Investment Performance of the 'Dogs of the Dow' Strategies: Latest Evidence

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***Abstract*—The purpose of this research is to examine the risk-adjusted investment performance of three versions of the 'Dogs of the Dow' or 'DOD' strategies, relative to that of the broader Dow Jones Industrial Average (DJIA). Specifically, the research explores the traditional DOD portfolio (Dow-10), the Dow-5 and the 'Small Dogs of the Dow' (Small Dogs). An empirical analysis utilizing the Sharpe ratio is used to investigate the relative investment performance of the DOD variants. Over the period 1996-2016, the three DOD portfolios outperform the DJIA, in terms of, raw annual returns, total sample period returns, risk-adjusted annual returns, risk-adjusted rolling period returns and Sharpe ratios. The study concludes that the DOD strategies provide superior risk-adjusted returns than the DJIA Index and that the dividend-driven/contrarian methods may deliver enhanced returns, compared with the buy-and-hold of Dow-30 Index.**

***Index Terms*—Dividend investing, dogs of the dow, investment performance, sharpe ratio.**

I. Introduction

Michael O'Higgins and John Downes in the book titled, "Beating the Dow" [1] illustrate how an equally-weighted portfolio of the top 10 highest dividend-yielding companies in the Dow Jones Industrial Average (DJIA) outperforms the broader DJIA market index. This popular dividend-driven/contrarian investment approach is known as the 'Dogs of the Dow' (DOD or Dow-10) strategy. The DOD strategy is intuitive and can be easily implemented by investors. The Dow-10 approach requires that an investor build an equally-weighted portfolio of the 10 stocks from the DJIA Index that pay the highest dividend yield as of the end of last trading day of a calendar year. The investor then holds the portfolio for one-year and rebalances the portfolio with the 10 highest-yielding stocks in the DJIA in the following year. The procedure is repeated once a year as the constituents of the Index changes.

Earlier work of O'Higgins and Downes [1] and Siegel [2] show that the DOD portfolio performs significantly better in terms of overall total rate of return than the DJIA Index. The findings generate great interest in the investment community and mainstream financial news media such as the Wall Street Journal, Bloomberg, Forbes and CNBC begin to cover the annual changes in the DOD portfolio and follow the performance of the investment strategy. The media coverage of the DOD strategy suggests that this investment approach is of high interest to both individual as well as institutional investors. Moreover, there are mutual funds that track the performance of the DOD strategy. For instance, the ELEMENTS Dogs of the Dow High Yield Select 10 Exchange-traded fund (ticker: DOD), Hennessy Total Return Fund (HDOGX), Hennessy Balanced Fund (HBFBX) and Invesco Select 10 Industrial Portfolio (SDOW) are funds that attempt to capture the returns of the traditional DOD or Dow-10 portfolio.

The investment philosophy of the DOD is consistent with blue-chip and value-style dividend-driven investing programs that focus on dividend persistence and sustainability. The Dow Jones Industrial Average (DJIA) Market Index is an excellent choice for investors seeking 'safe', high-dividend yielding investment opportunities. Stocks in the DJIA are well-established multinational firms that are more likely to continue to pay high level of dividends and can recover from company financial distress and/or business cycles more easily than other large-capitalization stocks due to the long-term track records of these Dow companies.

The chief objective of this paper is to determine whether the various forms of DOD strategy outperform (on a risk-adjusted basis) the Dow Jones Industrial Average (DJIA). Contributing to the current literature, this studies considers 3 variants of the DOD strategy – Dow-10, Dow-5 and 'Small Dogs of the Dow' and incorporates more recent stock market data that include the 2001 dot-com bubble, the 2008 financial meltdown and the post-2008 stock market recovery. To investigate the risk-adjusted performance of the DOD strategies, this research employs the Sharpe ratio analysis [3], in addition to other risk-return measures. Furthermore, the empirical analysis employs a set of rolling-period comparisons to ensure the soundness and robustness of the empirical work.

The results indicate that the investment performance of all the three DOD strategies outperform the DJIA market index. The findings shed additional lights on the benefits of dividend-investing and the relevancy of such investing approach in more recent time periods. The study concludes that the DOD strategies provide superior risk-adjusted returns than the DJIA Index and that the dividend-driven/contrarian methods may deliver enhanced returns, compared with the entire Dow-30 portfolio method.

The rest of the paper is organized as follows. Section II provides a brief review of relevant literature. Section III discusses the background of the Dogs of the Dow as well as development of hypotheses. Sections IV describes the data

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and methodology. Section V presents the results and the final section concludes.

II. Relevant Literature

The Dogs of the Dow (DOD) strategy is supported by several prominent studies in the behavioral finance literature. Studies such as De Bondt and Thaler [4], [5], Jegadeesh and Titman [6], Barberis, Shleifer and Vishny [7] and Daniel, Hirshleifer and Subrahmanyam [8] explore cognitive bias of investors and how such bias impacts the financial markets. Specifically, these studies investigate market over-/under-reaction, mean reversion in security prices and contrarian investing. In sum, the literature lends support to the DOD strategy and can help explain why the DOD can capture temporary market inefficiency and mispricing.

The performance of the DOD strategy has been examined extensively. McQueen, Shields and Thorley [9] find results supporting DOD; however, the superior performance of the strategy was not economically significant after adjusting for portfolio risk, taxes and transactions costs. Domian, Louton and Mossman [10] and Hirschey [11] contend that the performance of the Dogs varies depending on the subperiods under investigation and whether the subperiods were prior to or after the stock market crash of 1987.

Another stream of research focus on applying the Dogs of the Dow philosophy in international market indices to investigate the performance of this investment approach. Visscher and Filbeck [12] illustrate that the ten highest dividend yielding stocks in the Toronto 35 Index produce higher risk-adjusted returns than both the Toronto 35 and the broader Toronto Stock Exchange (TSE) 300 Index. Chong and Luk [13] study the strategy using the Hang Seng Index data and find that the top dividend-yielding stocks outperform the entire index group. On the other hand, Da Silva [14] shows that in Latin American stock markets, the strategy generally yields higher returns but the results are not statistically significant.

III. Background and Hypotheses

The Dogs of the Dow strategy has long been proposed to deliver superior investment return relative to buy-and-hold return of the Dow Jones Industrial Average (DJIA) market index. Such investment approach is intuitive and easy to follow by investors. Because the holding period of the DOD method is a period of one year, the portfolio avoids short-term capital gains and hence the ordinary income taxes. Further, the DOD strategy requires portfolio rebalance only once per year, the transactions costs associated with such approach are considered trivial. Therefore, this research focuses on the risk-adjusted performance of the 3 variants of the DOD investment strategy. The empirical analysis compares the risk-return property of the DOD approaches and the DJIA.

This study tests the following (null) hypotheses:

HO1: There is no difference in raw return performance of the three DOD strategies when compared with the buy-and-hold return of DJIA market index.

HO2: There is no difference in risk-adjusted return performance of the three DOD strategies when compared with the buy-and-hold return of DJIA market index.

IV. Data and Methodology

The sample for this research consists of four stock portfolios that include the Dogs of the Dow (Dow-10), the Dow-5, 'Small Dogs of the Dow' and the Dow Jones Industrial Average (DJIA) market index. The three variants of the DOD strategies are equally-weighted and are rebalanced annually at the beginning of the calendar year (i.e, the first trading day of the year).

The Dow-10 is the traditional DOD portfolio and is consist of the ten highest dividend-yielding stocks in the DJIA, measured at the end of the last trading day of the year. The Dow-5 is a modified variant of the Dow-10 in that it includes just the five Dow stocks that pay the highest dividend yields. In other words, the Dow-5 is made up of the top 5 dividend-yielding stocks from the Dow-10. This approach further emphasizes the rate of return from corporate dividends and suggests that these highest dividend-paying companies may perform better relative to the other Dow companies. Lastly, the 'Small Dogs of the Dow' portfolio derives from the Dow-10 in that the 'Small Dogs' are the 5 lowest priced stocks in the Dow-10. This strategy seeks to not only capture the high dividend payments, but it intends to also produce rate of return from stock price appreciation when stocks from the DOD portfolio bounce back from significant price declines (e.g., mean reversion of stock prices). Since these DOD portfolios are simply to construct and involves trivial transactions costs, this research directly compares the risk-adjusted investment performance of these portfolios.

The data is collected from the Center for Research in Security Prices (CRSP) database. Annual return of the stocks in the three DOD portfolios are calculated as follows:

$$R_{i,t} = [D_i / P_{i,t}] + [P_{i,t+1} - P_{i,t}] / P_{i,t} \quad (1)$$

where:

$R_{i,t}$ = the annual rate of return of the stock i
D_i = the amount of cash dividend during the year
$P_{i,t+1}$ = the price of the stock i at the end of the year
$P_{i,t}$ = the price of the stock i at the beginning of the year

Since all of the DOD portfolios are equally-weighted, portfolio returns are calculated using the annual individual stock returns and are expressed as follows:

$$R_p = R_i + R_j + \ldots + R_n \ / S \quad (2)$$

where:

R_p = the annual rate of return of the portfolio
R_i = the annual rate of return of the stock i
R_j = the annual rate of return of the stock j
R_n = the annual rate of return of the stock n
S = the number of stocks in the portfolio

With the portfolio returns, geometric return and arithmetic return are calculated to compare the annualized rate of returns generated by the DOD approaches. Geometric return and arithmetic return are calculated as follows:

$$R_G = [1 + R_1] \text{ x } [1 + R_2] \text{ x } \dots \text{ x } [1 + R_N]^{\wedge}(1/N) - 1 \quad (3)$$

$$R_A = [R_1 + R_2 + \dots + R_N] / N \quad (4)$$

where:

R_G = the geometric rate of return of the portfolio
R_A = the arithmetic rate of return of the portfolio
R_N = the annual rate of return of the portfolio in the N^{th} year
N = the number of years in the sample period

In addition to the basic measures of portfolio return analysis, this study employs the Sharpe ratio to determine the risk-adjusted performance of the DOD portfolios since the size of the portfolios differ. This research analyzes the annual Sharpe ratios of the DOD portfolios across the sample time periods and over a five-year rolling windows for robustness of results. Utilizing the Morningstar's methodology paper [15], the Sharpe ratio analysis begins with obtaining the monthly returns of the DOD portfolios and the corresponding 30-day Treasury-bill returns. With the monthly data, monthly portfolio Sharpe ratios are calculated and are expressed as follows:

$$\text{Sharpe Ratio}_M = \frac{\bar{R}^e}{\sigma_M^e} \quad (5)$$

$$\sigma_M^e = \sqrt{\frac{1}{m-1}\sum_{m=1}^{m}(R_i - RF_i - \overline{R^e})^2} \quad (6)$$

$$\text{Sharpe Ratio}_A = \text{Sharpe Ratio}_M\sqrt{12} \quad (7)$$

where:

Sharpe Ratio$_M$ = monthly Sharpe Ratio of the portfolio
Sharpe Ratio$_A$ = annualized Sharpe Ratio of the portfolio
$\bar{R}^e$ = average monthly excess return of the portfolio
σ_M^e = monthly measure of the standard deviation of excess returns
R_i = rate of the return of the portfolio in month i
RF_i = rate of the return of the 30-day T-bill in month i

V. Empirical Results

Table I presents the preliminary investment performance of the three DOD portfolios. The raw return performance analysis indicates that the Dow Jones Industrial Average (DJIA) market index trails all the three variants of DOD, in terms of geometric, arithmetic and total compounded rates of return. The geometric return (the accurate measures of annualized rate of return) of the DJIA is 6.23% over the period 1996-2006, while those of the Dow-10, Dow-5 and Small 'Dogs of the Dow" are 6.91%, 7.13% and 7.75%, respectively. The total compounded rates of return of the portfolios also show the same results. The last line of Table I reports the total dollar value of the portfolio, assuming an annual investment contributions of $10,000. The value of the annuities grows to $410,451 during the period 1996-2016.

It is interesting to find that the portfolio consisting of the lowest priced stocks from the Dogs of the Dow portfolio (i.e., the Small Dogs) outperformed all the other portfolios in every category of performance measure in Table I. This may suggest a 'risk' or 'volatility' effect, and therefore, the next step of the study analyzes the risk-adjusted performance of the portfolios. This paper employs the Sharpe ratio to analyze the investment performance since the results from raw return analysis may be driven by the underlying risk of the portfolios.

TABLE I: Portfolio Performance Comparison, 1996-2006 (Raw Returns)

Returns	DJIA	Dow 10	Dow 5	Small Dogs
Geometric Return	6.23%	6.91%	7.13%	7.75%
Arithmetic Return	7.30%	8.06%	8.72%	9.47%
Total Return	355.6%	406.6%	425.0%	479.1%
FV of $10k Annuity	$410,451	$443,854	$455,598	$489,428

To account for the riskiness of the portfolio, the Sharpe ratio determines the rate of excess return (i.e., return over the risk-free rate) per unit of risk. Analyzing portfolio performance with Sharpe ratio allows the comparison to reflect the true reward/return earned for the equivalent risk. Table II presents the annualized Sharpe ratios of the three DOD portfolios and the DJIA. The Sharpe ratios in Table II are shown for each portfolio for each individual year from 1996 to 2016. The results indicate that the DOD portfolios beats the DJIA strategies sixteen out of twenty-one times (or 76.2%) over 1996-2016 and during 2000-2016, the DOD strategies outperforms the DJIA in fifteen of the seventeen years (or 88.2%). As for the DOD portfolios, the results appear to be more evenly distributed among Dow-10, Dow-5 and the Small Dogs of the Dow. Table II suggests that on a risk-adjusted basis, performance of the DOD strategies is better than that of the entire DJIA index. This research contends that the superior performance of the DOD approaches does not depend on the riskiness of the underlying portfolio.

TABLE II: Sharpe Ratio Comparison (Individual Years)

Year	DJIA	Dow 10	Dow 5	Small Dogs
2016	1.032	1.383	**1.648**	0.853
2015	-0.173	0.141	0.338	**0.550**
2014	0.552	0.747	0.768	**0.841**
2013	1.602	**2.022**	1.057	2.004
2012	0.366	0.587	**0.869**	0.570
2011	0.281	0.993	0.883	**1.004**
2010	0.605	**1.138**	1.018	0.678
2009	**0.738**	0.576	0.546	0.544
2008	-2.645	-2.695	**-2.63**	-2.999
2007	**0.149**	-0.160	-0.162	0.017
2006	0.864	1.728	**2.220**	2.144
2005	-0.054	**0.282**	-0.411	-0.021
2004	0.145	0.150	-0.028	**0.574**
2003	1.233	**1.260**	0.942	0.727
2002	-1.685	-1.090	**-0.767**	-1.027
2001	-0.880	-1.076	-0.517	**-0.492**
2000	-0.638	0.167	**0.547**	0.339
1999	**1.302**	-0.243	0.059	-0.785
1998	**0.618**	0.219	0.384	0.204
1997	**1.180**	-0.749	-1.387	0.724
1996	1.104	**1.147**	1.034	0.823

Although the results reported in Table II are robust, this study performs an additional and more rigorous analysis of

the risk/return combination of the portfolios. Following Visscher and Filbeck [12], this research implements five-year rolling-periods from 1996 to 2016 to confirm the previous results. A rolling five-year window portfolio performance analysis can help the research determine the actual holding period performance as long-term investors tend to 'roll over' dividend payments to subsequent investment periods to earn to compounded rates of investment (and reinvestment).

Table III reports the results of the rolling-period analysis and indicates that except for the rolling-windows (1996-2000 & 1997-2001), the DOD strategies outperform the DJIA market index in all of the subsequent (consecutive) rolling periods. In fact, the DOD strategies yield superior risk-adjusted investment performance in 15 of the 17 (or 88.2%) of the five-year rolling windows. The results are consistent with the individual yearly period analysis reported in Table II.

However, Table III further suggests that the Small Dogs of the Dow portfolio performs the best, especially after the year 2000, where the Small Dogs beat the other portfolios 8 out of 12 times (or two-thirds) in the rolling-period analysis. The results clearly indicate that adjusting for portfolio risk, the Small Dogs portfolio provides the highest rates of investment return, relative to the other competing portfolios. This research extends the work of McQueen et al. [9] by including the Small Dogs of the Dow, in addition to Dow-10 and Dow-5. The findings shed new lights on how a simply modified version of the DOD strategy can outperform the benchmark portfolio, especially in more recent time periods.

TABLE III: SHARPE RATIO COMPARISON (FIVE-YEAR ROLLING PERIODS)

Rolling Period	DJIA	Dow 10	Dow 5	Small Dogs
2012-2016	0.846	0.894	1.021	**1.508**
2011-2015	0.658	0.822	0.854	**1.555**
2010-2014	0.853	1.005	1.002	**1.595**
2009-2013	0.899	0.974	0.954	**1.502**
2008-2012	-0.164	0.110	**0.149**	-0.064
2007-2011	-0.219	**-0.027**	-0.075	-0.237
2006-2010	-0.073	0.108	**0.216**	0.120
2005-2009	-0.238	**-0.049**	-0.095	-0.099
2004-2008	-0.386	-0.127	-0.221	**-0.089**
2003-2007	0.585	0.598	0.559	**1.076**
2002-2006	0.126	0.427	0.427	**0.75**
2001-2005	-0.311	-0.087	-0.17	**-0.075**
2000-2004	-0.457	-0.108	**0.039**	0.038
1999-2003	-0.167	-0.180	**0.058**	-0.388
1998-2002	-0.321	-0.371	**-0.064**	-0.551
1997-2001	**0.396**	-0.308	-0.199	-0.003
1996-2000	**0.893**	0.099	0.139	0.408

VI. CONCLUSIONS

This paper reports the superior investment performance of three 'Dogs of the Dow' variants over that of the broader Dow Jones Industrial market index. The empirical analysis utilizes the risk-adjusted performance measures of the Sharpe ratio and rolling-period windows to ensure robustness of the results. The results shed additional lights on the benefits of dividend-driven investing programs and the relevancy of such approach in the recent time periods. The findings are important in that they convey information about temporary market mispricing and inefficiency, which have long been documented in the behavioral finance literature.

This research contends that investors should consider high quality, blue-chip stocks like those in the DJIA if they pursue a dividend-style/value investing strategy. Future research can explore further on the performance of the DOD strategies in emerging markets as these markets tend to exhibit more inefficiency. A comparison study of the investment performance of DOD strategies in both developed countries and emerging markets may allow the researcher to better understand how benefits of dividend investing may differ in various market environments.

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