate stocks into two portfolios according to size. The largest 200 stocks in terms of market capitalization are classified as large, and the remaining stocks are classified as small. We obtain the 30th and 70th percentile of the book-to-market ratio from the largest 200 stocks, following Brailsford et al. (2012b). These breakpoints are then applied to the entire sample. Stocks with book-to-market ratios below or equal to the 30th percentile are classified as growth stocks, and stocks with book-to-market ratios higher than the 70th percentile are classified as value stocks. The remaining stocks are classified as neutral (or medium) stocks.

[6] As a robustness check, we also test the dividend month premium using the whole population. The results remain similar and will be discussed in Section X.

SMB is the average return on the three small-size portfolios, minus the average return on the three big-size portfolios. Similarly, HML is the average return on the two high book-to-market portfolios, minus the average return on the two low book-to-market portfolios. Following the same approach in creating the HML factor, we create another two mimicking portfolios that capture returns associated with profitability and investment.

Australian earnings announcement data for the period 1991 to 2012 was collected from the SIRCA ACA database. This information includes half-year result announcement reports, full year announcement reports and quarterly announcement reports. For the purposes of this study, announcement data is required to be "price sensitive". Therefore, this study follows Chai and Do (2016) in including market updates that arise when firms become aware of situations that may affect earnings. This is done as there is strong evidence suggesting that these updates tend to be followed by strong market reactions.

2.2 Method

We use portfolio sorts in the main empirical analysis. For each month, stocks are separated into three groups. The first group contains stocks that pay dividends at the concurrent calendar month. The second group includes stocks that have paid dividends in the past 12 months, but not in the current month. The third group contains stocks that have not paid dividends, at least in the past 12 months. The first group is referred as dividend stocks, the second group is referred as non-dividend stocks and the third group is referred as dividend-free stocks. Hartzmark and Solomon (2011) construct a simple prediction rule to predict expected dividend month for their portfolio construction. In this paper, we use actual dividend payout (instead of forecasted dividends) in our analysis for two reasons.

First, Australian firms generally make their financial calendar public. As such, exact dividend dates are known to investors. [7] Second, since our purpose is to identify the driving force of the dividend month premium, using actual dividend paying month allows us to better achieve the goal. We then calculate equal-weighted returns for these portfolios up to 12 months after the portfolio formation. The dividend month premium is represented by the return difference between a portfolio containing stocks that pay dividend at month t and a portfolio containing stocks that have no dividend at month t but paid dividend within the past 12 months.

[7] Appendix 1 show a number of example of these financial calendar by Australian firms.

As argued in Hartzmark and Soloman (2011), stocks in these two groups have similar characteristics, but are different due to different timing of dividend payments. Therefore, the return comparison between these two groups allows us to hold firm-specific characteristics constant and test whether the dividend itself causes excess returns.

We also compute the spread between the dividend portfolio and dividend-free portfolio for the purpose of comparison.[8] To test whether the tax-related clientele effect is the driver of price pressures, the dividend stocks are further classified into franked and unfranked dividends. A stock's dividend is franked if the franking credit is at least 50%. We then compute the dividend month premium for both the franked and unfranked groups. The Fama-French five-factor model is then used to calculated risk-adjusted returns.

3. Results

3.1 Descriptive statistics

Table 1 presents the summary statistics of the stocks in our sample. Within the top 200 firms, about 60% of them have paid dividends in the past. Panel A of Table 1 shows that companies with paid dividend in the past 12 months have an average market capitalisation of $740 million and an average book-to-market ratio of 1.18, whilst their counterpart (Panel B) have an average market capitalisations of $60 million and a mean book-to-market ratio of 1.63. This result is as expected as firms that have paid a dividend are normally large in size and have a higher growth potential. The distribution between dividend paying stock and non-dividend paying stocks is relatively balance.

[Insert Table 1 about here]

3.2 The dividend month premium

In this section, we investigate returns at and after dividend paying month. Each month (i.e., t = 0), stocks are grouped into three portfolios (dividend, non-dividend and dividend free)

[8] There are some drawbacks of conditioning the dividend month portfolio using calendar months. Depending on the scheduling of the ex-dividend date of a stock, the true returns arising from timing a purchase in order to receive all the abnormal returns associated with a dividend payment may be understated. For example, if the ex-day is on the 1st of the month, then any positive price pressures arising in the lead up to the ex-dividend date will accrue to the previous calendar month. Moreover, the dividend month portfolio will actually capture the price reversals that occur subsequent to a dividend ex-day.

based on the timing of the dividend payout. These portfolios are held for 12 months. Table 2 presents raw returns and standard deviations of the dividend portfolios each month after the formation. In Australia, dividends tend to be paid semi-annually. The returns for the dividend month portfolio are high in and around months 0, 5, 6, 11, and 12. The dividend month portfolio also exhibits higher returns compared to non-dividend and dividend free portfolios around the dividend paying months. In other months, it appears that there is no major different in returns of the dividend month portfolio and non-dividend month portfolio. It is also quite clear that the dividend free portfolio underperform the other two portfolios and also carry higher standard deviation. These results provide suggestive evidence on the association between stock returns and dividend payout. However, it is worth noting that dividend free portfolio contains stocks that are struggle to pay dividends. Therefore, a meaningful comparison is between dividend and non-dividend month portfolios.

The findings that months (i.e., month 5 and 11) preceding dividend month exhibit relatively high returns are in contrast to that documented in Hartzmark and Solomon (2013). Specifically, Hartzmark and Solomon (2013) show that months after dividend months tend to exhibit higher returns relative to other months. A possible reason for the difference in result could be due to the 45-day holding period rule in 1997. We will explore this in more detail in the subsequent section.

Overall the findings suggest that, on average, stock returns are higher at the ex-dividend month and one month prior when compared to months without an ex-dividend date. If these returns are merely a result of increased systematic risk, then the EMH would explain the high returns in dividend months. Thus the real question is whether the high returns surrounding dividend months are purely compensation for higher levels of risk. Following Hartzmark and Solomon (2013), we address this issue on several dimensions. Firstly, we examine whether there are abnormal returns for the dividend month portfolio after controlling for standard models of expected return. Next we compare the portfolio of dividend month companies with that of non-dividend month companies (non-dividend month portfolio). This essentially tests the same set of stocks at different stages of their dividend life cycles. Lastly, the dividend month portfolio is compared with the dividend-free portfolio, which parallels a completely different set of stocks.

Table 3 shows distributions of average monthly returns for the Dividend Month', Non-dividend Month, and Dividend Free portfolios. The respective returns are 1.99% (t = 7.52),

1.29% (t = 5.39) and -0.07% (t = -0.17). The return difference between dividend month portfolio and non-dividend month portfolio is 0.68% (t = 5.32) per month. The return difference is even higher, resulting in 2.02% (t = 6.55) per month when the short position is on dividend-free portfolio. The associated risk-adjusted returns are 0.65% (t = 4.82) and 1.59% (t = 5.64).

Examining Table 3, the portfolio of dividend paying stocks carry significant abnormal return after control for factors that are well known to explain stock returns. The magnitude of abnormal returns is also economically meaningful. The result from Table 3 show strong evidence of dividend month premium in the Australian equity market. The result of non-dividend portfolio also suggest that the observed dividend month premium is not driven by risk. As explained by Hartzmark and Solomon (2013), the result using non-dividend portfolio is only subject to time-series variation among the same group of dividend paying stocks. Our result is further strengthen by the fact that we focus on the top 200 firms. By definition, there are better homogeneity among this group of large stock compared to the remaining firms. In addition, the conventional measures of risk (excess returns, size, book-to-market and momentum) fail to account for dividend month portfolio yielding high returns relative to the dividend-free portfolio. From the analysis of Table 2 and 3, there is strong evidence to suggest that dividend-paying stocks do earn higher abnormal returns relative to companies that do not pay dividends whatsoever.

[Insert Tables 2 & 3 about here]

3.3 Patterns of Abnormal Returns

So far we have shown that the dividend month premium exists in the Australian equity market. Hartzmark and Solomon (2013) find that price reversals occur 40 days after an ex-dividend date, suggesting that the premium is driven by price pressure of these stock during the dividend month. In this section, we explore whether this is also the case in the Australian market. Table 4 presents the risk-adjusted dividend returns (i.e., dividend month – non-dividend month) in the subsequent 12 months following the dividend month.

The return pattern appears remarkably similar to that reported Table 2. We observed statistically significant positive returns in months 5, 6, 11 and 12 following the dividend month. The magnitude is between 68 and 84 basis points. This result is consistent with the dividend

paying pattern of Australian firms. As most of the firms pay dividend half-yearly, it is expected to observed abnormal return at 6 and 12 months following a dividend.

In addition, we also find that months (months 5 and 11) prior to dividend payout also exhibit abnormal returns. This phenomenal is consistent with the abnormal return documented by the literature during the interim period. We also observe some evidence of price reversals up to about 3 months after dividend is paid. A similar return pattern is also observed in months 7, 8 and 9 following an expected dividend payout in month 6. This finding is consistent with the premise that, if the abnormal returns from the dividend month are due to short-term dividend seekers, once a stock goes ex-dividend, investors will sell their shares to avoid holding stocks at risk for longer than required.

[Insert Tables 4 about here]

3.4 Legislative reforms and dividend month premium

Prior to 1987, Australia had a classical taxation system in which company earnings paid out as dividends were essentially taxed twice. Companies paid taxes on their earnings, as per the norm in most parts of the world, and the after-tax earnings were then distributed to investors as dividends. When the investor received the dividend, this was regarded as income and taxed accordingly at the investor's marginal tax rate. This is the current tax system in the US. After 1987, companies could choose to either; a) pay taxes on their profits and then issue franking credits that act as a tax rebate for investors or; b) distribute earnings before taxes as dividends of which the investor is then liable for taxes at their personal marginal tax rate. The initial introduction in 1987 only apply for retail investors. In 1988, a subsequent adjustment is made to allow this tax system to apply for institutional investors as well. Therefore, the imputation system has in essence abolished double taxation on company earnings.

Another key change in Australian tax system that could potentially have a strong effect on investor's behaviour is the 45-day holding period rule introduced on 1st July 1997. This restricts the distribution of franking credits to "eligible" investors. To be considered "eligible", one must meet the following criteria: (a) have held the shares at risk for 45 days preceding the ex-dividend date, or (b) qualify under the small shareholder exemption that exempts investors who receive under $1,000 in franking credits in the financial year. This small shareholder exemption was then increased from $1,000 to $5,000 in 1999.

Therefore, this rule requires investors to hold stocks that pay franked dividends for a minimum of 45 days prior to a dividend's ex-date to be eligible to receive the associated franking credits. Purchasing the stock less than 45 days before the ex-date would decrease the after-tax return on franked dividends by the amount of the franking credit. Hence, if the tax-related clientele is present in Australia, investors will be against purchasing a stock paying franked dividends in their dividend month. Any price pressures arising for a franked dividend should then be present at least 45 days before the ex-date.

We use this tax change as a nature experiment and explore the potential different in the dividend month premium. Accordingly, we divide the sample period into three sub periods: 1983-1986, 1989-1996, and 1998-2010. The reason for choosing such sub periods is to ensure we have a clean sample of data. In Australia, legislative changes taken effect on the 1st of July, not the first day of the year. For example, after the 1st July 1987, franking credit system applied for retail domestic investors. After the 1st July 1988, franking credit system applied for domestic investment funds. So the gap between period 1 and 2 is to account for regulatory changes in those two years. Similarly, after 1st July 1997 the 45 holding period rule applied. Hence period 3 start in 1998.

Table 5 displays the results. We focus our discussion on the first three columns of table 5 as they shows the dividend premiums between dividend month and non-dividend months of the same group of dividend paying stocks. Panel A shows the results for all the stocks over these sub periods. The dividend month premiums are significant for all the sub periods. We divide the stocks in the dividend month portfolio based on their franking credit and perform the same analyses. Panels B and C of table 5 present the results for unfranked and franked dividends, respectively. Franked dividends come with a tax credit, which investors can use to offset their own personal tax obligations. Thus we can directly observe any differences in tax-related preferences by examining the differences in price pressure behaviour between franked and unfranked dividends during the second and third periods. This provides a direct test on the tax-related clientele effects. If tax is not a significant factor then we should observe minimal different in dividend month premium across franked and unfranked stocks.

The result from the second sub period shows that tax is an important factor in driving the dividend month premium. The dividend month premium is strongly significant in the second period for stocks with franked dividend s while is it not statistically significant for stocks with unfranked dividend. This result indicates that during this period, all of the price pressure on

dividend month are focused toward franked dividend stock due to their tax benefit. This result is not surprising given that there isn't any down side trade-off for choosing franked dividend stocks. This is the first and a very strong evidence supporting the tax-related clientele effect as a driver of price pressure during dividend month.

The trade-off appear in the third period following the introduction of 45-day holding period rule for franked dividend stocks. This present investors with two options. To receive franked tax benefit, investors must hold the stocks for at least 45 days before the ex-date and expose themselves to market risk. Alternatively, they can choose to chaise unfranked dividend stock close to ex-date and limit their market risk exposure. From Table 5, we can see a strong and significant dividend month premium for stocks with both franked and unfranked dividend. For stocks with franked dividend, dividend premium remain significantly strong. It is worth noting that the economic magnitude of dividend month premium reduced by about half gong from period 2 to period 3. While this certainly driven by different market condition, a major reason behind this is the shift of investors demand toward unfranked dividend stocks due to the 45 holding period rule. This is most observable looking at dividend premium among unfranked dividend paying stocks. In period 2, dividend month premium is not statistically significant while it became strongly significant in period 3. We interpret this result as a shift in investors demand for these stock from franked dividend paying stocks due to change in regulation. This indicated that there are groups of investors choosing for forgo the benefit of franked tax benefit and simply seeking unfranked dividend. Here is evidence of the catering effect.

[Insert Tables 5 about here]

3.5 Investor behavioural changes

The 45-day holding period rule should create price pressures at least 45 days prior to an ex-dividend date for stocks that pay franked dividends. Given that unfranked dividends are not affected by this rule, there should be no behavioural changes for companies paying this form of dividend. Table 6 presents the risk-adjusted returns for the dividend month premium hedge portfolio 12 months since the last dividend payment for franked and unfranked dividends.

For the unfranked dividend month portfolio, month t=6 and 12 yields significant excess returns of 53 and 117 basis points, both significant at the 1% level. This result is consistent with prior results from table 4 for the entire ASX S&P 200. We also observe similar result for month t=6 and 12 of franked dividend stocks. The reported abnormal returns are 73 and 72 basis points and again statistically significant at the 1% level. Interesting result is the different in abnormal returns among month t=5, 10 and 11 between franked and unfranked dividend. On the one hand, these months display no significant abnormal returns for unfranked stock. On the other hand, they are positive and significant for franked dividend paying stocks. This result shows that the price pressure is shifted to prior months following the 45-day trading rule. They are most likely cause by investors choosing to purchase stock early to receive frank tax benefit which is direct evidence of tax-related clientele effects.

The fact that we observe abnormal return during dividend month for both franked and unfranked dividend suggest that catering effect is also an important factor contribute to dividend month premium. It shows that there are groups of investors seeking unfranked dividend stocks and franked dividend stock within the 45-day rule. It is worth noting that if investors buy franked stocks within the 45-days rule, they are still eligible to receive dividend. They only miss out on the franked tax benefit. Finally we observe some evidence of price reversal during month t=3 and 9 but only for unfranked dividend stocks. Theses months shows negative abnormal return for franked dividend stocks although not statistically significant. One of the objective that this paper set out to explore is the source of price pressure around dividend month which create dividend month premium. Hartzmark and Solomon (2013) documented that price pressure on expected dividend paying stocks cause dividend month premium but unable to pinpoint the source of price pressure is from tax-related clientele effects or from catering effects. Utilizing unique tax structure of Australian market, we find evident that both tax-related clientele effects and catering effects contribute to the price pressure of dividend.

4. Additional tests

4.1 Investor sentiment and dividend month premium

Hartzmark and Solomon (2013) predicted that if the catering effect is the main driver behind price pressure, one would observed stronger dividend premium during period of economic downturn. It is because during the downturn period, investors would value certainty (in dividend) more. If the same argument can be made using investor confidence, one would

expected higher premium when confidence is low. We utilises the Westpac Consumer Confidence Index (CCI, hereafter) as a proxy for the level of investor optimism. A score above 100 indicates that there are more optimists than pessimists in the market, and a score below 100 shows that there are more pessimists than optimists in the market. The CCI scores are split into four categories; <90, 90 – 100, 100 – 110 and >110. When using the CCI as a proxy for market sentiment, the results depict an interesting story. Table 7 shows that the results for four sub-categories of CCI. It appear that dividend month premium in Australia is quite stable across all spectrums of investor confidence. The abnormal results are positive and significant in all four sub-categories with some variation in magnitude. It appear that dividend month premium in Australia is robust regardless of investors sentiment.

[Insert Table 7 about here]

4.2 Earning announcement contamination

One of the possible alternative explanation proposed by Hartzmark and Solomon (2013) was that dividend month may be coincide with earning announcement. And so the observed dividend month premium could be the result of earning announcement effect. Given that the earning announcement bay be negative or positive, this alternative explanation may or may not be true. Nonetheless, we re-estimate our result excluding all the earning announcement months. Table 8 column 1 shows the result of dividend month premium excluding earning announcement months. A portfolio that long all the dividend paying stock on dividend month and short the same set of stocks in non-dividend months generate positive abnormal return of 47 basis point per month and significant at the 1% level. This abnormal return is smaller than the 65 basis points per month reported in table 3. It appear that earning announcement do have some influence on dividend month premium but this premium remain strong even after earning announcement effect is removed.

4.3 Population result

We have been focusing on the top 200 stock in Australia to explore dividend month premium in this paper. That is because stocks within the top 200 are more homogenous, they suffer less

liquidity problem and more likely to be short sale. Here we repeat our analysis on the entire population of Australian stocks for robustness check. Table 8 column 2 shows that dividend month premium remain robust for the entire population. The abnormal return is 70 basis point per month which is quite similar to the 65 basis pointed reported in table 3.

[Insert Table 8 about here]

4.4 Predicted dividend results

Australian dividend date is often available at the beginning of the financial year via firm's financial calendar. This is public information and all investors can access this. Hence the notion of predicted dividend month as suggested by Hartzmark and Solomon (2013) is no longer practically necessary. Nonetheless, we test whether this idea of predicted dividends (if required) can still generate dividend month premium. We follow the procedure outlined in Hartzmark and Solomon (2013) to forecast dividends. As with the main analysis, only cash dividends with a regular paid frequency are considered in forecasting. In Hartzmark and Solomon (2013), a stock is predicted to pay a dividend in the current month, t, if either a quarterly dividends was paid at t-3, t-6, t-9, or, t-12, a semi-annual dividend was paid at t-6 or t-12, or an annual dividend was paid at t-12. However, as noted in Ainsworth and Nicholson (2015), markets outside the US do not have a clear categorization on the types of dividend being paid despite their regular frequency. The authors propose additional rules that a stock is predicted to pay a dividend if it paid a dividend at t-3 and at t-6, or it paid a dividend at t-6 and at t-12, or it paid a dividend at t-12 and at t-24. In this paper, we combine the rules used in Hartzmark and Soloman (2013) and Ainworth and Nicholson (2015) in forecasting dividends. The result is presented in column 3 of table 8. And again, we show that dividend month premium remain robust even with predicted dividend. The magnitude of the premium is naturally smaller due to the lower level of predictability of dividend timing in Australia. We observe a premium of 34 basis point using predicted dividend compare to 65 basis points with actual dividend.

5. Conclusion

This study examined the dividend premium anomaly in Australia and attempted to distinguish between price pressure and tax-effects as its drivers. The study was motivated firstly by the

relatively sparse Australian literature on dividend-related abnormal returns. Therefore, although the results of the dividend anomaly have generally been consistent, the idiosyncrasies of the Australian imputation framework provide a vastly different environment to conduct dividend anomaly studies. Secondly, the inability of the US literature to untangle the drivers of the dividend month premium provides an interesting avenue of investigation. By utilising the unique Australian imputation landscape stronger and more direct tests can be executed to examine the tax-related clientele effect and catering effect as possible causes for dividend month premium.

The main results demonstrate the existence of the dividend month premium in Australia. The dividend free hedge portfolio yields highly significant excess returns of 91 basis points over the period 1982 to 2010. These results are consistent with US studies regarding non risk-based price fluctuations surrounding dividends. The month subsequent to the dividend month achieves negative and significant returns. We argue that the observed abnormal returns in dividend months are instigated by short-term dividend seeking investors. Subsequent to receiving the dividend, investors reverse out of their positions to minimise their risk.

The third finding suggests that the tax-related clientele (Allen et al., 2000) plays an important role in price pressure behaviour around dividend ex-dates. Whilst a sizeable surge in abnormal returns for franked dividends was visible post imputation, unfranked dividends yielded an insignificant premium. Furthermore, after the initiation of the 45-day holding period in 1997, price pressure behaviour changed for franked dividends. Investors who still desire franking credits time their purchases at least 45 days before an ex-date resulting in highly significant abnormal returns in the month prior to the dividend month as well as the dividend month itself.

This study provides important practical contributions. Firstly, this study adds to a sparse Australian literature on dividend anomalies. The results suggest that there is a dividend month premium in Australia, similar to that documented in the US. Furthermore, we identified the underlying sources for the excess returns found around dividend payments; namely the tax-related clientele effect and catering effect. From a practical standpoint, the dividend month premium provides investors with a potential trading strategy that combines strong capital gains with a safe form of return through dividend payouts. We also highlight the importance of behavioural biases in capturing price pressure induced abnormal returns. After the 45-day holding period, investment strategies that still require franking credits should time their

purchase in the month prior to a predicted dividend month in order to receive the abnormal returns attributable to franked dividend payers.

Furthermore, the emergence of price pressures as the explanation for the dividend month premium questions the validity of past Australian literature that have studied the level of franking credit capitalisation using the dividend drop-off method[9]. According to price pressures, if there are abnormal returns prior to an ex-date, at least part of the share price drop when a share goes ex-dividend is attributable to short-term dividend seekers reversing their market position. As such, future studies into this area should also control for the premium prior to the ex-dividend date. When revising methodology for dividend drop-off methods, it is important to note that the general downward trend in franking credit capitalisation is consistent with the findings in this study. Rather, the results of this study question the actual value of franking credit capitalisation.

[9] Dividend drop-off studies examine the price drop in share prices after a dividend ex-date. The value of franking credits are then calculated by deriving the segment of the price drop that is attributable to the franking credit after controlling for dividend yield and economic conditions.

Table 1 Summary statistics

This table shows the summary statistics for the top 200 companies utilised in this study over the period January 1982 to December 2010. Each month, we classify stocks into dividend paying and non-dividend paying and compute summary statistics across the stocks. This table shows the time-series averages of these statistics. Panel A shows the results for stocks that have paid dividends within the past 12 months, while Panel B shows the results for stocks with no dividend.

Panel A: Firms that have dividend in the past 12 months								
	N	Mean	St. Dev	Min	25%	Median	75%	Max
Market capitalization (000,000's)		740.1535	3097	0.847101	12.52595	45.70332	224.0079	32536.22
Book-to-market		1.184698	5.047082	-10.4453	0.414636	0.723863	1.207044	58.11758
Dividend yield		0.036786	0.043863	0.006979	0.019464	0.026646	0.036601	0.24752
Number of firms months	40,271							
Number of firms	112							
Panel B: Firms with no dividend in the past 12 months								
Market capitalization (000,000's)		60.19264	235	0.799996	4.299937	10.15004	28.0001	2115.51
Book-to-market		1.604354	6.919177	-8.95159	0.405315	0.830253	1.498355	59.01399
Number of firms months	31,511							
Number of firms	88							

Table 2 Returns around dividend month

Each month, over our sample period, the top 200 largest firms are grouped into 'Dividend Month', 'Non-Dividend' and 'Dividend-Free' portfolios. 'Dividend Month' portfolio contains stocks that pay dividend at the concurrent month. 'Non-Dividend' portfolio contains stocks that have paid dividends in the past, but not in the current month. Stocks in the 'Dividend-Free' portfolio have never paid a dividend. Equal-weighted portfolio returns are calculated up to 12 month after the portfolio formation. "Months since dividend payment" signifies the month after the portfolio formation month (i.e., month 0). This table presents average monthly raw returns and standard deviations for each month since the portfolio formation.. .

	Dividend Month		Non-Dividend Month		Dividend Free	
	Returns in current month given dividend payment t months ago		Returns in current month given portfolio formation at t=0		Returns in current month given portfolio formation at t=0	
Months since dividend payment	Mean return	Standard deviation	Mean return	Standard deviation	Mean return	Standard deviation
0	1.99%	5.00%	1.29%	4.52%	-0.07%	8.06%
1	1.30%	5.05%	1.37%	4.49%	0.05%	7.90%
2	1.18%	4.83%	1.37%	4.51%	0.16%	7.78%
3	1.00%	4.59%	1.35%	4.43%	0.18%	7.60%
4	1.46%	4.67%	1.20%	4.43%	-0.01%	7.32%
5	1.80%	5.04%	1.11%	4.34%	0.19%	7.35%
6	1.77%	4.98%	1.08%	4.31%	0.14%	7.34%
7	1.15%	4.70%	1.16%	4.32%	0.16%	7.36%
8	1.00%	4.69%	1.19%	4.32%	0.18%	7.26%
9	0.86%	4.60%	1.20%	4.28%	0.10%	7.09%
10	1.51%	4.59%	1.12%	4.21%	0.21%	7.00%
11	1.95%	5.16%	1.03%	4.16%	0.21%	6.91%
12	1.83%	4.53%	0.96%	4.20%	0.16%	6.77%

Table 3 Dividend month premium

Each month, over our sample period, the top 200 largest firms are grouped into 'Dividend Month', 'Non-Dividend' and 'Dividend-Free' portfolios. 'Dividend Month' portfolio contains stocks that pay dividend at the concurrent month. 'Non-Dividend' portfolio contains stocks that have paid dividends within the past 12 months, but not in the current month. Stocks in the 'Dividend-Free' portfolio have no dividends in the past 12 months. Equal-weighted portfolio returns are calculated for these portfolios. This table shows the raw and risk-adjusted returns of these dividend portfolios. Associated t-statistics are reported in parenthesis. The adjustment for risk is based on the Fama-French five-factor model. *, ** and *** denotes 10%, 5% and 1% significance level, respectively.

	Raw returns		Risk-adjusted returns	
	Dividend Month (Long)		Dividend Month (Long)	
	Non-Dividend Portfolio (Short)	Dividend-Free Portfolio (Short)	Non-Dividend Portfolio (Short)	Dividend-Free Portfolio (Short)
Long	1.99%***	1.99***	0.85%***	0.85%***
	(7.52)	(7.52)	(5.54)	(5.54)
Short	1.29%***	-0.07%	0.20%***	-0.74%***
	(5.39)	(-0.17)	(2.83)	(-2.95)
Difference	0.68%***	2.02%***	0.65%***	1.59%***
	(5.32)	(6.55)	(4.82)	(5.64)

Table 4 Dividend month premium reversals

This table shows the return difference between 'Dividend Month' and 'Non-Dividend Month' portfolios obtained from the top 200 largest firms. 'Dividend Month' portfolio contains stocks that pay dividend at month *t*. 'Non-Dividend' portfolio contains stocks that have paid dividends within the past 12 months, but not in month *t*. 'Months since dividend payment' indicates the month after month *t* (i.e., dividend month). The returns are risk adjusted using the Fama-French five-factor model. Associated t-statistics are reported in parenthesis. *, ** and *** denotes 10%, 5% and 1% significance level, respectively.

Months since dividend payment	Dividend month premium	Months since dividend payment	Dividend month premium
1	0.04%	7	0.09%
	(0.28)		(0.56)
2	-0.22%	8	-0.26%
	(-1.5)		(-1.71)
3	-0.26%	9	-0.39%***
	(-1.53)		(-2.73)
4	0.25%	10	0.28%
	(1.55)		(1.88)
5	0.70%***	11	0.81%***
	(3.82)		(5.27)
6	0.68%***	12	0.84%***
	(4.32)		(5.71)

Table 5 Franked and unfranked dividend month premiums

Each month, over our sample period, the top 200 largest firms are grouped into 'Dividend Month', 'Non-Dividend' and 'Dividend-Free' portfolios. 'Dividend Month' portfolio contains stocks that pay dividend at the concurrent month. These stocks are further divided into franked and unfranked dividends. 'Non-Dividend' portfolio contains stocks that have paid dividends within the past 12 months, but not in the current month. Stocks in the 'Dividend-Free' portfolio have no dividends in the past 12 months. Equal-weighted portfolio returns are calculated for these portfolios. This table shows dividend month returns when a long position is on (1) 'Dividend Month' portfolio (Panel A); (2) franked 'Dividend Month' portfolio (Panel B); and (3) unfranked 'Dividend Month' portfolio (Panel C), respectively. The short position is in either 'Non-Dividend' or 'Dividend Free' portfolio. The dividend month returns are averaged over three sub-periods: 1983 – 1986 (period 1), 1989 – 1996 (period 2) and 1998 – 2010 (period 3). A stock is classified to be franked if the franking credit is over 50%, and unfranked otherwise. The reported returns are risk-adjusted using the Fama-French five-factor model. Associated t-statistics are presented in parentheses.. *, ** and *** denotes 10%, 5% and 1% significance level, respectively.

	Long dividend month, short non-dividend month			Long dividend month, short dividend-free month		
Panel A: Dividend month premium						
	1983-1986	1989-1996	1998-2010	1983-1986	1989-1996	1998-2010
	Period 1	Period 2	Period 3	Period 1	Period 2	Period 3
Long	1.28%***	0.76%***	0.84%***	1.28%***	0.76%***	0.84%***
	(3.16)	(3.45)	(3.67)	(3.16)	(3.45)	(3.67)
Short	0.37%	0.05%	0.20%	-1.69%***	-0.99%***	-0.26%
	(2.31)	(0.48)	(1.64)	(-2.50)	(-2.88)	(-0.67)
Difference	0.92%**	0.71%***	0.64%***	2.97%***	1.75%***	1.13%***
	(2.17)	(2.75)	(3.53)	(3.15)	(3.98)	(2.83)
Panel B: Unfranked dividends						
Long	1.28%***	0.71%	1.15%***	1.28%***	0.72%	1.15%***
	(3.16)	(1.39)	(2.70)	(3.16)	(1.40)	(2.70)
Short	0.37%	0.05%	0.20%	-1.69%***	-1.01%***	-0.26%
	(2.31)	(0.50)	(1.56)	(-2.50)	(-2.92)	(-0.68)
Difference	0.92%**	0.50%	0.96%***	2.97%***	1.52%***	1.42%***
	(2.17)	(1.00)	(2.45)	(3.15)	(2.61)	(2.60)
Panel C: Franked dividends						
Long	N/A	1.06%***	0.70%***	N/A	1.06%***	0.70%***
	N/A	(3.17)	(2.77)	N/A	(3.17)	(2.77)
Short	N/A	0.05%	0.20%	N/A	-1.01%***	-0.26%
	N/A	(0.50)	(1.56)	N/A	(-2.92)	(-0.68)
Difference	N/A	1.01%***	0.54%***	N/A	2.09%***	0.99%***
	N/A	(2.97)	(2.46)	N/A	(3.87)	(2.37)

Table 6 Franked and unfranked dividend month premium reversals

This table shows the return difference between 'Dividend Month' and 'Non-Dividend Month' portfolios obtained from the top 200 largest firms. 'Dividend Month' portfolio contains stocks that pay dividend at month *t*. These stocks are further divided into franked and unfranked dividends. A stock is classified to be franked if the franking credit is over 50%, and unfranked otherwise 'Non-Dividend' portfolio contains stocks that have paid dividends within the past 12 months, but not in month *t*. Equal-weighted portfolio returns are calculated for these portfolios 'Months since dividend payment' indicates the month after month *t* (i.e., dividend month). The returns are risk adjusted using the Fama-French five-factor model. Associated t-statistics are reported in parenthesis. *, ** and *** denotes 10%, 5% and 1% significance level, respectively.

Months since dividend payment	Dividend month premium (Unfranked)	Months since dividend payment	Dividend month premium (franked)
1	0.20%	1	0.08%
	(0.79)		(0.36)
2	0.11%	2	-0.32%
	(0.38)		(-1.65)
3	-0.50%*	3	-0.31%
	(-1.90)		(-1.78)
4	0.21%	4	0.30%
	(0.76)		(1.74)
5	0.25%	5	0.74%***
	(1.00)		(3.08)
6	0.53%***	6	0.73%***
	(2.36)		(3.49)
7	0.56%	7	0.11%
	(1.56)		(0.64)
8	-0.06%	8	-0.21%
	(-0.22)		(-1.23)
9	-0.81%***	9	-0.12%
	(-2.90)		(-0.65)
10	-0.08%	10	0.38%***
	(-0.25)		(2.80)
11	0.55%	11	0.88%***
	(1.89)		(3.95)
12	1.17%***	12	0.72%***
	(3.23)		(4.09)

Table 7

Dividend month premium in different economic conditions

This table presents the "Dividend Month Premium" portfolio containing a long position in the "Dividend Month" portfolio and a short position in the "Dividend free" portfolio. The "Dividend Month" portfolio contains stocks in the month where they have a dividend ex-date. The "Dividend free" portfolio contains stocks that have not pay dividends in the past. The table shows the "Dividend Month Premium" sorted by "CCI" categories of less than 90, 90 to 100, 100 to 110 and over 110. The "CCI" is the Westpac Consumer Confidence Index obtained from the Westpac website. A CCI above 100 indicates that consumers are optimistic about the market and a CCI below 100 indicates that consumers are pessimistic about the market. All portfolio returns are regressed on the Fama-French five factor model. All results reported in Panel B are value-weighted. The data in the regressions consists of monthly stock returns of top 200 ASX listed companies from January 1982 to December 2010. The top number is the coefficient of the alpha in terms of percentage and the number in parenthesis is the t-statistic, *, ** and *** denotes 10%, 5% and 1% significance respectively.

The dividend month premium sorted by the Consumer Confidence Index	
CCI	Dividend Month Premium
<90	0.83%***
	2.2372
90 to 100	0.78%***
	2.5776
100 to 110	0.54%***
	2.3648
>110	0.73%***
	3.3271

Table 8

Abnormal returns in dividend months

This table shows the Fama-French 5 factor models regression Alpha of monthly stock returns of portfolios formed on the classifications; "Dividend Month", "Non-Dividend" and "Dividend-Free". These portfolios are as previously defined. The "difference" portfolio contains a long position in the "Dividend month" portfolio and a short position in the specified short portfolio. The returns of these portfolios are regressed using Fama-French 5 factor models. The data in the regressions consists of monthly stock returns of ASX listed companies from January 1982 to December 2010. The top number is the coefficient of the alpha in terms of percentage and the number in parenthesis is the t-statistic, *, ** and *** denotes 10%, 5% and 1% significance respectively.

	dividend moth premium exclude earning announcement	Population dividend moth premium	Predicted dividend month premium
Long	0.58%***	1.34%***	0.33%**
	3.46	10.17	1.99
Short	0.13%	0.64%***	-0.01%
	1.75	7.01	-0.11
Difference	0.47%***	0.70%***	0.34%***
	3.20	6.11	2.17

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