'Dogs of the Dow' Down Under

We evaluated the 'Dogs of the Dow' investment strategy, and a number of variations to it, in the Australian context using the large cap S&P/ASX 50 index. Our research indicated that after providing quite spectacular returns in the initial years, the strategy continued to provide modest abnormal returns over the sample period.

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IN THEIR BOOK, *Beating the Dow*, O'Higgins and Downes (1992) introduced a simple investment strategy, dubbed the 'Dogs of the Dow' strategy, using the dividend yields of US big cap companies to identify temporary price swings. This strategy was shown to provide superior returns to investors over one-year holding periods, compared to investing in the broader market. Fifteen years later, this strategy is still popular among investors and continues to attract the attention of the financial press in the United States and elsewhere.[1]

The profitability of investment strategies has implications for the applicability of the Efficient Market Hypothesis (EMH) in the market. Under the EMH, investors would compete away potential opportunities to earn abnormal returns, so that opportunities to earn higher returns will exist only by taking on more risk (Fama and French 1993). If it is possible for investors to systematically earn abnormal returns, then market efficiency is called into question, as would be the case if abnormal returns can be consistently earned with the Dogs of the Dow strategy, as claimed by its proponents.

Several studies have examined the profitability of the Dogs of the Dow strategy. McQueen, Shields and Thorley (1997) tested the strategy in the United States, comparing its performance to a portfolio of all Dow Jones Industrial Average (DJIA) stocks. They found that overall, the strategy provided superior returns but when performance was analysed in sub-periods, the Dogs of the Dow did better in only a few sub-periods, some years before it became a popular strategy in the market. Hirschey (2000), using a more recent dataset reached a similar conclusion, that the popularity of the strategy was eroding its own success. Filbeck and Visscher (1997) tracked the performance of the strategy in the British stock market between 1984 and 1994. Using FTSE-100 stocks as the British equivalent to the DJIA, they found that the

strategy beat the FTSE-100 index in only four of the 10 years, mostly in the earlier years of their dataset. They noted that a reason for their findings could be the difference in the nature of the FTSE-100 from the DJIA. The FTSE-100 is a larger universe, and includes a higher proportion of utilities and financial stocks. Applying the Dogs of the Dow strategy to the Canadian market, Visscher and Filbeck (2003) chose the 'Dogs' of the Toronto 35 Index, and compared their performance to the Toronto 35 as well as the larger Toronto Stock Exchange 300 index. They reported significant superior performance to the strategy, after adjusting for risk. Assessing the overall results from these studies, it appears that the strategy has different outcomes in different countries. To the best of our knowledge, the Dogs of the Dow strategy has not previously been examined in Australia.

We evaluated the Dogs of the Dow strategy in the Australian context taking into consideration the special characteristics of the Australian market. The strategy was tested in its original form and with several variations incorporated into it.

The strategy

The Dogs of the Dow strategy involves ranking the 30 constituent companies of the DJIA index according to their dividend yields at the end of the year, then investing in the top 10 stocks based on that ranking. O'Higgins and Downes (1992)[2] prescribed a holding period of one year, beginning at the start of the year , and rebalanced annually to maintain an equally-weighted portfolio on the anniversary dates.

The rationale for this prescription was that blue chip stocks with high dividend yields chosen from the DJIA present the likelihood of these stocks being currently beaten down (hence the word 'Dog'), due perhaps to business cyclicality or underpricing. This would make these stocks bargain buys. However, the stocks that make it into the Dogs of the Dow are stocks that usually pay a steady stream of dividends and are large cap companies with strong fundamentals. They are believed to be strong enough to rebound from their current out-of-favour share prices.

The dividend yield has long been a popular stock selection tool among investors. However, the numerous research studies that have been devoted to examining the relationship between dividend yields and stock prices have shown mixed results. Studies such as Black and Scholes (1974), Goetzmann and Jorion (1993, 1995), did not find a strong relationship between dividend yields and stock prices while others such as Fama and French (1988), Grant (1995), Litzenberger and Ramaswamy (1982), Kothari and Shanken (1997), Brzeszczyński and Gajdka (2007), found some predictive power between the two variables. The Grant study in particular, showed that high dividend yield stocks not only provided higher than average returns, but they also possessed lower market risks. This is consistent with the findings of this study, where estimated betas of the high dividend yield portfolio are generally below one, but adjusted returns are still above CAPM-adjusted expected returns.

If it is possible for investors to systematically earn abnormal returns, then market efficiency is called into question, as would be the case if abnormal returns can be consistently earned with the Dogs of the Dow strategy, as claimed by its proponents.

The Dogs of the Dow strategy has been referred to by the popular press as a value investing strategy.[3] This is because value investors use the dividend ratio as one of the measures of identifying value stocks. But as Greenwald, Kahn, Sonkin and Biema (2001) pointed out, using measures such as dividend yields and P/E ratios as 'search strategies' are only a first step to the value investing process. Nevertheless, the Dogs of the Dow strategy is consistent with value investing principles, in that it tends to choose stocks with strong fundamentals which show signs of being undervalued by the market.

Data sources and methodology

The Australian equivalent of the Dogs of the Dow ('ASX Dogs' hereafter), is set up using stock prices starting from December 1999, corresponding to the introduction of large cap indices in Australia. The data were sourced from the Thomson Datastream database. On 31 December each year, an equal weighted portfolio was formed by picking the top 10 dividend yield stocks from the S&P/ASX 50 index, and holding them for one year. Dividend yields were also obtained from the Thomson Datastream database, which were based on gross dividends of companies.[4] These dividends were updated as soon as a new dividend announcement was made.

Since the constituents of the S&P/ASX 50 change over time, additions and deletions to the index were retrieved in order to determine the constituents of the index in each time period. The archive of changes made to the S&P/ASX 50 was obtained from Standard and Poor's.[5] The ASX Dogs portfolio was then set up using the constituents of the index at each point in time.

The holding period of the ASX Dogs portfolio was assumed to be one year with annual rebalancing. Portfolio returns were calculated on a continuously compounded basis, by taking the log difference between the beginning and ending value of the portfolio, inclusive of dividends paid during the year. If a stock was excluded from the index before the portfolio anniversary date was reached, it was assumed that the risk free rate was earned over that period in place of that stock.

The expected returns were evaluated after adjusting for market risk. The betas and Jensen alpha estimates of each of the portfolios were based on the 'Market Model', calculated by regressing the monthly excess returns of each ASX Dogs portfolio over the risk free rate on the monthly excess returns of the ASX All Ordinaries index five years

prior to the start of each portfolio. The returns are presented in Table 1 showing calculations adjusting for risk along with the t-statistics and their corresponding significance levels. If the respective coefficients were statistically significant, these were used to estimate the expected return of the portfolio using the Capital Asset Pricing Model (CAPM). The return of the ASX Dogs strategy was then compared to the CAPM-calculated returns.

The Dogs of the Dow strategy is consistent with value investing principles, in that it tends to choose stocks with strong fundamentals which show signs of being undervalued by the market.

Abnormal returns of the ASX Dogs

Several interesting points can be noted in Table 1. First, the strongest returns were in the early years between 2000 and 2002. Not surprisingly, the best years of the strategy were in that period as well, as the ASX Dogs beat the CAPM-adjusted return in 2000 and 2001 by 19.20% and 21.20%, respectively. A t-test of the mean differences between the returns of the ASX Dogs portfolio and the expected CAPM returns over the seven-year period showed that the abnormal returns of the ASX Dogs were significant at the 5% level. The results in Table 1 also suggested that the stocks that qualified for the ASX Dogs portfolio had lower market risk in the later years than in the earlier years.

The reason for the abnormal returns to be exceptionally high in the earlier years when the index was first introduced could be the lack of investor awareness of using the index for the ASX Dogs strategy. However, consistent with the investor learning argument presented by McQueen, Shields and Thorley (1997), these early over-performances started

TABLE 1: Performance of ASX Dogs portfolio, years 2000–06

For 1-year portfolio beginning on	Estimated Beta[1] (T-statistic)	Jensen Alpha[1] (T-statistic)	Risk Free Rate[2]	ASX All Ords Return[3]	ASX Dogs Raw Return	CAPM Expected Return[4]	Difference
Jan 1, 2000	0.88443 (11.9781[a])	0.00272 (1.00137)	6.10%	4.90%	24.24%	5.04%	19.20%
Jan 1, 2001	0.80073 (7.44655[a])	0.00289 (0.76418)	4.98%	9.64%	29.91%	8.71%	21.20%
Jan 1, 2002	0.61918 (6.84174[a])	0.01086 (3.12518[b])	4.70%	-8.43%	9.09%	-3.43%	12.52%
Jan 1, 2003	0.55267 (6.02365[a])	0.00821 (2.65182[c])	4.92%	14.72%	13.74%	10.34%	3.40%
Jan 1, 2004	0.48669 (5.24266[a])	0.00643 (2.11245)	5.44%	24.35%	20.89%	14.64%	6.25%
Jan 1, 2005	0.58849 (6.15910[a])	0.00783 (2.73254[b])	5.61%	19.13%	10.77%	13.57%	-2.80%
Jan 1, 2006	0.46080 (5.10149[a])	0.00955 (3.40206[b])	5.96%	22.29%	20.67%	13.48%	7.19%
						Mean	9.57%
						Standard Deviation	0.086
						T-statistic[5]	2.940
						One tail P-value	0.012

a Significant at the 0.1% level
a Significant at the 1.0% level
c Significant at the 5.% level

Notes

1 Market betas and Jensen alphas were estimated by regressing monthly excess stock returns against excess returns of the ASX All Ordinaries index in the five years immediately prior to inception of the particular ASX Dogs portfolio.

2 The 30-day bank accepted bill rates were used as a proxy for the risk free rate.

3 The continuously compounded returns of the ASX All Ordinaries accumulation index were used as a proxy for the market return in the CAPM.

4 The expected return as predicted by the CAPM was calculated using the estimated parameters from the five years before the particular portfolio's formation.

5 The t-statistic was calculated by taking the mean of the difference between the expected and realised return of the ASX Dogs portfolio, divided by the standard deviation of the difference, and multiplied by the square root of seven (for the number of observations). Instead of evaluating the data with annual frequencies, the evaluation could also have been carried out using monthly data over the seven year period as a whole, even though the strategy is rebalanced annually. Given the higher degrees of freedom available with monthly data, the statistical significance of the results may have been stronger had monthly data been used. We thank an anonymous referee of this journal for pointing this out to us.

to erode after 2002 and even dropped below the expected CAPM return in 2005.[6] One possible interpretation of this result is that the abnormal returns of the investment strategy had been picked up by investors, driving up demand for the ASX Dogs stocks, resulting in lower abnormal returns in subsequent periods.

Transaction costs

The abnormal returns discussed so far have ignored transaction costs associated with the formation of the portfolios. But because the ASX Dogs strategy entails annual rebalancing of the portfolio, it is important to examine the strategy performance after allowing for transaction costs.[7] The ASX Dogs strategy studied here had an average turnover rate of 3.83 stocks per year after rebalancing six times between the seven annual portfolios formed. Interestingly, turnover was higher in 2001–02, and again in 2005–06.[8] Compared to the cost of maintaining a passive portfolio, the transactions costs for maintaining the Dogs portfolio were therefore expected to be higher. But as the stocks were mostly large, liquid companies, the bid ask spreads for these stocks would be expected to be narrow (Brands, Gallagher and Looi 2006).

The standard brokerage fees in Australia are between 0.5% and 1.5% per transaction, and are often negotiable between client and broker, plus an administration fee and 10% GST. Furthermore, discount brokers could charge as low as $30 per transaction, regardless of the volume of trade. For the purpose of this paper, it was assumed that an average of 1.0 % per one-way transaction was charged. This translated into an average of 0.77% per year for the ASX Dogs portfolio. Given the order of magnitude of the abnormal returns shown in Table 1, the abnormal returns net of transaction costs will not materially change the performance of the strategy or alter the conclusions of the study.

Investigating the portfolio rebalancing date

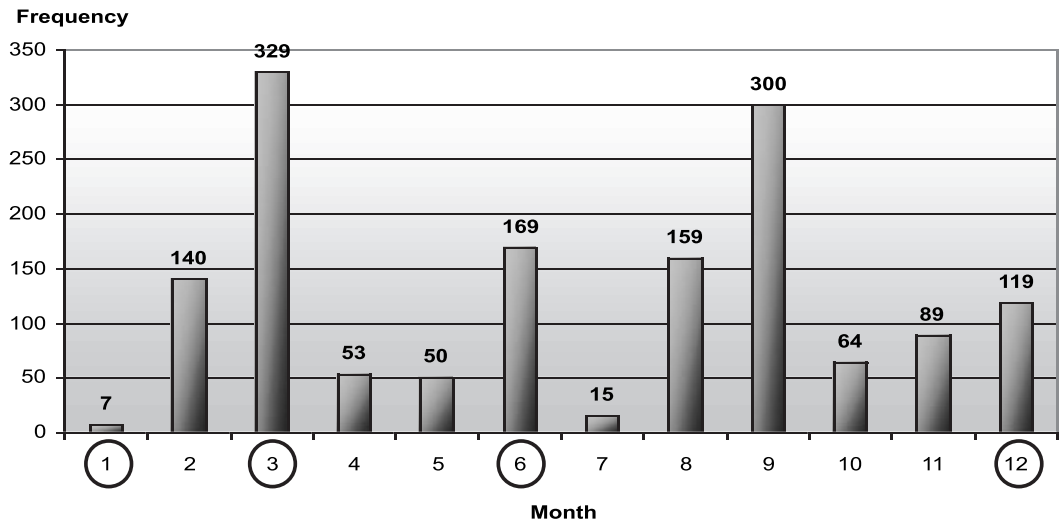
The base case above used 31 December as the anniversary date. Would a different date work better? It is well known that ex-dividend months carry information effects on future stock returns (Litzenberger and Ramaswamy 1982). On months when most companies go ex-dividend, not only does the rolling 12-month dividend yield change, but movements in the share price as a result of the dividend will alter the dividend yield number. Hence, to investigate the issue, the performance of the strategy with the following anniversary dates was examined: 31 January, 31 March and 30 June. 30 June was an obvious choice, because it is the financial and tax year-end in Australia.

Visscher and Filbeck (2003) avoided using a rebalancing date that coincides with the tax year-end to avoid tax effects in their study of the Canadian market. But by comparing the performance of the portfolio with a tax year-end rebalancing date, a portfolio constructed on other dates presented a unique opportunity to study how tax year-end trading may affect the performance of the portfolio. The other three rebalancing dates were chosen as they were the months in which the frequencies of ex-dividends payments dates varied widely. This was determined by compiling the ex-dividend dates of all the constituent companies in the S&P/ASX 50 from the year 2000 to 2006 as presented in Figure 1.

As evident from Figure 1, March and January contained the most and the least numbers of ex-dividends between 2000 and 2006. Anniversary dates ending on these months were therefore chosen to investigate the effects of ex-dividend dates on the strategy.

FIGURE 1: **Frequency of companies going ex-dividend in a particular month between 2000 and 2006**

The bars indicate the number of times constituent companies of the S&P/ASX 50 had reported an ex-dividend date in a particular month. The numbers on top of each column represent the frequency of ex-dividend dates occurring in that month between 2000 and 2006. The numbers across the bottom represent the month of the year, and a circle is placed over the month-ends tested in the paper.



The strategy steps were repeated for the three alternative dates. The top 10 dividend yields stocks were chosen on each of these dates, and their one-year risk adjusted returns calculated. The performance of each portfolio is shown in Table 2, with the base case using a 31 December anniversary date and each alternative date used, shown in separate panels.

Results suggest that all the high dividend yield stock portfolios outperformed the market by far in 2000 and 2001, no matter which month the stocks were ranked and chosen from. The tax-year end anniversary date of 30 June appears to cause a more volatile pattern in the abnormal returns of the portfolio, with a higher standard deviation in the differences

TABLE 2: A comparison of the ASX Dogs using different starting dates

Panel A shows the results of the base case portfolio presented in Table 1. The results of choosing stocks on alternative dates are shown in the other panels of the table.

PANEL A: DEC 31	2000	2001	2002	2003	2004	2005	2006
Market beta	0.884 (11.978)	0.801 (7.447)	0.619 (6.842)	0.553 (6.024)	0.487 (5.243)	0.588 (6.157)	0.461 (5.101)
Jensen alpha	0.003 (1.001)	0.003 (0.764)	0.011 (3.125)	0.008 (2.652)	0.006 (2.112)	0.008 (2.733)	0.010 (3.402)
CAPM Return	5.04%	8.71%	-3.43%	10.34%	14.64%	13.57%	13.48%
ASX Dogs Return	24.24%	29.91%	9.09%	13.74%	20.89%	10.77%	20.67%
Difference	**19.20%**	**21.20%**	**12.52%**	**3.40%**	**6.25%**	**-2.80%**	**7.19%**

PANEL B: JAN 31	2000	2001	2002	2003	2004	2005	2006
Market beta	0.833 (8.257)	0.639 (6.228)	0.586 (6.045)	0.518 (5.272)	0.541 (5.211)	0.640 (7.853)	0.626 (6.319)
Jensen alpha	-0.004 (-1.144)	0.003 (0.756)	0.006 (1.592)	0.005 (1.47)	0.004 (1.224)	0.002 (0.626)	0.001 (0.358)
CAPM Return	9.26%	6.03%	-4.54%	10.38%	16.73%	15.72%	15.21%
ASX Dogs Return	30.53%	21.47%	4.79%	9.98%	27.75%	16.04%	21.74%
Difference	**21.27%**	**15.44%**	**9.33%**	**-0.40%**	**11.02%**	**0.31%**	**6.53%**

PANEL C: MAR 31	2000	2001	2002	2003	2004	2005	2006
Market beta	0.764 (8.499)	0.774 (7.128)	0.684 (7.3)	0.611 (5.329)	0.388 (4.277)	0.565 (6.41)	0.428 (4.438)
Jensen alpha	-0.002 (-0.756)	-0.002 (-0.407)	0.006 (1.726)	0.003 (0.849)	0.002 (0.559)	0.005 (1.74)	0.004 (1.318)
CAPM Exp. Return	3.19%	10.02%	-7.05%	15.53%	12.00%	16.99%	12.14%
ASX Dogs Return	30.44%	36.66%	8.02%	23.58%	15.82%	16.78%	22.76%
Difference	**27.25%**	**26.64%**	**15.07%**	**8.05%**	**3.81%**	**-0.22%**	**10.62%**

PANEL D: JUN 30	2000	2001	2002	2003	2004	2005	2006
Market beta	0.732 (8.09)	0.672 (6.442)	0.658 (6.525)	0.581 (6.093)	0.507 (5.807)	0.646 (7.125)	0.464 (5.051)
Jensen alpha	-0.001 (-0.173)	0.000 (0.027)	0.005 (1.392)	0.002 (0.618)	0.006 (2.154)	0.004 (1.373)	0.002 (0.659)
CAPM Exp. Return	7.77%	-1.60%	0.94%	13.94%	13.93%	16.00%	15.63%
ASX Dogs Return	35.36%	32.60%	8.79%	21.71%	12.55%	9.52%	29.98%
Difference	**27.59%**	**34.20%**	**7.85%**	**7.77%**	**-1.38%**	**-6.48%**	**14.35%**

SUMMARY	DEC 31	JAN 31	MAR 31	JUN 30
Average mean difference	9.57%	9.07%	13.03%	11.99%
Standard Deviation	8.61%	7.81%	10.67%	14.70%
t-Statistic	2.940	3.073	3.232	2.157
One-tailed P-value	0.0130	0.0109	0.0089	0.0372

between the realised returns and the CAPM expected returns. Dyl (1977) found evidence that trading activity of investors increase in the last month of the tax year in the United States. If investors choose trading positions to maximise their tax benefits this may be a reason for the higher trading activity in June and the higher volatility in returns in Australia. An interesting finding is that the portfolio rebalanced on 31 March most consistently outperformed the CAPM returns. This could be due to the fact that as more companies' ex-dividend dates are in the month of March, the dividend yields of those companies are freshly updated on the 31 March anniversary date. The 'beaten down' status of companies may be most informative at that anniversary date.

Selecting the 'Dogs' from alternative indexes

Would a smaller or larger benchmark index give better results? To answer this question, the research process was repeated by selecting stocks from the S&P/ASX 20 and the S&P/ASX 100. Both indices were launched by Standard and Poor's about the same time as the S&P/ASX 50.

Results show that the S&P/ASX 20 and S&P/ASX 100 provided lower abnormal returns than the S&P/ASX 50 Dogs. Irrespective of the choice of index however, all portfolios provided positive abnormal returns in the first year the large cap indices were introduced. The abnormal returns generated by both versions using the S&P/ASX 20 and the S&P/ASX 100 were not statistically significant compared to the CAPM-expected returns.

TABLE 3: Selecting the 'Dogs' from alternative indexes

The base case portfolio is shown in panel A. Results of choosing from the S&P/ASX 20 and the S&P/ASX 100 are presented in panels B and C respectively. The t-statistics for the estimated CAPM coefficients are shown in parenthesis.

PANEL A: ASX 50	2000	2001	2002	2003	2004	2005	2006
Market beta	0.884 (11.978)	0.801 (7.447)	0.619 (6.842)	0.553 (6.024)	0.487 (5.243)	0.588 (6.157)	0.461 (5.101)
Jensen alpha	0.003 (1.001)	0.003 (0.764)	0.011 (3.125)	0.008 (2.652)	0.006 (2.112)	0.008 (2.733)	0.010 (3.402)
CAPM Exp. Return	5.04%	8.71%	-3.43%	10.34%	14.64%	13.57%	13.48%
Portfolio Return	24.24%	29.91%	9.09%	13.74%	20.89%	10.77%	20.67%
Difference	**19.20%**	**21.20%**	**12.52%**	**3.40%**	**6.25%**	**-2.80%**	**7.19%**

PANEL B: ASX 20	2000	2001	2002	2003	2004	2005	2006
Market beta	0.869 (12.096)	0.887 (10.437)	0.822 (9.955)	0.719 (7.831)	0.722 (8.261)	0.756 (7.913)	0.719 (9.368)
Jensen alpha	0.005 (1.909)	0.006 (2.137)	0.008 (2.667)	0.005 (1.555)	0.001 (0.387)	0.004 (1.524)	0.003 (1.16)
CAPM Exp. Return	5.06%	9.12%	-6.10%	11.97%	19.08%	15.84%	17.70%
Portfolio Return	16.68%	16.66%	-5.39%	7.15%	24.75%	13.23%	15.47%
Difference	**11.63%**	**7.54%**	**0.71%**	**-4.82%**	**5.66%**	**-2.61%**	**-2.23%**

PANEL C: ASX 100	2000	2001	2002	2003	2004	2005	2006
Market beta	0.667 (7.291)	0.652 (6.447)	0.505 (5.89)	0.301 (3.211)	0.209 (2.515)	0.261 (3.123)	0.359 (4.315)
Jensen alpha	-0.003 (-0.91)	-0.005 (-1.311)	0.001 (0.201)	0.004 (1.352)	0.003 (1.146)	0.008 (3.03)	0.003 (1.069)
CAPM Exp. Return	5.30%	8.02%	-1.93%	7.87%	9.40%	9.14%	11.83%
Portfolio Return	17.32%	4.38%	15.38%	6.74%	25.87%	6.19%	21.62%
Difference	**12.02%**	**-3.64%**	**17.31%**	**-1.12%**	**16.47%**	**-2.95%**	**9.79%**

SUMMARY	ASX 50	ASX 20	ASX 100
Average mean difference	9.57%	2.27%	6.84%
Standard Deviation	8.61%	6.11%	9.19%
t-Statistic	2.940	0.983	1.969
One tailed P-value	0.0130	0.1818	0.0482

Further investigating the dividend yield ratio

If the variations described above suggest that the ASX Dogs portfolio's performance depends on the settings of the strategy, does that cast doubt on the dividend yield ratio as a predictor of future stock performance? As the dividend yield ratio plays a key role in the construction of the portfolio strategy, it would be interesting to examine the power of this ratio. To examine this, the base case portfolios were compared with portfolios with different levels of dividend yields.

TABLE 4: Results of dividend yield blocks

Summary of the performance of each portfolio formed with different dividend yield blocks. 'High DY1' represents the ASX Dogs. 'High DY2' denotes the 10 next lower dividend yield stocks. 'Low DY1' denotes the lowest 10 dividend yield stocks (excluding zero dividend stocks). T-statistics for the regression estimates are shown in parenthesis.

PANEL A: HIGH DY 1	2000	2001	2002	2003	2004	2005	2006
Market beta	0.884 (11.978)	0.801 (7.447)	0.619 (6.842)	0.553 (6.024)	0.487 (5.243)	0.588 (6.157)	0.461 (5.101)
Jensen alpha	0.003 (1.001)	0.003 (0.764)	0.011 (3.125)	0.008 (2.652)	0.006 (2.112)	0.008 (2.733)	0.010 (3.402)
CAPM Exp. Return	5.04%	8.71%	-3.43%	10.34%	14.64%	13.57%	13.48%
Portfolio Return	24.24%	29.91%	9.09%	13.74%	20.89%	10.77%	20.67%
Difference	**19.20%**	**21.20%**	**12.52%**	**3.40%**	**6.25%**	**-2.80%**	**7.19%**
PANEL B: HIGH DY 2	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Market beta	0.933 (14.149)	0.782 (8.148)	0.954 (12.756)	0.592 (5.000)	0.656 (7.060)	0.751 (10.266)	0.873 (10.73)
Jensen alpha	0.005 (1.88)	0.010 (2.958)	0.006 (1.926)	0.002 (0.384)	0.004 (1.427)	0.009 (4.236)	0.004 (1.444)
CAPM Exp. Return	4.98%	8.63%	-7.82%	10.72%	17.84%	15.77%	20.22%
Portfolio Return	19.26%	21.63%	-5.20%	-1.70%	33.33%	15.00%	22.26%
Difference	**14.28%**	**13.00%**	**2.62%**	**-12.43%**	**15.49%**	**-0.76%**	**2.04%**
PANEL C: LOW DY 2	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Market beta	1.055 (16.105)	0.974 (9.735)	0.847 (6.966)	0.741 (6.511)	0.662 (5.563)	0.874 (8.64)	0.936 (12.579)
Jensen alpha	0.004 (1.464)	0.000 (0.116)	0.008 (1.722)	0.005 (1.428)	0.002 (0.633)	0.005 (1.53)	0.004 (1.535)
CAPM Exp. Return	4.83%	9.52%	-6.42%	12.18%	17.96%	17.44%	21.25%
Portfolio Return	5.93%	12.00%	-9.37%	12.75%	29.34%	32.20%	24.65%
Difference	**1.10%**	**2.49%**	**-2.96%**	**0.57%**	**11.38%**	**14.77%**	**3.40%**
PANEL D: LOW DY 1	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Market beta	0.951 (10.319)	0.927 (6.921)	0.990 (8.801)	1.275 (9.714)	1.166 (11.872)	1.117 (9.628)	1.214 (8.906)
Jensen alpha	0.017 (5.017)	0.022 (4.670)	0.014 (3.262)	0.008 (1.873)	0.008 (2.433)	0.007 (1.907)	0.012 (2.796)
CAPM Exp. Return	4.96%	9.30%	-8.30%	17.42%	27.48%	20.72%	25.78%
Portfolio Return	10.13%	-6.17%	-39.92%	7.59%	24.75%	25.00%	29.19%
Difference	**5.17%**	**-15.47%**	**-31.62%**	**-9.83%**	**-2.72%**	**4.28%**	**3.41%**

SUMMARY	HIGH DY 1	HIGH DY 2	LOW DY 2	LOW DY 1
Average mean difference	9.57%	4.89%	4.39%	-6.68%
Standard Deviation	8.61%	10.10%	6.33%	13.46%
t-Statistic	2.940	1.282	1.835	-1.313
One tailed P-value	0.0130	0.1236	0.058	N/A

The constituents of the S&P/ASX 50 on 31 December each year were again ranked according to their dividend yields, and four blocks of 10 stocks each were constructed for each year. The first block constituted the original portfolio of the top 10 dividend yield stocks and each successive block contained the 10 stocks with progressively decreasing dividend yields. Only stocks that pay dividends were included in the portfolios. The returns and risks of the portfolios were calculated and are presented in Table 4. The base case portfolio is shown in panel A for comparison.

As expected, the returns of the base case portfolio with the highest dividend yields produced the most significant abnormal returns among the four portfolios. The mean difference also decreased across the portfolios, indicating a relationship between dividend yields and stock returns. The lowest dividend yields had a negative mean difference compared to the CAPM expected return due, in particular, to the fact that the low dividend yield portfolio suffered a nearly 40% loss in 2002 alone.

Overall, these results provide further evidence that dividend yields do play a predictive role in strategy performance.

Testing different investment horizons

The ASX Dogs strategy and its variations studied so far assumed a fixed holding period of one year. How would a different holding period affect profitability? To examine a range of shorter investment horizons,[9] the cumulative abnormal returns of each of the seven annual ASX Dogs portfolios were calculated, and tracked on a daily basis.[10] The cumulative abnormal returns of these portfolios were then examined graphically.[11] A reduction in the upward trend after a particular holding period would have suggested that to be an optimal holding period. But no clear pattern to suggest an ideal sell-off date before the one-year holding period was evident from the results.

Overall, these results provide further evidence that dividend yields do play a predictive role in strategy performance.

ASX Small Dogs strategy

One popular variation to the Dow Dogs strategy is the 'Small Dogs of the Dow'. After the initial Dow Dogs stocks were chosen, the stocks were ranked according to their prices and the five stocks with the lowest stock price at the rebalancing date were chosen to form the 'Small Dogs of the Dow'. The rationale was that these low-priced stocks present a better bargain buy opportunity and a stronger 'beaten down' trait sought by the Dow Dogs strategy. The five stocks that formed this new portfolio were then put through the tests as before, and the results are presented in Table 5.

The results indicate that the Small ASX Dogs did not perform any better than the original ASX Dogs version. The betas of the Small ASX Dogs were less significant, especially in 2004. This version should save investors on transaction costs, however, as the smaller number of shares available to invest in reduce the average turnover of the portfolio to 1.5 times per year. Again, a pattern was observed in which abnormal returns were strong in the first few years, but decreasing in the later years. As the Small ASX Dogs strategy is derived from the ASX Dogs, it was not surprising that a similar pattern was observed.

TABLE 5: **Performance of ASX Small Dogs**

PANEL A: ASX DOGS	2000	2001	2002	2003	2004	2005	2006
Market beta	0.884 (11.978)	0.801 (7.447)	0.619 (6.842)	0.553 (6.024)	0.487 (5.243)	0.588 (6.157)	0.461 (5.101)
Jensen alpha	0.003 (1.001)	0.003 (0.764)	0.011 (3.125)	0.008 (2.652)	0.006 (2.112)	0.008 (2.733)	0.010 (3.402)
CAPM Exp. Return	5.04%	8.71%	-3.43%	10.34%	14.64%	13.57%	13.48%
Portfolio Return	24.24%	29.91%	9.09%	13.74%	20.89%	10.77%	20.67%
Difference	**19.20%**	**21.20%**	**12.52%**	**3.40%**	**6.25%**	**-2.80%**	**7.19%**
PANEL B: SMALL DOGS	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Market beta	0.826 (7.533)	0.707 (5.539)	0.461 (4.012)	0.448 (3.961)	0.263 (2.328)	0.588 (6.157)	0.409 (3.557)
Jensen alpha	-0.002 (-0.492)	0.005 (1.004)	0.011 (2.422)	0.008 (1.966)	0.005 (1.304)	0.008 (2.733)	0.009 (2.576)
CAPM Exp. Return	5.11%	8.28%	-1.36%	9.31%	10.40%	11.94%	12.64%
Portfolio Return	21.50%	29.59%	10.69%	12.03%	20.47%	1.98%	19.49%
Difference	**16.39%**	**21.31%**	**12.05%**	**2.72%**	**10.07%**	**-9.95%**	**6.85%**

Conclusions, limitations of the study and directions for future research

This paper examined the Dow Dogs strategy in an Australian context over a seven-year period and found that, on average, it provided positive abnormal returns relative to the CAPM, after allowing for transaction costs. Results showed that abnormal returns which were initially very large, have been decreasing over time.

Several variations of the ASX Dogs strategy were also examined, firstly in regard to the anniversary dates chosen for rebalancing the portfolio, and then the index from which the stocks were chosen. The rebalancing date of March which was the month most companies had their ex-dividend dates, gave the best performance. Of the choice of indexes, the S&P/ASX 50 provided distinctly superior returns compared to those of the S&P/ASX 20 and S&P/ASX 100.

The study further investigated the effects of dividend yields on the strategy outcomes, by forming four blocks of 10 dividend-paying stocks with varying degrees of dividend yields, and comparing their performances. Predictably, the block containing the highest dividend yield stocks outperformed the other three blocks. Other adjustments to the way the portfolio can be set up were studied as well. By investigating cumulative abnormal returns throughout the year of each ASX Dogs portfolio, the paper tried, but failed to identify an optimal holding period for the portfolio. Finally, a variant of the strategy, known as the 'Small Dogs of the Dow', was also studied. No significant difference between this variant and the original ASX Dogs was found.

Future research on this topic could focus on exploring the underlying factors driving the results of this strategy. For instance, the performance of the strategy in bull versus bear markets could have played a role in the results. Gombola and Liu (1993) found that dividend yields were negatively (positively) related to returns in bull (bear) markets.

A limitation of this study is the seven-year period available for the study, which is a relatively short time span from which to draw general conclusions. However, the purpose of the study, which commenced with the inception of the large cap indexes in Australia, was to document the outcome of the Dogs of the Dow strategy on a year-to-year basis, to provide results that would be of practical value to financial markets participants.

Notes

1 See AFR Smart Investor article on 15 October, 2007 about the Dogs of the Dow strategy in Australia. The article is located at http://www.afrsmartinvestor.com.au/dogs.aspx.

2 Websites like http://www.dogsofthedow.com/faq.htm do mention that other anniversary dates are used, but 31 December is seen as the most common date chosen by users of this strategy.

3 For instance, in its explanation of Value Stocks, Investopedia.com quotes the Dow Dogs strategy as a simple way to identify value stocks.

4 McQueen, Shields and Thorley (1997) found that when gross dividend yields were used, risk- and transaction-adjusted returns are slightly lower than when net dividend yields were used. The datastream database does not provide yields based on dividends net of franking credits in Australia.

5 Standard & Poor's archives record additions and deletions to the ASX 50 index up to as early as 17 April, 2000. The list is available at http://www2.standardandpoors.com/portal/site/sp/en/au/page.topic/indices_asx50/2,3,2,8,0,0,0,0,0,3,1,0,0,0,0,0.html. Datastream provides historical constituent lists only up to March 2001 (Chary, personal communication, 22 October, 2007).

6 Filbeck and Visscher (1997) found similar results when they used a dataset starting a few months after the FTSE-100 was launched in the United Kingdom.

7 McQueen, Shields and Thorley (1997) observed that the returns of the Dow Dogs strategy in Canada was just enough to provide economic returns, after allowing for the higher transaction costs due to the relatively high turnover rate of stocks in the portfolio.

8 The composition of the individual stocks in the portfolio and their turnover was studied in detail, but is not presented in the interest of space.

9 A longer investment horizon can not be carried out without overlapping the data, due to the limited data span available.

10 The abnormal return for each day is the difference between the expected CAPM return and the ASX Dogs portfolio return.

11 We do not present this graph in the interest of brevity, but it is available from the authors on request.

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