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ABSTRACT

Since Miller and Modigliani (1961), the issue of dividend payout policy on equity valuation has been largely ignored by the markets – the payment of dividends is generally regarded as irrelevant. Further, interest in dividend capture schemes in the market has to a large extent dried up as such strategies have fallen victim to tax laws which have attempted to wipe out their widespread use. Evidence presented in this paper suggests that investors should take another look at dividends and their value to equity holders. This paper examines stock prices of the 50 largest companies (by market capitalisation) listed on the Australian Stock Exchange, following the payment of dividends to determine the rate at which ex dividend stock price retraces back to the cum dividend price and the returns from this stock price movement. It finds evidence of significant retracing and as such questions whether shareholders are getting the value of dividends twice.

PURPOSE AND SCOPE

Miller and Modigliani (1961) effectively established the principle that, in the case of traded equities, expected returns could take the form of expected dividends and/or expected capital gains. The forecasting of dividend streams has long been an area covered by equity analysts, but the question then becomes what are the drivers of expected capital gains? Many different models have been or are being used in practice, most of which rely on an estimation of cash flow or earnings.

There has been considerable debate about whether cash flow or earnings is the better proxy basis for the estimation of future earnings and/or returns in stock price valuation (Subramanyam and Venkatachalam, 2001; Penman and Sougiannis, 1998; Dechow, 1994; Sloan, 1996, and many others). For example, in theory, cash flow has generally been considered a better alternative as a potential driver of capital appreciation in traded stocks due to the greater difficulty for management to influence cash flow, as compared to accounting earnings. However, Gentry, Whitford, Sougiannis and Aoki (2002) find a strong relationship between net earnings and capital gain rates for both Japanese and American stocks, and find that free cash flow is not closely related to capital appreciation rates. Notably, the dividend stream was not included in their analysis.

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The price performance of stocks going ex-dividend on the first day of trading has been extensively examined in Elton and Gruber (1970), Elton, Gruber and Rentzler (1984), Frank and Jagannathan (1998), Green and Rydqvist (1999), Elton, Gruber and Blake (2003) and others, all of whom conclude that stock prices generally fall by close to, but less than the dividend on the day that they go ex-dividend. The same evidence has been presented in the following markets, and is summarised in Table 1, below.

While much of this research has centred on the impact of taxation on this effect, the mere existence of an effect, for whatever reason, has been found to exist.

If capital gain expectations are driven by EPS growth expectations (as argued by Gentry, Whitford, Sougiannis and Aoki, 2002), and the adjustment to capital gain is less than the actual dividend stream paid, then it follows that the total expected return must exceed that indicated by expected earnings growth alone.

Country Examined	Articles
Canada	Athanassakos (1996); Athanassakos and Fowler (1993); Booth and Johnson (1984).
China	Milonas, Tan, Travlos and Xiao (2002).
Denmark	Florentsent and Rydqvist (2002).
Germany	McDonald (2001).
Greece	Milanos and Travlos (2001).
France	Desbrieres (1988); Romon (2000).
Hong Kong	Kadapakkam (2000); Boyd and Jagannathan (1994).
Italy	Michaely and Murgio (1995).
Japan	Hayashi and Joganathan (1990); Kato and Lowenstein (1995).
Korea	Kim S. (2002).
New Zealand	Bartholdy and Brown (2002).
Spain	Gardeczabel and Reguly (2002).
Sweden	Daunfeldt (2002); Green and Rydqvist (1999).
UK	Ang, Blackwell and Megginson (1991); Chui, Strong and Cadle (1992); Menyah (1993); Poterba and Summers (1984), (1985).

Table 1: Selection of literature examining Ex-Dividend Stock Prices

What does not appear to have been fully researched is the extent to which the ex-dividend adjustment lasts beyond the first day of ex-dividend trading. There are obviously a number of potential alternatives, including:

- 1) Stocks actually adjust by the tax-adjusted value of the cash dividend paid, and trade on a “normal” pattern thereafter;
- 2) After going ex-dividend, stocks quickly return to their cum-dividend levels, effectively ignoring the dividend payment in pricing;
- 3) Stocks trade somewhere between the two extremes.

Gentry, Whitford, Sougiannis and Aoki (2002) have identified a link between EPS growth and capital appreciation rates, rather than total returns, but have not established any statistical difference between using the use of capital appreciation rates as against total returns. However, if it were shown that a more statistically significant relationship existed with capital appreciation, as against total returns, then the market should be setting prices based on an expected capital appreciation stream (which should be a function of expected reported EPS growth), with the forecast dividend stream being fully added to this. As such, there should be a pattern of trading behaviour evident which sees the payment of a dividend effectively ignored by the market, suggesting situation 2) above.

If the market only partially adjusts for dividends (as per above), then pricing should reflect capital appreciation rates that are less than reported EPS growth rates, but more than (EPS – DPS) growth rates.

The apparent success of dividend capture type strategies requires stocks to trade in a way other than what would generally be considered “normal”; i.e. for the strategy to work, stocks must at least partially, retrace the price adjustment seen as a result of the stock going ex-dividend. Further, the very existence of tax measure designed to limit the use of such strategies in the US and Australia (and other countries) also suggests the existence of the success of such strategies.

METHODOLOGY

The paper employs two approaches to examine stock price movements following a dividend payment. Essentially, these are two tests of the relative price performance of a sample of the largest 50 Australian stocks by market capitalisation (against the market Index ASX200).

The first approach involves an investigation of the trading performance of the Top 50 constituent stocks by market capitalization of the ASX200 Index over the period from December 2000 to February 2004. Relative returns are calculated over eight periods, each representing 15 trading days, as described in Table 2 below.

Period	Stock Price Trading Dates
1	15 days prior to the last cum dividend date
2	last cum-dividend date and 15 days forward
3	last cum-dividend date plus 16 days to plus 30 days
4	last cum date plus 31 days to plus 45 days
5	last cum date plus 46 days to plus 60 days
6	last cum date plus 61 days to plus 75 days
7	last cum date plus 76 days to plus 90 days
8	last cum date plus 91 days to plus 105 days

Table 2: Trading Periods Examined

For each of the periods examined, arithmetic averages of relative returns were investigated for signs of statistically significant differences in relative returns over each of the periods. Market capitalisation weighted averages were not used as, the primary issue here was the prevalence, or otherwise, of the price adjustment being investigated, and market value had little or no bearing on the observation of the phenomenon.

The second test involves the same sample of stocks. In this test, stock prices are observed for a tendency to return to cum-dividend market-relative price levels within the 15 trading days immediately after going ex-dividend. The possibility of inflated cum-dividend prices immediately prior to going ex-dividend, reflecting potential “dividend capture” effects were also considered. In addition, comparisons of the maximum relative price achieved in the 15 days immediately after going ex-dividend were made against 5-day averages of the relative price, up to 5 days before going ex-dividend.

A further piece of preliminary analysis is undertaken. Given that market-relative figures were being used for calculations of capital appreciation and retracement analysis, the possibility arises that if a large portion of the ASX200 was to go ex-dividend at the same time, then the Index itself could be significantly affected by the ex-dividend adjustment of component stocks, which would distort the results of the analysis. Of 193 separate days on which dividends were paid during the sample period, on only 6 days did the market capitalisation of stocks going ex-dividend exceed 10% of the ASX200 market capitalisation, being the ex-dividend dates of News Corporation and its preferred shares. On those days, no other stocks in the sample went ex-dividend. In addition, only 8 trading days saw greater than 3 counters in the sample go ex-dividend, with the maximum being 9 stocks on the 4th March 2002. As such, it was considered that no adjustment was necessary to prevent distorted results being achieved.

KEY RESULTS

The first test was carried out on a sample of the largest (by market capitalisation) 50 constituent stocks of the ASX200 Index, and their respective cash dividend payments over the period December 2000-February 2004. This gave a total sample of 274 observations. Where dividend payments were made within 45 days of the last available price data, that observation was excluded from the results. Arithmetic averages were calculated (relative to market capitalisation weighted averages) for the reasons mentioned above, and related descriptive statistics are shown in Table 3 below.

	Trading Days Since Last Cum-Dividend Trading Day							
	-15	+15	+30	+45	+60	+75	+90	+105
Maximum	20.29%	21.80%	15.51%	17.74%	20.35%	22.52%	19.33%	14.86%
Min	-25.97%	-35.70%	-37.27%	-24.74%	-25.67%	-41.73%	-20.96%	-36.25%
Avg.	0.06%	0.68%	-0.36%	0.60%	-0.26%	-0.05%	0.40%	0.31%
StDev	5.8%	5.5%	5.5%	5.3%	6.1%	6.4%	5.0%	5.5%

Table 3: Market Relative Price Performance around Dividend Payment Dates

The first observation to make from the data in Table 3, is what is not evident here. The ASX200 currently trades on a dividend yield of approximately 3.8%. Given that cash dividends are generally paid twice each year, the expected average adjustment to prices relative to market as a result of those dividend payments would be expected to be in the region of 1.8-2.0%. This would obviously be expected in the first 15 trading days after the last cum-dividend trading day. With the ASX200 Index itself not significantly influenced by ex-dividend pricing (see above), the results in Figure 1 appear to show that this does not take place. To the contrary, the average relative price performance of stocks in this period is positive, although not statistically significant in its variance from zero. While it seems likely that the degree of apparent over-performance in this period is not necessarily significant, the absence of clear under-performance during the period does appear to be significant.

Given the fact that arithmetic averages have been used in the calculations to highlight the prevalence of the phenomenon, as against the percentage of the market capitalisation to which this applies, the actual magnitude of the relative price performance has little real relevance, except in a rough relative comparison to the figures achieved for the other periods.

Further, the performance in the first period, being the 15 days immediately prior to the last cum-dividend trading day, shows little evidence to suggest that there is any significant short-term, dividend capture related buying of stocks in the sample, which may have caused some distortion of the results. However, any short-term unwinding of such trading positions would be likely to work against the phenomenon identified. This has some relevance for the following test of the data.

On a prima facie basis, this evidence seems to suggest that the market is, in effect, giving investors cash dividends “for free”. This is not necessarily the case, of course, if the true effect is not to give the dividend stream effectively at no cost, but to simply move forward part of the capital appreciation return stream that would be expected to accrue over the period, to the next dividend payment date up-front. As such, the apparent anomaly in price performance in the period immediately after the stock goes ex-dividend would be effectively offset by reduced capital appreciation in the period after the adjustment, up to the next dividend payment.

At the very least, this would appear to be a significant trading anomaly that is somewhat surprising and difficult to explain, but not unknown. The wide spread adoption of dividend capture strategies by investors over relatively long periods of time bears evidence to this. What is interesting is that this apparent ex-dividend trading performance anomaly appears to persist despite the advent of tax laws aimed at making the practice unprofitable.

Further empirical evidence supporting a positive link between dividend payout ratio and market pricing, which is contrary to generally accepted theory, based on the pricing of the ASX200 is given below. If the relationship between EPS growth and capital appreciation is stronger than the link with total returns, then it suggests that stocks with a high dividend payout policy are likely to be priced more generously by the market, all other things being equal. Miller and Modigliani (1961), on the other hand, suggest that dividend payout should not impact market pricing. The generally accepted current corporate finance-based theory suggests a negative relationship

between payout ratio and market pricing, given expected lower growth rates for high payout equities.

The second test that was carried out was to investigate the number of observations where there had been a clear return of relative stock prices to cum-dividend levels in the immediate post ex-dividend trading period. A period of 15 trading days was arbitrarily chosen. The cum-dividend comparison data was calculated as set out in the Methodology section above.

The maximum relative price achieved in the 15 trading days after the stock went ex-dividend was recorded and compared to the cum-dividend relative price comparison calculation. If the maximum price achieved was greater than the comparison figure, this was recorded as a “full retracement”. If the maximum achieved relative price was less than the comparative, then the proportion of the maximum relative price from the theoretical ex-dividend price was compared to the calculated relative dividend payment (cash dividend paid / ASX200 Index closing on the last traded cum-dividend day).

Results for the sample used showed that 194 observations, out of a total sample of 274 observations (71%), traded at a maximum relative price equal to or greater than the comparative cum-dividend pricing. A further 10 observations, or 3.7%, retraced between 75% and 100% of the dividend adjustment.

A further issue that appeared to be impacting these results was observed. Stocks that had announced results that were significantly below market expectations suffered significant relative capital depreciation for a considerable period after the announcement of such results, which generally went well beyond the corresponding ex-dividend date. This adjustment to negative results announcements clearly distorts the results associated purely with the examination of the post dividend payment phenomenon being investigated. We identified 28 instances in our sample where this was evident.

If these observations are removed from the sample, the percentage of full retracement observations rises to 79%, while the percentage of stocks achieving 75% retracement or better increases to 83%.

These results appear to be consistent with the results achieved in Test 1, and significantly reinforce the existence of what appears to be a wide-spread practice for markets to return stock prices to cum-dividend levels relatively quickly after the payment of cash dividends.

The question is, is this merely a widespread, short-term trading anomaly that has no further implications for equities, or is there potentially greater implications for the way that markets price equities?

The Gentry et al (2002) findings potentially suggest valuation implications for such findings. We made a preliminary investigation of the pricing of the ASX200 to look for any evidence of dividend payout having a positive effect on pricing levels.

In the final test, a multiple regression test was done of the ASX200 month-end historical price/earnings ratios, as calculated by Citibank SSB, over the period 1992 to

March 2004. Citigroup SSB data was preferred to that published by the Australian Stock Exchange (ASX) for the fact that the ASX chooses to exclude any loss-making results of its constituent stocks from its calculations. This gives a distorted result of the true price/earnings ratio of the ASX200 Index.

The dependent variable in the regression was the earnings yield (1/PER) of the ASX200, rather than using the PER, for the reason that one of the variables chosen was the 10-year Australian Government bond yield (10YRBOND), as a proxy for the risk free rate of return in the Australian market. The use of a yield-based comparative reduces a potential source of error.

The other two variables used were:

- 1) Two year forward annualised average growth rate in the calculated ASX200 Index earnings integer, based on the Citigroup SSB calculated Index PER (EPSGROWTH);
- 2) ASX200 payout ratio, calculated by dividing the Index dividend integer (ASX200 yield x ASX200 Index) by the corresponding earnings integer (ASX200PAYOUT).

The results of the regression are shown in Table 4 below.

Variables	Coefficients
Constant	0.0759 (18.0650)
EPSGROWTH	-0.1240 (-8.5751)
10YRBOND	0.2395 (9.7242)
ASX200PAYOUT	-0.0475 (-7.3414)

Table 4: Multiple Regression Results (t stats in brackets)

The results of the regression analysis shows that first, all three independent variables are statistically significant with the earnings yield of the market.

Of particular interest is the negative sign of the coefficient of ASXPAYOUT, suggesting that as the payout ratio increases, earnings yield falls (and market PER valuation increases). This is the opposite of that expected where increases in the payout ratio are expected to lead to future gains fall, and valuation falls. Over the period, the average payout ratio varied between 49.8% and 77.4%; bond yields varied between 4.9% and 10.53%, while 2 year average growth rates varied between 0% and 17%. Dividend yield reached a high of 7.95% and a low of 4.68%

However, it is consistent with our findings, which suggest that the dividend stream may be seen as separate from the expected capital appreciation stream that appears to be largely driven by expected EPS growth.

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