DIVIDEND YIELD STRATEGIES :
DOGS OF THE DOW AND HOUNDS OF THE BAY

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ABSTRACT

Over the years 'Dogs of The Dow' strategy has become an increasingly popular and intensely argued subject for both practitioners and academicians. This thesis examines the multifarious aspects of the 'Dogs of The Dow' (DoD) strategy and highlights both the euphemism of the believers and reservations of the skeptics. Further on, we empirically test the DoD strategy over a 16 year period from 1990 to 2005. A parallel study, Hounds of The Bay (HoB) is also carried out for the Canadian markets, over the same time period, to test if such a dividend yielding strategy has merits outside of the US market. Overall based on our research and empirical tests, we believe the effect of such a dividend yielding strategy has diminished in the recent years in both US and Canadian markets, while in the Canadian context it may be more subtle. However, this is no indication or a reason to believe that it may not work in the future or more importantly in other countries.

DEDICATION

This project is dedicated to our respective families, who have been eagerly waiting the completion of our MBAs and this thesis. We would also like to dedicate this thesis to our batch-mates and faculty of the Global Asset and Wealth Management for their continued support in bringing out the best in us during the program.

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GLOSSARY

DoD   Refers to the portfolio comprising of top 10 dividend yielding stocks on the Dow Jones Industrial Average Index.

HoB   Refers to the portfolio comprising of top 10 dividend yielding stocks on the Standard & Poor's / Toronto Stock Exchange 60 Index.

SP500   Refers to Standard & Poor's 500 Index.

DJIA   Refers to Dow Jones Industrial Average Index.

SPTSX   Refers to Standard & Poor's / Toronto Stock Exchange Index.

SPTSX 60   Refers to Standard & Poor's / Toronto Stock Exchange 60 Index

1 INTRODUCTION

One of the first reports on superior performance of high-yielding DJIA stocks appeared in The Wall Street Journal on August 11, 1988. John Slatter, an analyst with Prescott, Ball & Turben, Inc., examined the total returns of the ten highest dividend yielding Dow stocks for the years 1973 through 1988 and found that they outperformed the DJIA overall.

Expanded studies subsequently appeared in books by O'Higgins and Downes (1991) and Knowles and Petty (1992). These studies continued to show superior returns from the DoD since 1973. Several big financial services firms like Merrill Lynch, Prudential, Morgan Stanley, etc. followed up with their own studies which provided further empirical evidence to support the results. Table 1.1 summarizes the average annual returns of the ten highest-yielding stocks compared to the Dow average, as reported by prominent studies for the period pre 2000.

Table 1.1. Comparison of reported returns by various researchers[1]

Study	Period	DoD Returns	Dow Jones Industrial Average Total Returns
Slatter	1973 - 1988	18.39%	10.86%
Knowles and Petty	1973 - 1990	17.81%	11.41%
O'Higgins and Downes	1973 - 1991	16.61%	10.43%
Prudential Securities	1973 - 1992	16.06%	10.91%

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[1] Source: Domiana, Dale L., Loutonb, David A., Mossmanc, Charles E. (1998). The rise and fall of the "Dogs of the Dow". Financial Services Review 7. pg. 145– 59.

Due to the sustained returns over longer periods of time, the DoD strategy garnered considerable international interest too. Barron's Dubois (1997) noted that European version of the DoD was rapidly increasingly in popularity. Similar researches were concluded for Latin American Markets (Da Silva, 2001), Canada (Visscher & Filbeck, 2003), India (Suresh Krishnamurthy 2005) and Australia (www.etradeaustralia.com.au/products/stockcentre/ SampleQuerys.asp).

The basic Dogs of the Dow strategy is straight forward and can be executed in the following steps:

Step 1: Select any starting day (the first trading day of the year is most common) and construct an equally weighted portfolio consisting of the ten stocks in the DJIA 30 (or TSX 60 for Hounds of the Bay) with the highest current dividend yield.

Step 2: Hold the portfolio for one year. After one year, determine the total value of the portfolio including all dividends and other cash distributions along with the closing values of the stocks. Stocks which have dropped off the top-ten yield list should be sold and replaced with the new additions to the list. And the portfolio should be rebalanced to ensure equal investment in the new top 10 stocks.

Step 3: Repeat the process every year.

Even after establishing the DoD returns are higher than DJIA returns, the most critical element in determining the profitability of the strategy is the factoring in of transaction costs and taxes. The periodic balancing of the portfolio results in higher transaction costs that impact the overall profitability of the DoD strategy. Similarly, since the nature of investment return in top Dogs is more of dividend yield instead of capital gain, which is subject an inefficient tax effect and further dwindles the excess returns originally grossed.

Another important aspect of the DoD theory has been the emergence of similar strategies like the 'Dow Underdogs', 'Five Dogs' and 'The Foolish Four', which are newer versions of the DoD. 'Dow Underdogs' refers to the stocks in DJIA with the worst price performance over the previous 12 months, regardless of yield. Because so many low-dividend-paying stocks have been added to the average in recent years, yield is no longer the best indicator of underperformance. This strategy depends on the "contrarian" investment approach i.e. beaten down stock will outperform, and even if they do not, dividend yield would be a fallback. The Five Dogs strategy calls for an additional winnowing of the ten DoD stocks based on price and buying an equally-weighted portfolio of the five lowest-priced stocks within the ten highest-yielding set. Finally 'The Foolish Four' refines the Five Dogs on two dimensions, first by dropping out the lowest-priced stock of the Five, and second by doubling up on the second-to-the-lowest priced stock.

This thesis has been organized as follows - Part 2 looks at the previous prominent studies that have been done on this topic. These research papers are further segregated into 'Believers' and 'Skeptics'. The popularity of DoD was not limited to Dow Jones and US, in-fact numerous international empirical studies were concluded for various countries / regions, the same are discussed in Part 3. In Part 4, we empirically test the DoD strategy over a 16 year period (1990 to 2005) to confirm and reconcile the issues raised by 'believers' and 'skeptics'. In this section a parallel study, Hounds of The Bay (HoB) is also carried out for the Canadian markets, over the same time period, to test if such a dividend yielding strategy has merits outside of the US market. Finally Part 5 summarizes our results and presents a conclusion for the thesis.

2 REVIEW OF PROMINIENT DOD RESEARCHES

The DoD strategy, a type of dividend yielding strategy, belongs to a broader class of value investment strategies. Value stocks basically have high dividend yields, low price to book ratio, low P/E ratio and lower expected growth rates, while growth stocks are vice-versa.

Behavioural finance researchers like DeBondt & Thaler (1985) use theories from the field of psychology to explain different returns for value and growth stocks. According to such reasoning, when investors come in contact with both good and bad information, they become too optimistic in the case of growth stocks and too pessimistic in the case of value stocks. Hence when the market adjusts for these overreactions, value stocks with low investor expectations tend to perform better than expected, while growth stocks tend to under perform. This theory gives an interesting explanation for the excess returns on the high dividend yield Dow Dogs. There are many other explanations on this put forth by researchers, which are discussed in this section.

This section is further divided into 2 sub-sections i.e. 'Believers' – in this section research papers of the DoD theory advocates are reviewed and 'Skeptics' – in this section the research papers of the DoD critics are examined.

2.1 Believers

2.1.1 Slater, John. (Analyst, Prescott, Ball & Turben Inc.). (1988). Study of Industrial Averages Finds Stocks With High Dividends Are Big Winners. Wall Street Journal (Eastern edition) August 1988. pg. 1.

John Slatter, an analyst with Prescott, Ball & Turben, Inc., examined the total returns of

the ten highest dividend yielding Dow stocks for the years 1973 through 1988 and found that they

outperformed the DJIA overall. He was one of the first to report on superior performance of high-

yielding DJIA stocks in The Wall Street Journal in 1988. His report summary is outline below in

table 2.1.

Table 2.1. DoD Portfolio as of 1988 and return comparison with DJIA from 1973 - 1988[2]

Data Set	DJIA Return	Dow 10 Returns
1973 - 1988	10.80%	18.40%

Dow Top 10	Dividend Yield
General Motors Corp.	6.40%
Texaco	6.40%
Primerica	5.90%
Chevron	5.50%
Sears Roebuck	5.50%
Allied-Signal	5.20%
Philip Morris	4.90%
Exxon	4.70%
AT&T	4.50%
Du Pont	4.40%

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[2] Source: Slater, John. (Analyst, Prescott, Ball & Turben Inc.). (1988). Study of Industrial Averages Finds Stocks With High Dividends Are Big Winners. Wall Street Journal (Eastern edition) August 1988. pg. 1.

The study by Slater at that time was more conceptual and he neither reported the smaller holding period returns i.e. over 1 year, 3 year, etc. nor risk adjusted returns. Also Slater overlooked the transaction costs and tax implications critical in determining the real return from investing in the strategy.

2.1.2 O'Higgins, M., & Downes, J. (1991). Beating the Dow. New York: Harper Collins.

During 1991, Michael O'Higgins and John Downes wrote the book - "BEATING THE DOW: A High-Return, Low-Risk Method for Investing in the Dow Jones Industrial Stocks". By around this time the concept of investing in D-10 stocks was catching the attention of money managers in the US. But again from a research perspective, O'Higgins and Downes study was similar to John Slatter's (1988) and ignored the effect of taxes and commissions. Table 2.2 below gives a brief snapshot of O'Higgins and Downes research:

Table 2.2. DoD return comparison with DJIA from 1973 – 1991[3]

Data Set	DJIA Return	Dow 10 Returns
1973 - 1991	10.43%	16.61%

However in the book, O'Higgins and Downes briefly mention the portfolio re-balancing effect and pegged the commission at 3% of the returns but still ignored taxes. An updated review of the research published by Financial Analyst Journal in December 1991, accounted for the commission effect and reported a return of 16.03%. The strategy still beat the DJIA index by an outstanding 5.60%. But like Slatter (1988), the research also ignored risk adjusted return measures for more fruitful comparison.

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[3] Source: O'Higgins, M., & Downes, J. (1991). Beating the Dow. New York: Harper Collins.

2.1.3 Domiana, Dale L., Loutonb, David A., Mossmanc, Charles E. (1998). The rise and fall of the "Dogs of the Dow". Financial Services Review 7. pg. 145– 59.

During late 90's the DoD theory was well established with numerous business magazine articles and finance journals publicizing the excess returns from the strategy compared to the DJIA index but there were no convincing explanations for why the strategy worked. It was in 1998, when Domian, Louton & Mossman(DLM) study demonstrated empirically, over the period 1964 to 1997, that the behavior of DoD stocks was consistent with the market overreaction hypothesis. Primarily the study aimed to determine whether high-yield stocks were losers in the portfolio pre-formation months (i.e. 12 months prior to inclusion in DoD), and whether the subsequent out-performance is in fact De Bondt and Thaler's "winner-loser" overreaction effect.

The second objective was to compare the performance of the DoD over different sub-periods, to confirm if the stock market crash of 1987-88 had any serious implications on the explanation of the strategy. The testing procedure employed was similar to the DeBondt and Thaler (1985) procedure in their original study. Where DeBondt and Thaler formed winner and loser portfolios conditional on past excess returns, DLM (1998) form portfolios of high-yield and low-yield stocks based on the dividend yields at the beginning of each year.

These tests in the study examine the behavior between systematic non-zero residual return in the 12 month period after portfolio formation and systematic non-zero residual returns in the 12 month pre-formation period. The results are illustrated below in Figure 1.

Figure 2.1. Non-Zero residual comparison of High and Low Yield stocks over various time periods[4]

Cumulative Residuals for 1964 - 1997

Low-Yield Stocks

High-Yield Stocks

Month Relative to Portfolio Formation

Cumulative Residuals for 1964 - 1986, Pre-Crash Period

Low-Yield Stocks

High-Yield Stocks

Month Relative to Portfolio Formation

Cumulative Residuals for 1989 - 1997, Post-Crash Period

High-Yield Stocks

Low-Yield Stocks

Month Relative to Portfolio Formation

This analysis of the DoD is consistent with the overreaction hypothesis. During 1964–1997, portfolios of the ten highest yielding stocks under perform in the 12 pre-formation months, and outperform post formation. While portfolios of low-yield stocks outperform the market in the pre-formation period, and slightly under perform in the following 12 months. Moreover, the overreaction effect in January is evident (i.e. around '0') from the graphs and is inline with the results of DeBondt and Thaler. Results from the pre-crash 1964–1986 period are similar to the 1964–1997. In contrast, the post-crash results exhibit an unusual trend distinct from overall and pre crash results. Thus, hinting that DoD strategy during the recent years has flopped, partially
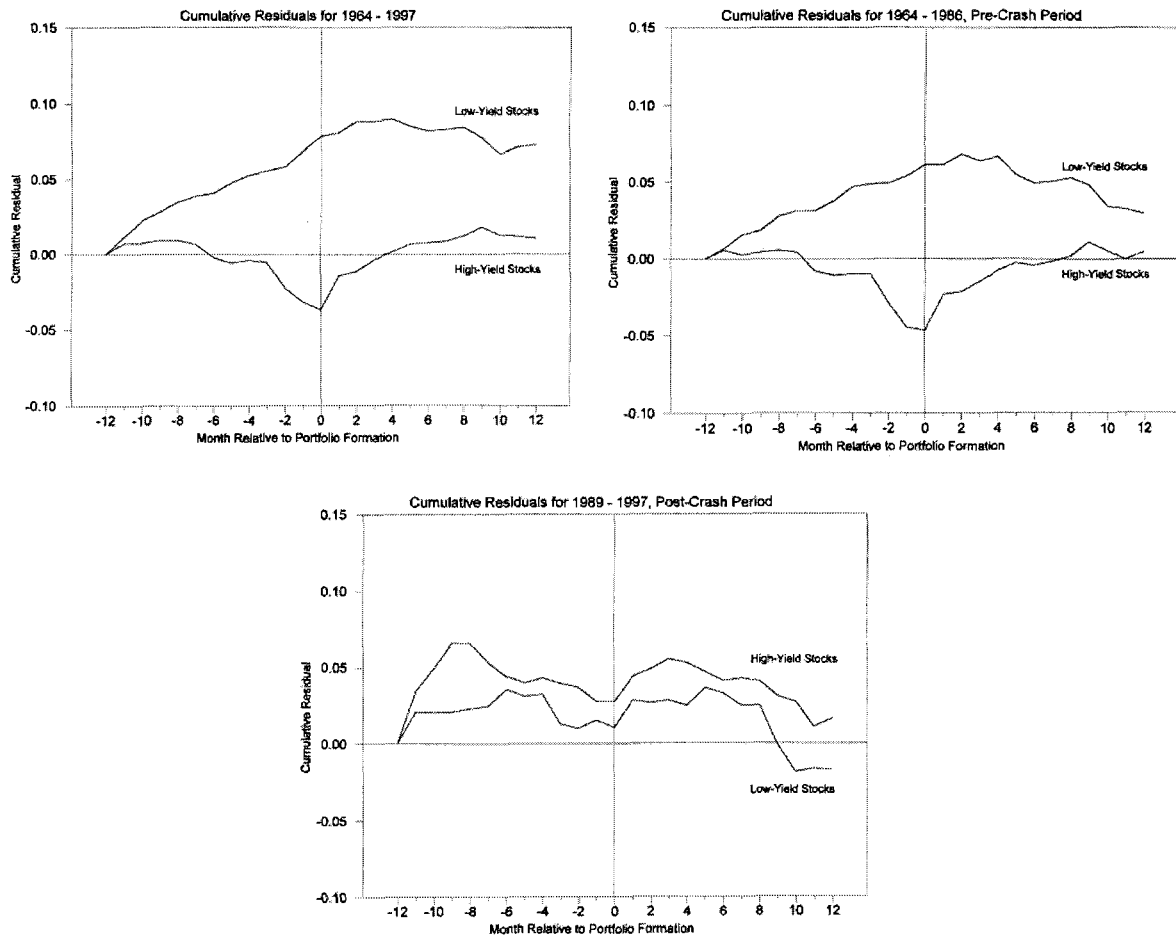
[4] Source: Domiana, Dale L., Loutonb, David A., Mossmanc, Charles E. (1998). The rise and fall of the "Dogs of the Dow". Financial Services Review 7. pg. 145– 59.

because of the feedback effect i.e. popularity has eroded the excess returns, earlier propounded by the theory. The research is thorough and convincing, and gives an empirical evidence to the recent trends for the DoD strategy.

2.1.4 Prather, Larry J. & Webb, Genel L. (2001). Window Dressing, Data Mining, Or Data Errors: A Re-examination of the Dogs of the Dow Theory. The Journal Of Applied Business Research Volume 18, Number 2.

By 2000 enough empirical evidence was put forth by both 'Believers' of DoD about the market in-efficiency (John Slatter, 1988; O'Higgins and Downes, 1991; Dubois, 1997; DLM,1998;) and 'Skeptics' who dismissed DoD as an anomaly citing data mining and data errors (Hirschey, 2000; McQueen, 1997; De Silva, 2001). Amidst such contradicting evidence Prather & Web (P&W) in 2001, tried to reconcile the results and extend the analysis.

P&W put forth plausible explanations for the different data returns by various studies by examining that constant dividend but daily changing prices will cause daily changes in the yield. Since the DoD trading rule is based on yields, even small daily changes could alter the portfolio composition by a few stocks and hence the portfolio returns would differ. Another important aspect highlighted by P&W was that compound returns calculated and reported by various researches are notoriously sensitive to beginning and ending dates, even a one or two day difference could alter the returns to a noticeable extent.

The most profound inclusion by P&W was the use of a comprehensive portfolio return measurement to examine the real time profitability of investing in DoD. The following formula is used: $R_{pt} = \sum_{i=1}^{N} \frac{P_{it} - P_{it-1} + D_{it} + I_t + S_{it}}{P_{it-1}}$ where R_{pt} is annual return from portfolio, P_{it} is the closing price of the stock, P_{it-1} is the closing price of security at time t-1, D_{it} is the dividend paid on the security i, I_t is the interest received form investing the dividend earned and S_{it} is the value of any stock or option received as distribution.

Using the returns calculated above P&W employ empirical testing using both parametric and non-parametric methods. The results using $R_{pt} - R_f = \alpha + \beta_p (R_{mt} - R_f) + \varepsilon_{pt}$ (where R_{pt} is the return on DoD portfolio, R_f is the risk free rate, α is the risk adjusted abnormal returns, β_p is the estimated systematic risk of the portfolio, R_{mt} is the annual return on DJIA and ε_p is the standard error) are illustrated in table 2.3 below.

Table 2.3. Parametric Testing of DoD return with DJIA from 1961 - 1998[5]

Panel A January 1st Formation Date					
	Coefficients	*Std. Error*	*t*	*Sig.*	R^2
α	4.188	1.153	3.361	0.001	0.84
β	0.911	0.066	13.754	0.000	

Panel B Different Formation Date					
	Coefficients	*Std. Error*	*t*	*Sig.*	R^2
α	3.055	1.371	2.228	0.032	0.866
β	0.767	0.074	10.388	0.000	

Results from panel A suggest that DoD outperformed the DJIA index by over 4% on a risk adjusted basis. Similarly Panel B tests the impact of both different formation date and January effect and confirms DoD outperformed DJIA index by over 3%. Even though P&W overlooked the impact of taxes and commissions the excess returns are simply too high and would still be higher than DJIA even after factoring in for those.

[5] Source: Prather, Larry J. & Webb, Genel L. (2001). Window Dressing, Data Mining, Or Data Errors: A Re-examination of the Dogs of the Dow Theory. The Journal Of Applied Business Research Volume 18, Number 2.

2.2 Skeptics

2.2.1 McQueen, G., Shields, K., & Thorley, S. (1997). Does the "Dow-10 Investment Strategy" beat the Dow statistically and economically? Financial Analysts Journal 53, pg. 66–72.

MST were one of the first to criticize the DoD theory and put forth a convincing argument. They compared returns of investing in DoD versus DJIA over a period of 50 years i.e. 1946 to 1995. Their basic argument advocates 'statistically' higher returns for the 50 years i.e. raw returns on the DoD strategy outperformed the DJIA. However, DoD strategy results in higher risk (less diversification, higher risk), higher transaction cost (due to portfolio turnover) and higher tax payments (due to majority returns from dividends instead of capital gains). After adjusting for risk, transaction cost and taxes, the DoD does not outperform the DJIA i.e. DoD does not beat DJIA 'economically'. Table 2.4 summarizes the results below.

Table 2.4. Annual Return comparison summary of DoD with DJIA from 1946 - 1995[6]

Portfolio	Average Annual Return	Standard Deviation	Geometric Mean Annual Return
Dow - 10	16.77%	19.10%	14.22%
DJIA	13.71%	16.64%	11.78%
Difference	3.06%	2.46%	2.44%

According to MST, the mean return difference between DoD and DJIA over the period of 50 years is 3.06%. Higher risk associated with DoD helps explain about 1.52%, which is almost half of the excess returns . Hence the real premium is only about 1.54%. Due to the yearly churn of the portfolio i.e. approximately on average 3 stocks are replaced and the remaining

[6] Source: McQueen, G., Shields, K., & Thorley, S. (1997). Does the "Dow-10 Investment Strategy" beat the Dow statistically and economically? Financial Analysts Journal 53, pg. 66–72.

portfolio rebalanced accordingly, resulting higher transaction cost about 0.59% which further reduce the premium to just about 0.95%. Unlike DJIA, where majority returns are from capital gains, which can be rolled over and not paid till realized or sold, majority returns from DoD are dividends and cannot be rolled over. Moreover dividend returns are taxed at a higher rate (this varies due to regulation). In wake of this, taxes explain almost all of the excess premium of 0.95% on DoD.

MST carried out sub-period and sensitivity analysis to confirm if the results were similar to the overall period testing. The sub-period analysis clearly revealed select periods of superior economical performance of DoD i.e. excess return after adjusting for risk, transaction cost and tax and also select periods of underperformance. Implying DoD is an anomaly and may be subject to data mining. Overall based on historical performance of 50 years, MST concluded that DoD "probably does not" beat the DJIA economically.

2.2.2 Hirschey, Mark. (2000). The 'Dogs Of The Dow' Myth. The Financial Review 35. 1-16.

In his criticism of the DoD theory, Hirschey focuses on why the early tests work and provides an argument that it could be result of data mining. In his study, he also looks at data errors by way of comparison of numerous earlier studies like Slatter (1988), O'Higgind & Downes (1991), Knowles & Pretty (1991), Merrill Lynch (1990).

In this study Hirschey, extends the period of investigation that OHiggins & Downes established (1973 – 1991) to cover a larger period of time i.e. 1961 – 1998 to perform his own empirical testing and reports no abnormal risk adjusted returns. In his testing he factors in the implication of transaction cost and tax. Eventually, he discounts the DoD theory's validity. Highlights of his findings are:

a) DoD theory prevails because of data mining and

b) Data errors in other tests drove superior results.

Another critical issue highlighted by Hirschey, questions the use of arithmetic average by previous studies and argues return estimates tend to be biased upwards. His argument is simple and well capture in this brief example – "if a stock appreciates by 100% ad then falls by 50%, the arithmetic average return is 25% (i.e. (100%-50%)/2). In reality no net profit is made and actual geometric mean rate of return is 0% (i.e. ((200% x 50%)0.5 -1))."

Based on his empirical research, he also argues the underperformance of DoD or absence of excess risk adjusted returns in sub-periods post 1990 may be tied to the feedback effect i.e. wide publicity tied to the DoD strategy may have generated sufficient investment interest to reduce its effectiveness (1999 public records indicate $ 20 billion investment in DoD strategy). In conclusion, Hirschey rejects the validity of the DoD theory and highlights issues pertaining to data mining, data errors and inaccurate calculation techniques to drive home his point.

3   INTERNATIONAL STUDIES OF DOD

The success of DoD strategy has also been investigated in international markets. Though there have been numerous business magazine articles and write-ups but very few comprehensive research papers exist. Some of the prominent ones have been discussed in this section.

3.1   DuBois, Peter C. (1997). International Trader: Like the Dogs Of The Dow? Then take a look at the Euro Dogs Fund. Barron's Vol.77, Iss. 31. pg. MW8.

Du Bonis was the one of the first practitioners (Payden & Rygel) who applied a variation of the widely followed DoD strategy to European markets. The Euro Dog kennel aka Euro Dogs, in contrast, is a portfolio strategy of applying a series of screens to the highest-yielding stocks on four European bourses (Amsterdam, Frankfurt, London and Paris). The research is not well documented and hence not much insight is available on the characteristics of Euro Dog portfolio.

3.2   Racanelli, Vito J. (2005)Pedigree Performance From the Euro Dogs. Barron's Vol.85, Iss. 3. pg. MW10.

Another practitioner article was published in Baron's and authored by Vito J Racanelli – 'Pedigree Performance From the Euro Dogs' in 2005. For the empirical analysis 15 highest dividend yielding companies were chosen from the DJ Stoxx 50 index, which contains 50 big blue-chip European companies. The testing was covered over a period of 10 years i.e. 1993 to 2004. Consequently, Euro Dogs (15 stocks portfolio) like their American cousins aka DoD, outperformed the benchmark, beating it 10 out of the last 12 years.

3.3 Da Silva, Andre L.C.(2001). Empirical tests of the Dogs of the Dow strategy in Latin American stock markets. International Review Of Financial Analysis 10. pg. 187–199.

DaSilva in his research paper published in 2001, analyzed the performance of the DoD strategy in Latin American stock markets namely – Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. The empirical testing was done over data period 1994 to 1999. Other significant highlights of the paper were the use of Geometric means for annual return calculation and the inclusion of tax and transaction cost implication on the total returns from the holding DoD portfolios. Moreover, the returns were reported on a risk adjusted basis. Study findings suggest that the DoD strategy can add value in an absolute sense in all the Latin American markets except Brazil. However parametric testing reveals that the results are not significant, implying poor statistical evidence of application of the DoD strategy.

Finally in conclusion DaSilva suggests further research on a longer time horizon with sub-period sampling would be required to arrive at a decisive evidence for statistical out performance of the DoD in Latin American markets.

3.4 Visscher, Sue & Filbeck, Greg. (2003). Dividend-Yield Strategies in The Canadian Stock Market. Financial Analyst Journal January 2003. pg. 99 – 106.

This research by V&F on application of DoD strategy in the Canadian stock market is by far one of the most comprehensive studies ever. The analysis covers a time period of 10 years from 1987 to 1997. The significance of the period is the first 10 years of existence of the Toronto 35 index, which consists of 35 of Canada's largest corporation. The empirical study compared the performance of the 10 highest dividend yielding stocks on the Toronto 35 Index (T35), hypothesized as 'Canadian Dogs', with T35 and TSX / S&P composite (TSX). The test Results are summarized below in table 3.1.

Table 3.1. Canadian Dogs versus T35 & TSX, 1988 - 1997[7]

Period	T35	t-Test TSE 300	Top 10	Sharpe T35	TSE 300
		Single-year Holding Period			
1988	0.68	0.77	-0.45	-0.65	-0.73
1989	1.23	1.24	1.73	0.9	0.97
1990	-0.73	-0.27	-1.35	-1.19	-1.37
1991	0.76	0.82	0.1	-0.47	-0.47
1992	1.9	1.62	0.48	-0.67	-0.68
1993	0.73	-0.49	0.55	0.3	1.28
1994	-0.5	0.17	0.29	0.46	0.26
1995	0.12	0.39	0.88	0.73	0.57
1996	1.41	1.26	2.04	0.47	0.41
1997	2.01	1.85	3.73	2.54	2.6
		Multiple-year Holding Period			
1988-92	1.68	1.87	-0.08	-0.45	-0.52
1989-96	1.77	1.26	0.17	-0.26	-0.15
1990-94	1.12	0.85	-0.02	-0.29	-0.24
1991-95	1.36	1.07	0.42	0.14	0.18
1992-96	1.64	1.24	0.69	0.32	0.38
1993-97	1.8	1.46	1.28	0.94	1.01
1988-97	2.45	2.36	0.53	0.16	0.14

Some other important highlights of the study include use of risk adjusted measures for reporting performance and factoring for taxes and transaction costs in the returns. V&F use both Sharpe and Treynor to report excess return per unit of total risk and excess return per unit of systematic risk (measured by Beta). Treynor specifically highlights if the investor is exposed to company specific risk for holding just 10 stocks.

The empirical results indicate 'Canadian Dogs' outperformed both T35 and TSX. More importantly the 'Canadian Dogs' strategy produced higher risk adjusted returns and were sufficient to compensate for taxes and transaction costs. However, one point of criticism is that V&F considered the study over only ten year period from 1987 to 1997, even when the study was analyzed and published in 2003. Perhaps the study could have covered 5 more years of analysis. Overall the study is comprehensive and convincing.

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[7] Source: Visscher, Sue & Filbeck, Greg. (2003). Dividend-Yield Strategies in The Canadian Stock Market. Financial Analyst Journal January 2003. pg. 99 – 106.

4 EMPIRICAL TESTING

In the wake of such contradictory evidence from various researchers and market studies, we undertook some basic empirical testing of the DoD over the period of last 16 years i.e. 1990 to 2005. Another compelling reason for testing was to confirm if the DoD strategy was still effective, since majority of the researches were dated and more importantly claimed feedback effect i.e. use of strategy on mass scale may have eliminated the effectiveness of the strategy. The DoD testing section is further sub divided into 'Data & Study' and 'Results'.

Further we extend our analysis by testing the DoD strategy in the Canadian markets i.e. Hounds of The Bay (HoB). HoB portfolio is based on the top dividend yielding stocks on the S&P TSX 60 Index and is tested identically as our DoD strategy and over the same time period 1990 to 2005 (16 years). The significance of this research extension is to test if such a dividend yielding strategy has merits outside of the US market. The HoB testing section is also further sub divided into 'Data & Study' and 'Results'.

4.1 DoD Testing:

4.1.1 A. Data and Study

In this study we compare the returns of DoD against the DJIA and S&P 500 on a risk adjusted basis. The data has been sourced from various databases i.e. Dow Jones Indexes website, Bloomberg and CRSP for the period of the study - 1990 to 2005. The DoD portfolio details are given below in Table 4.1. Where 'X' denotes inclusion of a stock in the DoD portfolio in that year and the turnover indicates the total churn i.e. the number of stocks that were added / removed to the re-balanced DoD portfolio at the end of one year.

Table 4.1. DoD Portfolio, 1990 - 2005

| Stock	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
AT&T	X	X	X	X	X	X		X	X					X	X	X	11
AT&T Inc	X	X	X	X	X	X											6
General Motors	X	X	X			X		X	X	X	X	X	X	X	X	X	13
Altria				X	X	X	X	X	X	X	X	X	X	X	X	X	13
Merck				X	X								X		X	X	5
Verizon																X	1
JP Morgan Chase						X	X	X	X	X	X	X	X	X	X	X	11
Citigroup															X	X	2
DuPont	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	16
Pfizer															X	X	2
General Electric							X							X		X	3
SBC Comm.											X	X	X	X	X		5
Exxon Mobil	X	X	X	X	X	X	X	X	X	X	X	X	X	X			14
Eastman Kodak	X	X	X	X	X	X	X	X	X	X	X	X	X				13
Honeywell										X			X	X			3
Caterpillar										X	X	X	X	X			5
International Paper							X	X	X	X	X	X					6
3M		X	X	X	X	X	X	X	X	X	X	X					11
Texaco							X	X									2
Chevron							X	X	X	X							4
Goodyear										X							1
American Express	X	X	X	X	X	X											6
Alcoa	X																1
IBM	X	X	X														3
United Tech			X	X	X												3
Turnover	0	1	1	2	0	2	4	2	1	2	2	0	1	3	4	2	1.69

4.1.2 Result

The preliminary results show that although DoD Strategy outperformed the SP500 in terms of total returns by 30 basis points, it underperformed the DJIA by a huge 7.67%. Similarly the geometric mean returns of DoD were higher than SP500 by 21 basis points but lower than DJIA by 70 basis points. In terms of volatility, DJIA had the least risk followed by DoD and then SP500. In terms of number of times, the DoD strategy outperformed the DJIA merely 44% of the times and outperformed the SP500 just about 50% of the times (see Table 4.2).

Table 4.2. Return comparison DoD versus DJIA & SP500, 1990 – 2005

Year	SP500	DJIA	DOD	DOD - SP500	DOD - DJIA
1990	-3.09%	-0.56%	-7.77%	-4.67%	-7.21%
1991	30.47%	24.19%	38.67%	8.20%	14.48%
1992	7.62%	7.41%	7.15%	-0.46%	-0.25%
1993	10.06%	16.95%	27.94%	17.88%	10.99%
1994	1.32%	5.02%	3.99%	2.67%	-1.02%
1995	37.58%	36.92%	36.14%	-1.44%	-0.78%
1996	22.96%	28.91%	33.22%	10.26%	4.30%
1997	33.36%	24.94%	22.14%	-11.22%	-2.79%
1998	28.58%	18.13%	10.69%	-17.89%	-7.43%
1999	21.04%	27.20%	3.77%	-17.27%	-23.43%
2000	-9.11%	-4.72%	-1.68%	7.43%	3.04%
2001	-11.89%	-5.44%	-4.77%	7.11%	0.67%
2002	-22.10%	-15.01%	-10.75%	11.35%	4.27%
2003	28.69%	28.29%	33.26%	4.58%	4.98%
2004	10.88%	5.31%	4.50%	-6.38%	-0.81%
2005	4.91%	1.72%	-4.95%	-9.86%	-6.67%
Total Return	**191.28%**	**199.24%**	**191.58%**	**0.30%**	**-7.67%**
Average	**11.95%**	**12.45%**	**11.97%**	**0.02%**	**-0.48%**
Geometric Average	**10.55%**	**11.47%**	**10.76%**	**0.21%**	**-0.70%**
Standard Deviation	**17.89%**	**15.21%**	**17.19%**	**-0.71%**	**1.98%**
Years DOD outperformed				*8*	*7*
% DOD out performance				*50%*	*44%*

Another significant observation in Table 4.2 is that, DoD portfolio consistently outperformed during the bear run of 2001-2002. This ties in very closely with the DeBondt and Thaler's expectation theory of values stocks, which outperform during bear runs due to lower return expectations. Moving on, a more meaningful comparison would be on a risk adjusted basis using sharpe ratio. As depicted in Figure 4.1, DoD strategy does outperform SP500 marginally but underperforms DJIA by a distinct margin.

Figure 4.1. DoD Sharpe Ratio comparison based on risk adjusted geometric average, 1990 - 2005
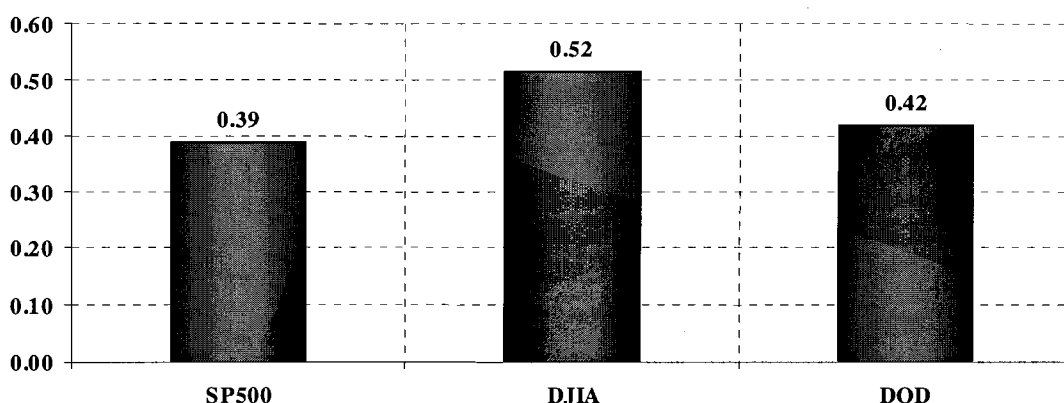
All comparisons till now have been on pure return basis and no portfolio costs have been considered so far. Since a DoD portfolio has to be re-balanced every year as against holding the index, we should factor in holding costs or trading costs to show the real performance. As a rule of thumb we use 10 basis points for general rebalancing cost plus 10 basis points for each stock turnover. General rebalancing refers to equal weighting the portfolio while turnover refers to the inclusion / exclusion of a stock in the portfolio at the end of every year. This implies that given the average turnover of the DoD portfolio (from table 4.1.), the total of holding and rebalancing cost is 27 basis points. Hence economically after factoring these portfolio costs, DoD strategy falls flat and underperforms both indices. Table 4.3 below, shows the return comparison after factoring these portfolio holding costs.

Table 4.3. DoD Return comparisons with holding costs, 1990 - 2005

Return Measure	SP500	DJIA	DOD	DOD - SP500	DOD - DJIA
Portfolio Returns before Holding Costs					
Average	11.95%	12.45%	11.97%	0.02%	-0.48%
Geometric Average	10.55%	11.47%	10.76%	0.21%	-0.70%
Holding Costs					
Portfolio Turnover	0.00	0.00	1.69	-	-
Turnover Cost	0.00%	0.00%	0.17%	-	-
Rebalancing Cost	0.00%	0.00%	0.10%	-	-
Portfolio Returns after Holding Costs					
Average	11.95%	12.45%	11.70%	-0.25%	-0.75%
Geometric Average	10.55%	11.47%	10.49%	-0.05%	-0.97%

Further on to confirm our empirical results statistically we conducted parametric testing. The following equation was used : $R_{DoDt} - R_f = \alpha + \beta_{DoD}(R_{Indext} - R_f) + \varepsilon_t$ (where R_{DoDt} is the return on the DoD portfolio, R_f is the US 1 year risk free rate, α is the abnormal return, β_{DoD} is the estimated systematic risk of the portfolio, R_{DJIAt} is the annual return on DJIA and ε_t is the standard error). For SP500 testing, the DJIA variables were replaced with SP500 variables. The results of the regression are summarized below in the table 4.4.

Table 4.4. DoD Parametric Testing for Risk Adjusted Abnormal Returns, 1990 - 2005

Parameter	Coefficients	Standard Error	t Stat	P-value
Regression DoD and DJIA				
α	-0.004	0.025	-0.166	0.871
β	0.993	0.153	6.469	0.000
Regression DoD and SP500				
α	0.015	0.028	0.554	0.588
β	0.795	0.150	5.316	0.000

Parametric testing estimates suggest that DoD out performance of the DJIA as well as the SP500 index on a risk adjusted basis turn out to be statistically insignificant at 95% confidence level. This means that DoD strategy is a mere anomaly and cannot be relied upon as a water tight strategy. In case of SP500, DoD still managed a positive though insignificant α but when regressed with DJIA α was not only insignificant but also negative. It would be noteworthy to mention that a rally in technology stocks during 1997 – 1999 dramatically drove up the benchmarks indices. And since these technology stocks are typically non-dividend paying, it lead to divergence in returns for DoD. This may partially explain the statistical insignificance of DoD.

Overall there is ample evidence to suggest that DoD portfolio strategy did not outperform the benchmarks i.e. DJIA and SP500. Though some previous researches claim DoD to work, but our empirical and statistical tests do not ascribe to any such findings.

Our results are comprehensive and more reliable since they are based on a combination of factors i.e. total returns, geometric average returns, risk adjusted Sharpe ratios and parametric / statistical testing. In fact some of the initial studies like 'Study of Industrial Averages' by John Slater and 'Beating the Dow' by O'Higgins are very basic and do not even take into account risk adjusted measures or geometric mean returns for comparison. In all the studies, researchers have used only on one or two factors to drive their results, and in all probability used those factors that produced results consistent with their objective. Moreover, very few researchers have taken into account the DoD portfolio holding costs resulting from portfolio turnover and rebalancing, in reporting the returns. These costs are critical in determining the real profitability of the strategy for the investors and have also been factored in our final results. Finally, the study period in our analysis, focuses on the most recent data over the last 16 years as against majority of the studies that have focused on time periods from 1970's to 1990's. For all these reasons not only are our findings different from other researchers but in our view also more dependable.

4.2 HoB Testing:

4.2.1 A. Data and Study

In a parallel study, we try to implement the DoD strategy in Canadian markets by forming a similar portfolio i.e. Hounds of Bay (HoB) using top 10 dividend yielding stocks on the SPTSX60 (Standard & Poor's/ Toronto Stock Exchange 60 Index). We compare the returns of this HoB portfolio against the SPTSX60 and SPTSX (Standard & Poor's/ Toronto Stock Exchange Composite Index) on a risk adjusted basis. The data for the study has been sourced from various databases i.e. The Canadian Financial Markets Research Centre (CFMRC), Bloomberg and Bank of Canada for the period of the study - 1990 to 2005.

The HoB portfolio is administered in exactly the same way as the DoD portfolio, where HoB portfolio is rebalanced at the end of every year by equally weighting the new top 10 dividend yielding stocks on the SPTSX60.

The HoB portfolio details are given below in table 4.5. Where 'X' denotes inclusion of a stock in the HoB portfolio in that year and the turnover indicates the total churn i.e. the number of stocks that were added / removed to the re-balanced HoB portfolio at the end of every year. The bottom right most cell highlighted depicts the average turnover of the portfolio over the holding period. Similarly the right most 'Total' column indicates the number of times a stock made it to the HoB portfolio.

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Table 4.5. HoB Portfolio, 1990 - 2005

Stock	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
Abitibi												X	X				2
Alcan		X									X						2
Brookfield Asset Mgt								X	X	X	X	X					5
Bombardier													X		X		2
BCE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	16
BMO	X	X	X	X	X	X	X	X		X							9
Scotia Bank	X	X			X	X								X	X	X	7
CIBC	X	X	X	X									X	X	X		7
Dofasco	X	X				X	X	X	X		X	X	X		X		10
EnCana												X					1
Enbridge		X	X	X	X	X	X	X	X	X	X	X	X	X	X		14
Falconbridge	X	X	X	X	X	X	X	X	X	X	X	X	X	X			14
Husky Energy														X	X		2
Imperial Oil		X		X	X	X											4
Quebecor World																X	1
Magna International											X						1
Molson							X	X	X							X	4
National Bank Of Canada	X	X	X		X		X			X					X	X	8
Precision Drilling Trust															X		1
RBC	X				X								X	X	X	X	6
TELUS										X	X	X	X				4
Transalta			X	X	X	X	X	X	X	X	X	X	X	X	X	X	14
TD Bank														X			1
Thomson														X			1
TransCanada	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	16
West Coast Energy			X	X		X	X	X	X	X	X						8
Turnover	0	2	3	1	2	2	2	1	1	3	3	3	2	4	4	3	2.25

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4.2.2 Result

Preliminary results show that HoB Strategy outperformed both the SPTSX60 and SPTSX

in terms of total returns by 27.58% and 28.68% respectively and also in terms of geometric mean

returns by 1.83% and 1.91% respectively. In terms of volatility of returns, HoB portfolio had the

least risk followed by SPTSX60 and then SPTSX. Finally, the HoB strategy outperformed the

SPTSX60 over 63% of the times while it outperformed the SPTSX just about 50% of the times.

(see Table 4.6)

Table 4.6. Return comparison HoB versus SPTSX60 & SPTSX, 1990 – 2005

Year	SPTSX	SPTSX60	HOB	HOB - SPTSX	HOB - SPTSX60
1990	-17.96%	-14.92%	-12.55%	5.41%	2.38%
1991	7.85%	9.48%	25.75%	17.90%	16.27%
1992	-4.61%	-5.06%	-4.69%	-0.08%	0.37%
1993	32.23%	26.52%	27.88%	-4.34%	1.37%
1994	-0.21%	0.16%	-0.57%	-0.36%	-0.73%
1995	14.32%	12.92%	10.65%	-3.67%	-2.27%
1996	28.19%	28.38%	30.11%	1.91%	1.73%
1997	14.87%	17.57%	33.15%	18.28%	15.57%
1998	-1.76%	-0.29%	-3.81%	-2.05%	-3.53%
1999	31.78%	34.18%	-3.05%	-34.82%	-37.23%
2000	7.37%	7.92%	26.78%	19.40%	18.85%
2001	-12.57%	-14.90%	4.59%	17.16%	19.49%
2002	-12.39%	-13.98%	-10.28%	2.11%	3.70%
2003	26.68%	25.54%	27.41%	0.74%	1.87%
2004	14.53%	13.84%	10.11%	-4.42%	-3.73%
2005	24.25%	26.29%	19.76%	-4.50%	-6.54%
Total	152.56%	153.66%	181.24%	28.68%	27.58%
Average	9.53%	9.60%	11.33%	1.79%	1.72%
Geometric Average	8.33%	8.42%	10.25%	1.91%	1.83%
Standard Deviation	16.5%	16.4%	15.9%	-0.62%	-0.48%
Years HOB outperformed				*8*	*10*
% HOB out performance				*50%*	*63%*

Similar to the DoD observation and evident from table 4.6, the HoB portfolio also consistently outperformed during the bear run of 2001-2002. In fact during all major market bear runs, HoB has fared much better than both the benchmarks. Thus attributing the out performance to lower return expectations on these value stocks during bear runs.

Further, a more intuitive comparison would be on a risk adjusted basis using sharpe ratio i.e. per unit of return by per unit of risk. As depicted in Figure 4.2, HoB strategy outperforms both SPTSX and SPTSX 60 by a distinct margin.

Figure 4.2. HoB Sharpe Ratio comparison based on risk adjusted geometric average, 1990 - 2005
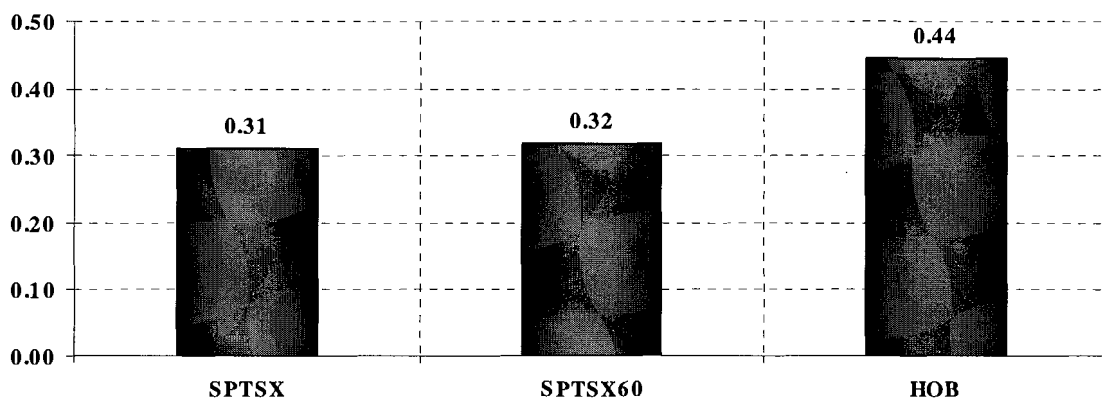
As in DoD testing, we now introduce holding costs i.e. general re-balancing costs and turnover costs to the HoB portfolio as well. Again as a rule of thumb we use 10 basis points for general rebalancing plus 10 basis points for each stock turnover. This implies that given the average turnover of the HoB portfolio (from table 4.5), the total of holding and rebalancing cost is 33 basis points. This is 5 basis points higher than our DoD portfolio holding costs and can be primarily attributed to the higher average turnover in the HoB portfolio. Nonetheless, even after factoring for these portfolio costs, HoB strategy continues to outperforms both indices. Post adjustment for holding costs, HoB beats the SPTSX by 159 basis points and SPTSX60 by 150 basis points. The results are summarized below in Table 4.7.

Table 4.7. HoB Return comparisons with holding costs, 1990 - 2005

Return Measure	SPTSX	SPTSX60	HOB	HOB - SPTSX	HOB - SPTSX60
Portfolio Returns before Holding Costs					
Average	9.53%	9.60%	11.33%	1.79%	1.72%
Geometric Average	8.33%	8.42%	10.25%	1.91%	1.83%
Holding Costs					
Portfolio Turnover	0	0	2.25	-	-
Turnover Cost	0.00%	0.00%	0.23%	-	-
Rebalancing Cost	0.00%	0.00%	0.10%	-	-
Portfolio Returns after Holding Costs					
Average	9.53%	9.60%	11.00%	1.47%	1.40%
Geometric Average	8.33%	8.42%	9.92%	1.59%	1.50%

Similar to our DoD analysis, we conducted parametric testing for the HoB portfolio as well. The following equation was used : $R_{HoBt} - R_f = \alpha + \beta_{HoB}(R_{Index t} - R_f) + \varepsilon_t$ (where R_{HoBt} is the return on the HoB portfolio, R_f is the Canadian 1 year risk free rate, α is the risk adjusted abnormal returns, β_{HoB} is the estimated systematic risk, $R_{SPTSX60t}$ is the annual return on SPTSX60 and ε_p is the standard error). For SPTSX testing, the SPTSX60 variables were replaced with SPTSX variables. The regression results are summarized below in table 4.8.

Table 4.8. HoB Parametric Testing for Risk Adjusted Abnormal Returns, 1990 - 2005

Parameter	Coefficients	Standard Error	t Stat	P-value
Regression HoB and SPTSX60				
α	0.030	0.032	0.946	0.360
β	0.665	0.186	3.576	0.003
Regression HoB and SPTSX				
α	0.031	0.031	0.974	0.347
β	0.669	0.180	3.717	0.002

Parametric testing estimates (table 4.8) suggest that the out performance of HoB in comparison to SPTSX60 and SPTSX index on a risk adjusted basis is statistically insignificant at 95% confidence interval. A closer look at the data in table 4.6 reveals that returns from HoB in 1999 diverged dramatically as compared to the benchmarks thus explaining the statistical insignificance of the strategy. This divergence can be attributed to the run up in technology stocks like Nortel that were non-dividend paying. Nonetheless, values of α were positive for both regressions implying that HoB strategy did add to the returns of SPTSX60 and SPTSX.

Overall, in our opinion, we have all the reasons to believe that HoB strategy has worked very well for the holding period from 1990 to 2005, but due to statistical insignificance of parameter, if this strategy will hold for future periods is still difficult to determine. Our general findings are consistent with the research of Visscher and Filbeck, the only other prominent study on HoB. However, their statistical testing is significant in contrast to ours. This can be explained by the fact that their testing period is from 1988 to 1997, which excludes the outlier returns of 1999. As explained earlier, in 1999 the returns from HoB diverged dramatically compared to the benchmarks thus impairing the statistical testing. Secondly, the time periods considered by the 2 researches are also very different i.e. Visscher and Filbeck's study period is shorter and spans over 10 years (1988 to 1997), while our study is spread over 16 years (1990 to 2005). A longer study period lends more credibility to the results since it includes extreme events and is more representative of data normality. For all these reasons, not only are our findings different from Visscher and Filbeck's study but also more reliable.

Further on in the next section we try to throw some light and put forth plausible explanations as to why our results are inline with current capital market trends. We also discuss the implications of these trends on DoD and HoB strategy going forward.

5 CONCLUSION

The DoD theory has been around for almost 2 decades now. The popularity heightened during early 90's, immediately after which a lot of the investment management companies took notice and invested heavily in the phenomena. Numerous studies show that DoD strategy was also most effective during the 70's and 80's but post 1990 the effectiveness has been on a declining trend. Co-incidentally as highlighted above 1990's saw most heightened activity by way of over $20 billion investment in DoD by various investors. This heightened activity may partially explain the demise of the DoD strategy.

In the past, DoD has been effective during certain periods and not so effective during certain periods. Some experts argue, DoD strategy works better during bear runs, but a thorough empirical analysis needs to be established to prove this. Although this is apparent even in our analysis of DoD and HoB that these value stock portfolios have outperformed during bear markets, perhaps due to low return expectations.

Overall based on our research and empirical tests, we believe the DoD effect has diminished in the recent years in the US markets . Some plausible explanations for this may lay in the fact that general payout ratios for US companies have declined and touched their lowest in recent years. Historically, the DJIA Index dividend yield has fluctuated between 3.2% and 8%. The highest DJIA dividend yield of over 15% was recorded during the stock market collapse of 1932. However, there has been a decreased emphasis on dividends since the mid-1990s and the DJIA dividend yields have fallen well below its historical low and infact reached the lowest at 1.14% in 1999. A similar trend can be noticed for dividend yield on SP500 as shown below in Figure 5.1.

Figure 5.1. Historical dividend yield (and trend line) on SP500, 1960 - 2005[8]
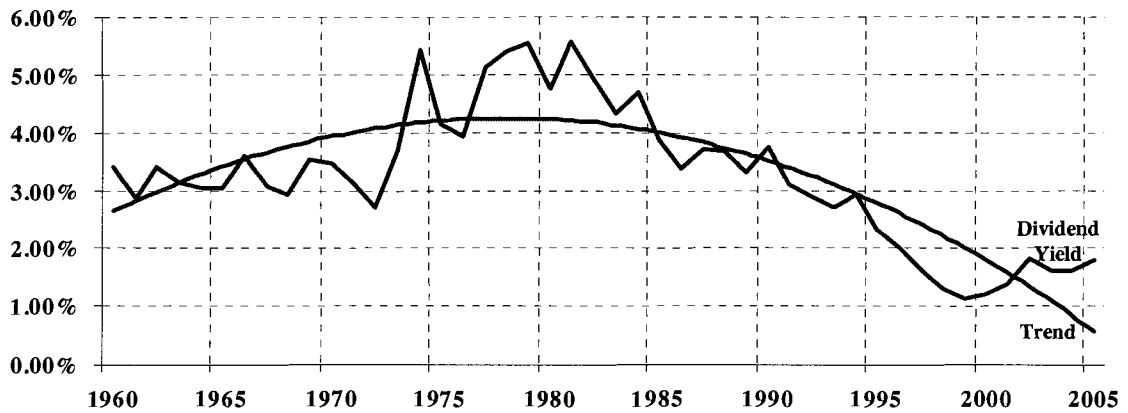
Another compelling reason for the declining dividend yield can be attributed to the increase in popularity of share buy-back programs by public companies. The US markets have witnessed a significant increase in the share repurchase relative to dividends from the mid 1980's.

Figure 5.2. Share repurchases and dividends on SP500, 1982 - 1998[9]
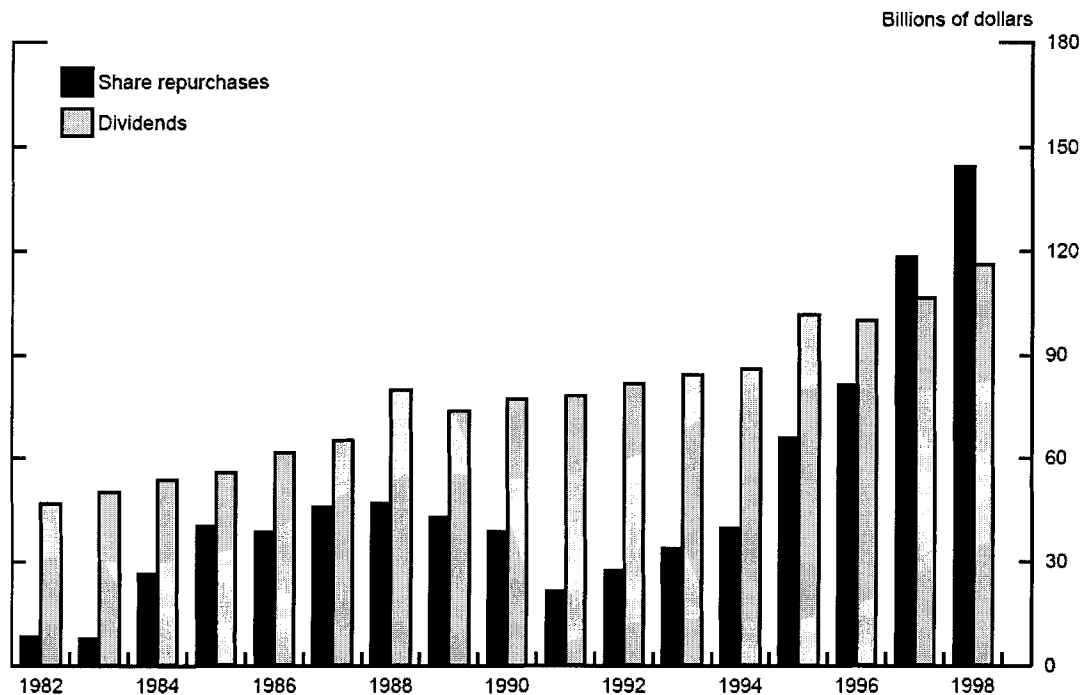
[8] Data source: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/spearn.htm
[9] J. Nellie Liang and Steven A. Sharpe, "Share Repurchases and Employee Stock Options and their Implications for S&P 500 Share Retirements and Expected Returns," Board of Governors of the Federal Reserve System, Finance and Economics Discussion Paper Series, no. 99/59 (November 1999).

As depicted in figure 5.2 above, popularity of share repurchases as compared to dividends has grown exponentially due to reasons like tax advantages, equity dilution avoidance from issuance of employee stock options and finally companies find it more flexible to pack back shareholders by share re-purchases than raising dividends, which may unnecessarily set precedent for shareholder's future expectations.

A similar argument on lower dividend yields may be extended to Canadian markets as well, but the impact may be more subtle since the composition and dynamics of Canadian capital markets are quite different from US. A glance over the sector weightings of the most popular indices of the two countries reveals the following:

Table 5.1. Sector weightings comparison of SP500 and SPTSX, December 2006[10]

Sector	SP500	SPTSX	SPTSX relative to SP500
Energy	10.3%	28.3%	Overweight
Materials	3.0%	16.2%	Overweight
Industrials	10.9%	5.6%	Underweight
Consumer Discretionary	10.6%	5.3%	Underweight
Consumer Staples	9.2%	2.6%	Underweight
Health Care	12.1%	0.9%	Underweight
Financials	21.7%	30.8%	Overweight
IT	15.4%	3.4%	Underweight
Telecom	3.4%	5.5%	Overweight
Utilities	3.6%	1.5%	Underweight

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[10] Data source: http://www2.standardandpoors.com

The resources boom has clearly impacted the Canadian markets specially given that resources is 3 times overweight in SPTSX compared to SP500. These Canadian resource companies driven by high profitability have been top dividend payers. Two other prominent sectors that are good dividend payers are telecom and financials. And in each of those again, the Canadian markets are overweight. Finally the IT sector that is at forefront of share repurchase programs is 5 times underweight in SPTSX compared to SP500. Taking a clue form all these factor, it is not surprising that Canadian market is a better dividend yielding market.

These factors and issues clearly support our testing of both DoD and HoB. However, these explanations are on past data and there are no reasons to believe that these trends are likely to continue or diminish in the future. And even more so in the context of other countries these explanations may not even be applicable specially developing countries in Asia or elsewhere.

Nonetheless, the practical importance of implementing simple trading strategies, like DoD or HoB, that can outperform an index are significant. Hence further research areas pertinent to this topic could include comparing portfolio comprising of highest returns through either dividend yields or stock repurchases against the respective benchmarks. Similarly another appealing research extension could include examining the returns of DoD / HoB during bear runs and drawing a parallel to Debondt and Thaler's over reaction effect.

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