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The rise and fall of the "Dogs of the Dow"

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Abstract

The Dow Dividend Strategy recommends the highest-yielding stocks from the 30 Dow Industrials. These stocks have come to be known as the "Dogs of the Dow" since they often include some of the previous year's worst performers. While the strategy's successes—and more recently, its failures—have been well documented in the popular press, there have not been any convincing explanations of why the strategy worked. This paper demonstrates that the behavior of these stocks is consistent with the market overreaction hypothesis. In years before the stock market crash of 1987, the dogs were indeed "losers" which went on to become "winners." But in the post-crash period, the high-yield stocks actually outperformed the market during the previous year. The Dow Dividend Strategy is no longer selecting the true dogs.

1. Introduction

Investors have always yearned for ways to beat the market. In recent years, one popular strategy involves the 30 stocks in the Dow Jones Industrial Average (DJIA). According to the Dow Dividend Strategy (DDS), a portfolio comprised of the ten highest-yielding DJIA stocks usually outperforms the Dow.

Initial explanations of the strategy's success concentrated on the dividends themselves. Some explanations involved nothing more than the observation that for a given percentage change in a stock's price, a higher dividend produces a higher total return. But by the

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mid-1990s, market observers realized that the DDS had often selected the previous year's worst performing DJIA stocks. DDS portfolios came to be known as the "Dogs of the Dow"

If a company maintains a constant quarterly cash dividend even though its stock price is falling, the dividend yield must necessarily rise. Thus, a high dividend yield may be a proxy for a low past return, and the Dow strategy's success may be a winner-loser phenomenon rather than a yield effect. Academic research in market overreaction can therefore provide a methodological framework for examining the DDS.

This paper examines connections among past returns, dividend yields, and future returns during 1964 through 1997. Our DDS portfolios consist of the ten highest-yielding DJIA stocks at the start of each year, and we also analyze portfolios of the ten lowest-yielding stocks. To exclude the effects of the 1987 stock market crash, we examine results over 1964–1986 and 1989–1997 in addition to the full sample. The post-crash subsample also represents a period when the DDS became widely known in the popular press.

The paper is organized as follows. Section 1 presents claims which have been made about the Dow Dividend Strategy. Section 2 reviews the market overreaction literature. The methodology employed is discussed in Section 3. Our tests for overreaction among the DJIA stocks are presented in Section 4. Concluding remarks are made in Section 5.

2. The Dow Dividend Strategy

One of the first reports of the 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 DDS since 1973. Knowles and Petty also showed that the ten highest-yielding stocks outperformed the Dow over a longer period of time from 1957 through 1991.

Several major brokerage firms, including Merrill Lynch, Prudential Securities, and Dean Witter, followed up with their own studies which provided further empirical evidence to support the earlier results. Table 1 summarizes the average annual returns of the ten highest-yielding stocks compared to the Dow average, as reported by various studies.

Table 1
Reported Returns from the Dow Dividend Strategy

Study	Period	Return on 10 Highest Yielding Stocks	Return on Dow Jones Industrial Average
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%

Average annual returns from the ten highest yielding Dow stocks are compared to annual returns on the entire Dow Jones Industrial Average. The returns include the reinvestment of dividends.

Prompted by this evidence, Merrill Lynch, Prudential Securities, and PaineWebber co-sponsored a unit investment trust (UIT) called the Defined Assets Fund Select Ten Portfolio, based on the Dow Dividend Strategy. This type of fund is attractive to the sponsors because of the low cost of implementing and administering such a simple investment strategy. No large staff of highly paid research analysts is required and because these funds are set up as unit investment trusts, they are, by definition, unmanaged. Once the portfolio of the ten highest yielding DJIA stocks is constructed, it is not changed during the one-year life of the fund. At the end of one year, the fund is liquidated at a price determined by the market values of the stocks as of the termination date. Investors can choose to receive the proceeds or roll them over into a new UIT at a reduced commission charge.

The basic Dow Dividend Strategy is straightforward and is executed as follows:

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 with the highest current dividend yield.

Step 2: Hold the portfolio for one year. On the anniversary date, determine the total value of the portfolio including all dividends and other cash distributions along with the closing values of the stocks. Rebalance the portfolio by investing 10% of the total value in each of the ten highest yielding DJIA stocks. Stocks which have dropped off the top-ten yield list should be sold and replaced with the new additions to the list.

Step 3: Repeat the process on each anniversary date.

While actual results from various studies differ depending on starting dates used and how dividend yields are defined, all have arrived at similar conclusions about the success of the Dow Dividend Strategy. Table 2 shows an annual comparison of the actual performance of the DJIA and an equally weighted portfolio of the ten highest dividend yielding stocks as reported in a UIT prospectus (Prudential Securities, 1993). Results are for the 20 years from January 1973 through December 1992, assuming that total return proceeds are reinvested at the beginning of each calendar year in the ten highest yielding DJIA stocks in equal dollar amounts (calculated on the previous year's closing stock prices). Results do not include transaction costs or taxes. The DDS portfolios had an average annual total return of 16.06% versus 10.91% for the DJIA.

3. Market overreaction

The literature relating dividend yields and stock returns is extensive and well established; see, i.e., Elton and Gruber (1970); Black and Scholes (1974); Black (1976); Miller and Scholes (1978); Litzenberger and Ramaswamy (1979); Blume (1980); Christie (1990). In contrast, studies of market overreaction are more recent. De Bondt and Thaler (1985) examine the question of stock price predictability in terms of earlier work in experimental psychology. The overreaction hypothesis states that the behavioral tendency of people to "overreact" to surprises extends to the way stock prices are determined. In particular, it suggests that stock prices systematically overshoot because individuals focus excessively on

Table 2
Capital Gains, Dividends, and Total Returns

	10 Highest Yielding Stocks			Dow Jones Industrial Average		
Year	Capital Gain	Dividend Yield	Total Return	Capital Gain	Dividend Yield	Total Return
1973	−6.22%	5.20%	−1.02%	−16.58%	3.46%	−13.12%
1974	−16.32	7.37	−8.95	−27.57	4.43	−23.14
1975	48.78	7.95	56.73	38.32	6.08	44.40
1976	27.70	7.10	34.80	17.86	4.86	22.72
1977	−6.75	5.92	−0.83	−17.27	4.56	−12.71
1978	−6.92	7.11	0.19	−3.15	5.84	2.69
1979	3.97	8.41	12.38	4.19	6.33	10.52
1980	17.83	8.54	26.37	14.93	6.48	21.41
1981	−0.94	8.29	7.35	−9.23	5.83	−3.40
1982	17.24	8.22	25.46	19.60	6.19	25.79
1983	30.20	8.25	38.45	20.30	5.38	25.68
1984	0.24	6.65	6.89	−3.76	4.82	1.06
1985	21.45	6.97	28.42	27.66	5.12	32.78
1986	23.74	6.13	29.87	22.58	4.33	26.91
1987	1.87	5.10	6.97	2.26	3.76	6.02
1988	15.80	5.80	21.60	11.85	4.10	15.95
1989	20.28	6.94	27.22	26.96	4.75	31.71
1990	−13.00	5.06	−7.94	−4.34	3.77	−0.57
1991	28.32	5.22	33.54	20.32	3.61	23.93
1992	3.44	4.82	8.26	4.17	3.17	7.34

The data reported in this table are obtained from Prudential Securities (1993).

short-term events such as changes in earnings patterns. Evidence of such behavior would be a violation of weak-form market efficiency.

Two hypotheses are tested: (1) extreme movements in stock prices will be followed by subsequent price movements in the opposite direction; and (2) the more extreme the initial price movement, the greater will be the subsequent adjustment. In their 1985 study, De Bondt and Thaler (1985) examine the cumulative average residuals of winner and loser portfolios formed in each of 16 non-overlapping three-year periods from January 1933 to December 1980. They find that loser portfolios outperform the market, on average, by 19.6% for the three-year postformation period. Winner portfolios underperform the market by about 5.0%. These results are consistent with the overreaction hypothesis.

De Bondt and Thaler (1987) followed up their original study in response to suggestions by some critics that the overreaction effect was, in fact, a rational response to changes in risk (see Brown et al., 1988), or that it was primarily caused by mean-reverting factor risk premia. The extended study also addresses unresolved issues relating the overreaction effect to size effects (see Zarowin, 1990) and seasonality, as well as the asymmetric nature of the corrections of the winners as compared to those of the losers.

To retest the overreaction hypothesis, De Bondt and Thaler construct rank portfolios of stocks with extreme capital gains (winners) and extreme capital losses (losers) based on past market-adjusted excess returns taken over formation periods of up to five years. Using

varying post-formation test periods, they show that sharp price reversals occur for both the winner and loser stock portfolios. In other words, the losers become winners and vice versa. Overall, the losers outperform the winners by an average of 31.9%, and as in their previous study, the overreaction effect is asymmetric.

Test period returns also show a strong seasonality effect, with a large part of the losers' excess returns occurring in the month of January for up to five years following portfolio formation. They show that the winner-loser effect cannot be attributed to changes in CAPM betas and that it is not primarily a size effect.

Chopra et al. (1992) also find an economically important overreaction effect even after adjusting for size and beta. Their evidence suggests that the overreaction effect is distinct from tax-loss selling effects. Furthermore, they find that the effect is stronger for smaller firms. Jegadeesh and Titman (1995) find that contrarian investment strategies are profitable, primarily due to the overreaction of stock prices to firm-specific information.

Renewed doubts about the existence of market overreaction are raised by Conrad and Kaul (1993) and Ball et al. (1995). Conrad and Kaul (1993) focus on biases in computed returns due to the cumulation of monthly returns containing measurement errors. They show a large upward bias in the cumulative returns of the lowest priced stocks. Ball et al. (1995) also document problems in measuring returns. However, Loughran and Ritter (1996) dispute Conrad and Kaul's methodology, and Rozeff and Zaman (1998) find overreaction in portfolios which are not affected by the problems raised by Ball et al. (1995).

4. Methodology

We follow the empirical testing procedures employed by De Bondt and Thaler (1985) in their original study. Whereas De Bondt and Thaler formed winner and loser portfolios conditional on past excess returns, we form portfolios of high-yield and low-yield stocks based on the dividend yields at the beginning of each year. As in the De Bondt and Thaler study, the tests in this study assess the extent to which systematic nonzero residual return behavior in the twelve-month period after portfolio formation is associated with systematic residual returns in the twelve-month preformation period.

Stock return data from the Center for Research in Security Prices (CRSP) are used for the period between January 1963 and December 1997. We use CRSP daily data for computing dividend yields; the first full calendar year on these tapes is 1963. The S&P 500 is the benchmark portfolio for market returns. Consistent with the De Bondt and Thaler study, we use market-adjusted excess return residuals estimated as $\hat{u}_{jt} = R_{jt} - R_{mt}$. De Bondt and Thaler show that the results of their empirical analysis are not affected by the method for determining return residuals. We follow a five-step testing procedure similar to De Bondt and Thaler (1985, pp. 797–798):

1. For each stock *j* and each month *t*, return residuals are determined as described above. At the beginning of each year, the dividend yield for each stock in the DJIA is determined. The stocks are then ranked according to dividend yield. The ten stocks with the highest dividend yields comprise the high-yield portfolio, while the ten lowest

form the low-yield portfolio. All portfolios are equally weighted. This procedure is repeated each year from 1964 to 1997. Although the DJIA consists of exactly 30 firms at any point in time, 43 different firms appeared in the Dow for at least a portion of our sample period.

2. For each high-yield portfolio, 24 average portfolio residuals $AR_{H,n,t}$ are calculated for each of the twelve months before and twelve months after the formation date (i.e., the first trading day of the year). The twelve preformation months are denoted by $t = -11$ to $t = 0$, with $t = 0$ representing the prior month of December. Similarly, $t = +1$ to $t = +12$ denote the twelve postformation months with $t = +1$ representing the month of January. Twenty-four average portfolio residuals $AR_{L,n,t}$ are also determined for each of the low-yield portfolios.
3. For each month from $t = -11$ to $t = +12$, we compute an average of the average portfolio residuals over the sample period for both high-yield ($AAR_{H,t}$) and low-yield ($AAR_{L,t}$) portfolios. Cumulative average average residuals are computed for the high-yield portfolios over the twelve preformation months according to the formula:

$$CAAR_{H,t} = \sum_{s=-11}^{t} AAR_{H,s} \tag{1}$$

for $t = -11$ to 0. The low-yield cumulative residuals $CAAR_{L,t}$ are calculated similarly. Postformation cumulative residuals are computed separately, restarting the cumulation at the formation point. The high-yield residuals are:

$$CAAR_{H,t} = \sum_{s=1}^{t} AAR_{H,s} \tag{2}$$

for $t = 1$ to 12. Postformation low-yield cumulative residuals are similar.

4. If dividend yields are related to stock price changes during the preformation months, then we would expect that $CAAR_{H,t} < 0$ and $CAAR_{L,t} > 0$ for $t \leq 0$. The overreaction hypothesis then predicts that for $t > 0$, $CAAR_{H,t} > 0$ and $CAAR_{L,t} < 0$. This implies that, for time periods $t \leq 0$, $[CAAR_{H,t} - CAAR_{L,t}] < 0$ and, for $t > 0$, $[CAAR_{H,t} - CAAR_{L,t}] > 0$. To determine whether, at any time t, the difference in returns between the high-yield and low-yield portfolios is statistically significant, we find a pooled estimate of the population variance:

$$S_t^2 = \frac{\sum_{n=1}^{N} (CAR_{H,n,t} - CAAR_{H,t})^2 + \sum_{n=1}^{N} (CAR_{L,n,t} - CAAR_{L,t})^2}{2(N-1)} \tag{3}$$

With two samples of equal size N (the number of portfolio formation years in the sample period), the variance of the difference of sample means equals $2S_t^2/N$ and the t-statistic is:

$$T_t = \frac{(CAAR_{H,t} - CAAR_{L,t})}{\sqrt{2S_t^2/N}} \tag{4}$$

For each of the twelve preformation and twelve postformation months, relevant *t*-statistics can be found but, as noted by De Bondt and Thaler, they do not represent independent evidence.

5. To determine whether a high-yield average residual for some month *t* is significantly different from zero, we first compute the sample standard deviation:

$$s_t = \sqrt{\frac{\sum_{n=1}^{N} (AR_{H,n,t} - AAR_{H,t})^2}{(N-1)}} \tag{5}$$

The *t*-statistic is

$$T_t = \frac{AAR_{H,t}}{s_t/\sqrt{N}} \tag{6}$$

Similar procedures apply for the low-yield portfolio.

5. Testing the Dow Dividend Strategy

We test the DDS to consider whether the superior performance of high yielding stocks is actually an overreaction effect. Some high yields may result from recent stock price declines rather than explicit dividend policy decisions. Our goal is to determine whether high-yield stocks are losers in the preformation months, and whether the subsequent outperformance is in fact De Bondt and Thaler's "winner-loser" overreaction effect.

A second objective is to compare the performance of the DDS over different subperiods. We want to determine whether the underlying dynamics of the Dow dividend effect remained stable during the entire 1964–1997 sample period. As documented in Table 1, the DDS has been extensively publicized since 1988. Also, inclusion of 1987 and 1988 may bring about potential confounding effects due to the stock market crash of 1987. We therefore choose 1964–1986 and 1989–1997 as the two subsamples.

We apply the tests described in Section 3 to the DJIA stocks. The results for the full 1964–1997 sample period are presented in Table 3. For these 34 years, the portfolios of ten high-yield stocks outperform the S&P 500 during the twelve months after portfolio formation by 4.76% (see Panel A). Our findings are consistent with the claims made by proponents of the DDS who use the DJIA rather than the S&P 500 as a benchmark. In contrast, the portfolios of ten low-yield stocks approximately match the market, underperforming by just 0.52% during the twelve months after portfolio formation. The difference between the cumulative average average residuals of the two portfolios [$CAAR_{H,12} - CAAR_{L,12}$] is 5.28%.

Table 3
Residuals from Dividend Yield Portfolios, 1964–1997

Month	High-Yield		Low-Yield		Differences
	$AAR_{H,t}$	$CAAR_{H,t}$	$AAR_{L,t}$	$CAAR_{L,t}$	$CAAR_{H,t} - CAAR_{L,t}$
			Panel A		
+1	0.0225 (4.08)**	0.0225 (4.08)**	0.0025 (0.49)	0.0025 (0.49)	0.0200 (2.68)**
+2	0.0027 (0.70)	0.0253 (3.73)**	0.0076 (2.42)*	0.0100 (1.58)	0.0152 (1.64)
+3	0.0077 (1.94)	0.0330 (4.12)**	−0.0000 (−0.01)	0.0100 (1.33)	0.0230 (2.10)*
+4	0.0053 (1.11)	0.0382 (4.50)**	0.0016 (0.50)	0.0116 (1.39)	0.0267 (2.24)*
+5	0.0051 (1.47)	0.0434 (4.66)**	−0.0050 (−1.62)	0.0065 (0.70)	0.0368 (2.78)**
+6	0.0012 (0.31)	0.0446 (4.28)**	−0.0030 (−0.68)	0.0035 (0.34)	0.0410 (2.77)**
+7	0.0010 (0.35)	0.0456 (3.89)**	0.0011 (0.28)	0.0047 (0.43)	0.0409 (2.56)*
+8	0.0038 (1.06)	0.0494 (4.02)**	0.0015 (0.39)	0.0062 (0.53)	0.0432 (2.53)*
+9	0.0057 (1.15)	0.0551 (4.24)**	−0.0068 (−2.24)*	−0.0006 (−0.05)	0.0558 (3.21)**
+10	−0.0053 (−1.10)	0.0498 (4.00)**	−0.0110 (−2.46)*	−0.0116 (−1.02)	0.0614 (3.64)**
+11	−0.0009 (−0.19)	0.0489 (3.40)**	0.0048 (1.01)	−0.0068 (−0.54)	0.0557 (2.92)**
+12	−0.0013 (−0.30)	0.0476 (3.16)**	0.0016 (0.37)	−0.0052 (−0.36)	0.0528 (2.54)*

Average average residuals (*AARs*) and cumulative average average residuals (*CAARs*) are presented for the full sample period, 1964 to 1997. The high-yield portfolios include the ten highest-yielding stocks from the Dow Jones Industrial Average. The low-yield portfolios include the Dow's ten lowest yielding stocks. This panel shows post-formation months $t = +1$ to $t = +12$. Numbers in parentheses are *t*-statistics.

			Panel B		
−11	0.0074 (1.55)	0.0074 (1.55)	0.0117 (2.63)*	0.0117 (2.63)*	−0.0043 (−0.66)
−10	0.0001 (0.02)	0.0075 (1.18)	0.0105 (3.23)**	0.0222 (3.70)**	−0.0147 (−1.69)
−9	0.0020 (0.55)	0.0094 (1.47)	0.0059 (1.79)	0.0281 (4.00)**	−0.0187 (−1.96)
−8	0.0000 (0.00)	0.0094 (1.32)	0.0066 (1.75)*	0.0347 (4.29)**	−0.0253 (−2.34)*
−7	−0.0026 (−0.78)	0.0069 (0.87)	0.0040 (1.22)	0.0388 (4.76)**	−0.0319 (−2.81)*
−6	−0.0090 (−2.58)*	−0.0021 (−0.23)	0.0022 (0.53)	0.0410 (4.50)**	−0.0430 (−3.31)**
−5	−0.0036 (−1.13)	−0.0057 (−0.55)	0.0068 (1.92)	0.0478 (4.73)**	−0.0534 (−3.69)**
−4	0.0018 (0.61)	−0.0039 (−0.33)	0.0051 (1.28)	0.0529 (4.86)**	−0.0568 (−3.58)**
−3	−0.0017 (−0.34)	−0.0056 (−0.47)	0.0026 (0.90)	0.0555 (4.80)**	−0.0611 (−3.69)**
−2	−0.0170 (−3.08)**	−0.0226 (−1.97)	0.0027 (0.64)	0.0582 (4.61)**	−0.0809 (−4.74)**
−1	−0.0090 (−1.61)	−0.0316 (−2.13)*	0.0103 (2.40)*	0.0685 (5.28)**	−0.1001 (−5.09)**
0	−0.0051 (−1.05)	−0.0367 (−2.26)*	0.0096 (2.52)*	0.0781 (5.38)**	−0.1148 (−5.26)**

Average average residuals (*AARs*) and cumulative average average residuals (*CAARs*) are presented for the full sample period, 1964 to 1997. The high-yield portfolios include the ten highest-yielding stocks from the Dow Jones Industrial Average. The low-yield portfolios include the Dow's ten lowest yielding stocks. This panel shows preformation months $t = -11$ to $t = 0$. Numbers in parentheses are *t*-statistics.

**Significant at the 1 percent level.

*Significant at the 5 percent level.

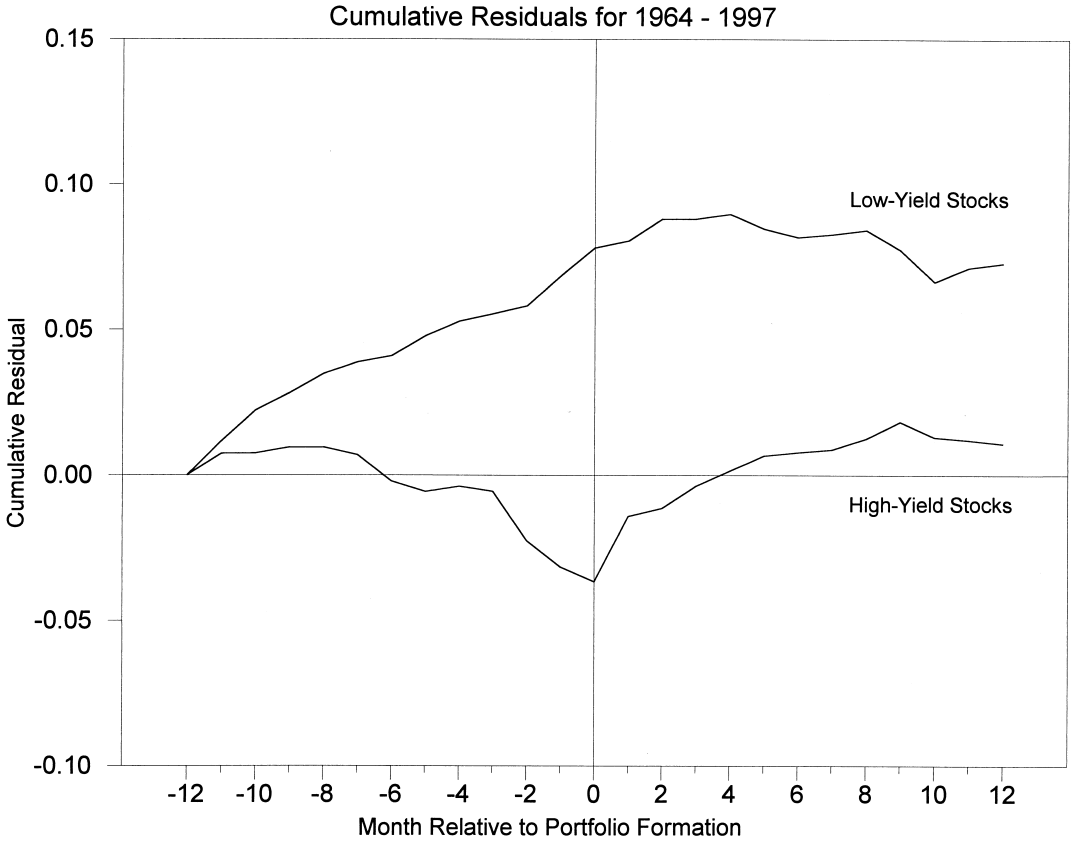

Fig. 1. Cumulative Residuals for 1964–1997.

Our results also reveal that the high-yield stocks underperform the market by 3.67% in the twelve months before portfolio formation (see Panel B). These high-yield stocks are indeed, in De Bondt and Thaler parlance, losers. The low-yield stocks outperform the market in the twelve preformation months by 7.81%, establishing them as winners. The difference between the two cumulative returns is 11.48%.

Furthermore, our findings are consistent with De Bondt and Thaler in that the overreaction effect is asymmetric; i.e., it is larger for the high-yield stocks than the low-yield stocks. Also consistent with De Bondt and Thaler, we find evidence of a seasonality effect, particularly among the high-yield stocks. The overreaction effect is much more pronounced in January than in subsequent months. In month $t = +1$, the high-yield portfolio earns an excess return of 2.25%.

Figure 1 combines the preformation and postformation periods to show the excess returns over 24 months, cumulating average average residuals from $t = -11$ to $t = 12$. For the full two years, the high-yield stocks outperform the S&P 500 by a relatively modest 1.09%.

The choice of January as the starting month is arbitrary. While previous DDS studies typically follow this convention, it should be noted that the UITs co-sponsored by Merrill

Lynch et al. use different starting months throughout the year. However, the studies and the UITs all use annual rebalancing of the portfolios, so we use twelve month postformation periods throughout this paper. Interestingly, De Bondt and Thaler (1985) and Chopra et al. (1992) find that portfolios formed on the basis of one-year returns display return momentum instead of overreaction. That is, the previous year's losers continue to underperform in the next year, while the winners continue to outperform.

In an effort to examine robustness of the DDS throughout the full sample period, we test the 1964–1986 and 1989–1997 subperiods separately. Results for the 1964–1986 pre-crash subperiod are presented in Table 4. During the twelve month period following portfolio formation (see Panel A) the high-yield portfolio outperforms the S&P 500 by 5.11%. The low-yield portfolio underperforms the benchmark by 3.21% during the same period. The difference between the cumulative residuals of the two portfolios [$CAAR_{H,12} - CAAR_{L,12}$] is 8.32%. Thus, the Dow dividend effect is somewhat stronger during this subperiod than during the full sample period. We find that the high-yield stocks underperform the market by 4.67% in the twelve months before portfolio formation (see Panel B). The low-yield stocks outperform the market by 6.16% during this period.

Figure 2 follows the format used in Fig. 1, cumulating residuals over 24 months. For 1964-1986, the preformation and postformation plots of the high-yield stocks are almost mirror images about $t = 0$, and after two years these stocks gain only 0.44% on the market benchmark.

Results for the 1989–1997 post-crash subperiod are presented in Table 5 and Fig. 3. During the postformation period (see Panel A) the high-yield portfolios *underperform* the market portfolio by 1.13% while the low-yield portfolios underperform by a slightly larger amount, 2.78%. The difference between the cumulative average residuals of the two portfolios [$CAAR_{H,12} - CAAR_{L,12}$] is 1.65% with a *t*-statistic of only 0.37. Thus, a Dow dividend effect does not seem to exist during this subperiod, although it should be noted that the lack of statistical significance is partly due to the small sample size. During the preformation subperiod (see Panel B), both portfolios outperform the S&P 500, the high-yield by 2.75% and the low-yield by 1.06%. These results contrast sharply with the performance of these portfolios in the pre-crash period, when the high-yield stocks were "losers." The underlying dynamics of the Dow dividend effect have not remained stable during the entire 1964–1997 sample period.

Two observations can be made to conclude this section. First, any capital market anomaly may disappear after it becomes widely known by investors. McQueen et al. (1997) suggest that this may have happened to the Dow Dividend Strategy, and furthermore that the DDS did not beat the DJIA economically after adjusting for taxes, transactions costs, and the higher risk from holding an undiversified portfolio of only 10 stocks. Other examples of "investor learning" are documented by Mittoo and Thompson (1990) for the firm size anomaly, and McQueen and Thorley (1997) for gold stocks and gold prices.

A second possible explanation for the strategy's recent failures is that it is no longer selecting the true dogs. During the post-crash period, dividend yield has not been an inverse proxy for past performance of the Dow stocks. As noted above, the highest yielding stocks outperformed both the S&P 500 and the low-yield portfolio during the preformation period.

Table 4
Residuals from Dividend Yield Portfolios, 1964–1986 (Pre-Crash Period)

Month	High-Yield		Low-Yield		Differences
	$AAR_{H,t}$	$CAAR_{H,t}$	$AAR_{L,t}$	$CAAR_{L,t}$	$CAAR_{H,t} - CAAR_{L,t}$
			Panel A		
+1	0.0236 (3.64)**	0.0236 (3.64)**	0.0001 (0.02)	0.0001 (0.02)	0.0234 (2.69)*
+2	0.0018 (0.39)	0.0254 (3.15)**	0.0066 (1.47)	0.0067 (0.81)	0.0187 (1.62)
+3	0.0066 (1.26)	0.0319 (3.14)**	−0.0044 (−1.03)	0.0023 (0.24)	0.0296 (2.09)*
+4	0.0069 (1.26)	0.0388 (3.74)**	0.0028 (0.65)	0.0052 (0.48)	0.0337 (2.25)*
+5	0.0051 (1.20)	0.0439 (3.54)**	−0.0120 (−3.92)**	−0.0068 (−0.57)	0.0507 (2.94)**
+6	−0.0017 (−0.40)	0.0422 (3.18)**	−0.0055 (−0.90)	−0.0123 (−0.85)	0.0545 (2.77)*
+7	0.0026 (0.73)	0.0449 (3.09)**	0.0012 (0.22)	−0.0111 (−0.73)	0.0559 (2.66)*
+8	0.0034 (0.77)	0.0483 (3.03)**	0.0023 (0.57)	−0.0088 (−0.56)	0.0571 (2.56)*
+9	0.0092 (1.49)	0.0575 (3.31)**	−0.0046 (−1.30)	−0.0134 (−0.87)	0.0709 (3.05)**
+10	−0.0056 (−0.89)	0.0519 (3.25)**	−0.0140 (−2.49)*	−0.0274 (−1.92)	0.0793 (3.70)**
+11	−0.0056 (−0.89)	0.0463 (2.37)*	−0.0019 (−0.32)	−0.0293 (−1.85)	0.0756 (3.01)**
+12	0.0049 (0.89)	0.0511 (2.55)*	−0.0028 (−0.64)	−0.0321 (−1.83)	0.0832 (3.12)**

Average average residuals (*AARs*) and cumulative average average residuals (*CAARs*) are presented for 1964–1986, the period preceding the 1987 stock market crash. The high-yield portfolios include the ten highest-yielding stocks from the Dow Jones Industrial Average. The low-yield portfolios include the Dow's ten lowest yielding stocks. This panel shows post-formation months $t = +1$ to $t = +12$. Numbers in parentheses are *t*-statistics.

			Panel B		
−11	0.0057 (0.96)	0.0057 (0.96)	0.0065 (1.25)	0.0065 (0.25)	−0.0008 (−0.10)
−10	−0.0029 (−0.74)	0.0028 (0.35)	0.0095 (2.42)*	0.0161 (2.16)	−0.0132 (−1.21)
−9	0.0017 (0.36)	0.0045 (0.61)	0.0028 (0.67)	0.0189 (2.18)	−0.0144 (−1.27)
−8	0.0013 (0.25)	0.0058 (0.67)	0.0090 (1.94)	0.0279 (2.70)*	−0.0222 (−1.64)
−7	−0.0014 (−0.35)	0.0044 (0.44)	0.0034 (0.89)	0.0313 (2.96)*	−0.0269 (−1.85)
−6	−0.0124 (−2.92)**	−0.0080 (−0.71)	0.0002 (0.05)	0.0315 (2.44)*	−0.0395 (−2.32)*
−5	−0.0025 (−0.67)	−0.0105 (−0.85)	0.0065 (1.47)	0.0380 (2.51)*	−0.0485 (−2.48)*
−4	0.0011 (0.27)	−0.0095 (−0.63)	0.0093 (2.27)*	0.0473 (2.96)*	−0.0567 (−2.58)*
−3	−0.0002 (−0.02)	−0.0096 (−0.62)	0.0018 (0.49)	0.0490 (2.96)*	−0.0586 (−2.59)*
−2	−0.0191 (−2.81)**	−0.0287 (−2.13)*	0.0005 (0.09)	0.0495 (2.72)*	−0.0782 (−3.46)**
−1	−0.0161 (−2.08)*	−0.0448 (−2.46)*	0.0047 (0.91)	0.0542 (2.82)*	−0.0991 (−3.74)**
0	−0.0018 (−0.36)	−0.0467 (−2.40)*	0.0074 (1.92)	0.0616 (2.87)*	−0.1083 (−3.74)**

Average average residuals (*AARs*) and cumulative average average residuals (*CAARs*) are presented for 1964–1986, the period preceding the 1987 stock market crash. The high-yield portfolios include the ten highest-yielding stocks from the Dow Jones Industrial Average. The low-yield portfolios include the Dow's ten lowest yielding stocks. This panel shows preformation months $t = -1$ to $t = -12$. Numbers in parentheses are *t*-statistics.

**Significant at the 1 percent level.
*Significant at the 5 percent level.

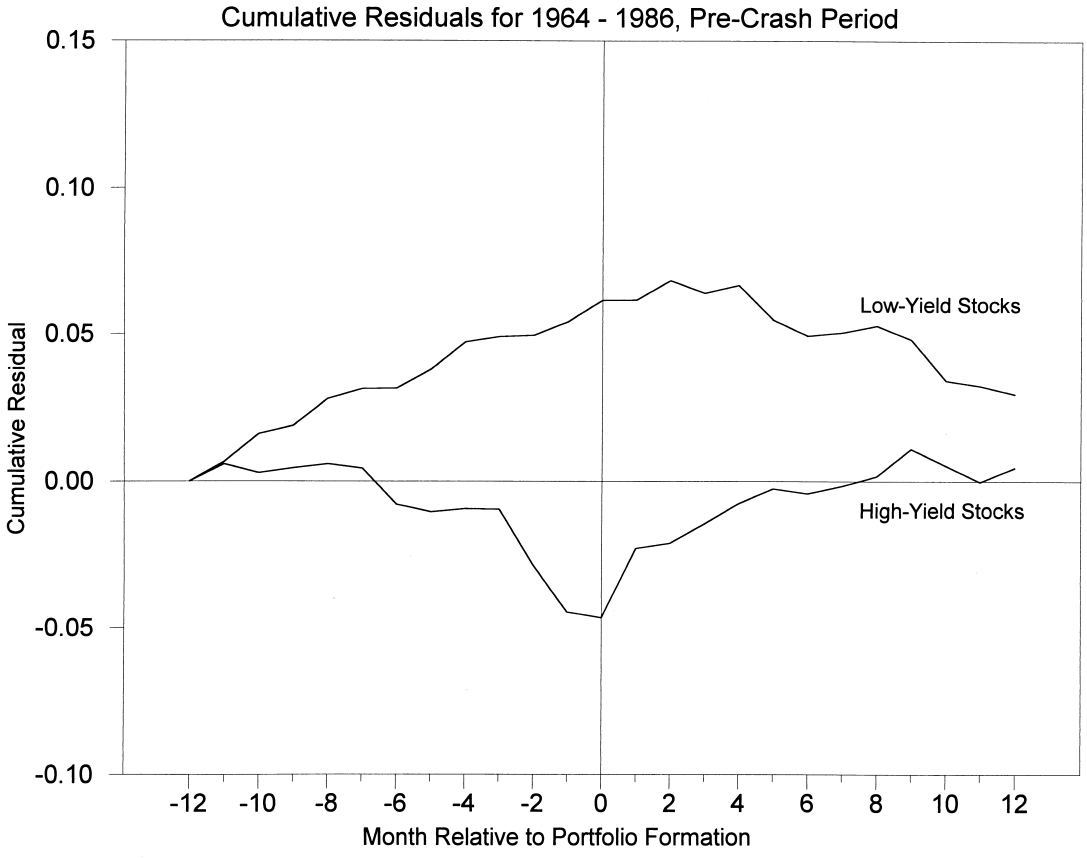

Fig. 2. Cumulative Residuals for 1964–1986, Pre-Crash Period.

Even if the market overreaction phenomenon still exists, investors have not been given the opportunity to exploit it using Dow stocks.

5. Conclusion

Our analysis of the Dow Dividend Strategy is generally consistent with the overreaction hypothesis. During 1964–1997, portfolios of the ten highest yielding Dow stocks underperform the market in the twelve preformation months, and outperform the market in the twelve months following formation. Portfolios of low-yield stocks outperform the market in the preformation period, and slightly underperform in the following twelve months. Furthermore, the overreaction effect is asymmetric and more pronounced in January, as previously found by De Bondt and Thaler.

Results from the pre-crash 1964–1986 period are similar to the 1964–1997 findings. The most notable difference is the more pronounced underperformance of low-yield stocks in the

Table 5
Residuals from Dividend Yield Portfolios, 1989–1997 (Post-Crash Period)

Month	High-Yield $AAR_{H,t}$	High-Yield $CAAR_{H,t}$	Low-Yield $AAR_{L,t}$	Low-Yield $CAAR_{L,t}$	Differences $CAAR_{H,t} - CAAR_{L,t}$
			Panel A		
+1	0.0165 (1.18)	0.0165 (1.18)	0.0176 (1.45)	0.0176 (1.45)	−0.0011 (−0.06)
+2	0.0048 (0.76)	0.0213 (1.41)	−0.0014 (−0.21)	0.0162 (1.00)	0.0051 (0.23)
+3	0.0065 (0.72)	0.0278 (1.69)	0.0015 (0.29)	0.0177 (1.02)	0.0101 (0.43)
+4	−0.0027 (−0.24)	0.0251 (1.48)	−0.0036 (−0.46)	0.0141 (0.67)	0.0110 (0.40)
+5	−0.0058 (−1.09)	0.0193 (0.98)	0.0119 (0.90)	0.0261 (1.39)	−0.0067 (−0.25)
+6	−0.0057 (−0.83)	0.0137 (0.70)	−0.0038 (−0.58)	0.0223 (1.21)	−0.0086 (−0.32)
+7	0.0017 (0.26)	0.0153 (0.81)	−0.0080 (−1.32)	0.0142 (0.65)	0.0011 (0.04)
+8	−0.0021 (−0.25)	0.0132 (0.86)	0.0000 (0.00)	0.0142 (0.85)	−0.0010 (−0.04)
+9	−0.0099 (−1.16)	0.0033 (0.17)	−0.0253 (−4.70)**	−0.0111 (−0.55)	0.0144 (0.52)
+10	−0.0038 (−0.41)	−0.0004 (−0.02)	−0.0178 (−1.30)	−0.0290 (−1.11)	0.0285 (0.80)
+11	−0.0162 (−1.43)	−0.0166 (−0.57)	0.0020 (0.27)	−0.0270 (−1.02)	0.0104 (0.26)
+12	0.0053 (0.55)	−0.0113 (−0.37)	−0.0008 (−0.08)	−0.0278 (−0.88)	0.0165 (0.37)

Average average residuals (*AARs*) and cumulative average average residuals (*CAARs*) are presented for 1989–1997, the period following the 1987 stock market crash. The high-yield portfolios include the ten highest-yielding stocks from the Dow Jones Industrial Average. The low-yield portfolios include the Dow's ten lowest yielding stocks. This panel shows post-formation months $t = +1$ to $t = +12$. Numbers in parentheses are *t*-statistics.

			Panel B		
−11	0.0345 (2.37)*	0.0345 (2.37)*	0.0207 (1.26)	0.0207 (1.26)	0.0137 (0.62)
−10	0.0148 (1.78)	0.0493 (3.19)*	−0.0006 (−0.10)	0.0202 (1.09)	0.0291 (1.21)
−9	0.0169 (1.98)	0.0661 (3.15)*	0.0006 (0.06)	0.0207 (1.00)	0.0454 (1.54)
−8	−0.0002 (−0.01)	0.0660 (2.54)*	0.0021 (0.26)	0.0228 (0.91)	0.0432 (1.20)
−7	−0.0131 (−2.28)	0.0529 (1.80)	0.0016 (0.22)	0.0244 (1.00)	0.0284 (0.74)
−6	−0.0087 (−0.88)	0.0442 (1.20)	0.0111 (1.28)	0.0356 (1.42)	0.0086 (0.19)
−5	−0.0045 (−0.63)	0.0397 (1.13)	−0.0046 (−0.44)	0.0310 (1.18)	0.0087 (0.20)
−4	0.0033 (0.48)	0.0430 (1.31)	0.0014 (0.14)	0.0324 (1.36)	0.0106 (0.26)
−3	−0.0035 (−0.64)	0.0395 (1.15)	−0.0195 (−3.48)**	0.0129 (0.50)	0.0266 (0.62)
−2	−0.0025 (−0.31)	0.0370 (0.92)	−0.0029 (−0.27)	0.0100 (0.30)	0.0270 (0.52)
−1	−0.0094 (−0.97)	0.0276 (0.69)	0.0054 (1.05)	0.0154 (0.53)	0.0122 (0.25)
0	−0.0001 (−0.15)	0.0275 (0.65)	−0.0048 (−0.36)	0.0106 (0.35)	0.0169 (0.33)

Average average residuals (*AARs*) and cumulative average average residuals (*CAARs*) are presented for 1989–1997, the period following the 1987 stock market crash. The high-yield portfolios include the ten highest-yielding stocks from the Dow Jones Industrial Average. The low-yield portfolios include the Dow's ten lowest yielding stocks. This panel shows preformation months $t = -1$ to $t = -12$. Numbers in parentheses are *t*-statistics.

**Significant at the 1 percent level.
*Significant at the 5 percent level.

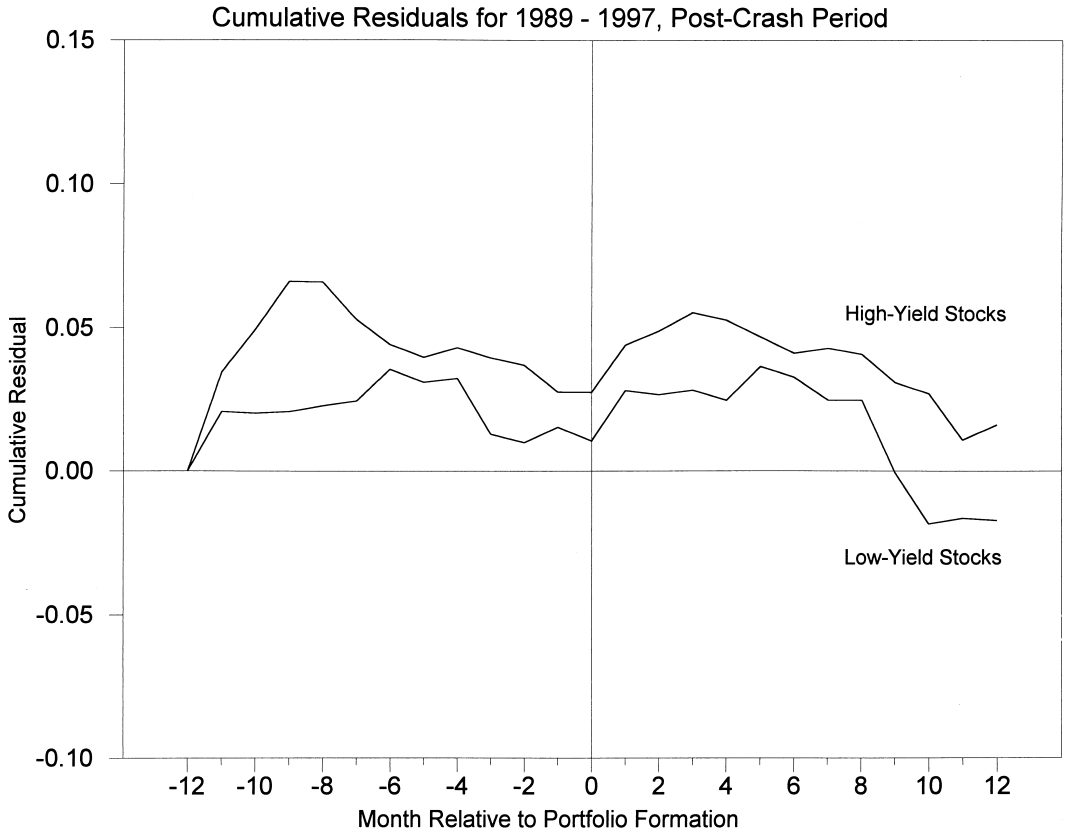

Fig. 3. Cumulative Residuals for 1989–1997, Post-Crash Period.

postformation period. In contrast, the post-crash results exhibit greater variability, perhaps due in part to the shorter sample period. Over 1989–1997, high-yield stocks have small excess returns during the first three months, but then drop back. Thus, during the years in which the DDS was becoming popular, the strategy itself was no longer successful.

This study did not consider the risk characteristics of the high and low yield portfolios. However, as noted in Section 2 above, De Bondt and Thaler (1987) find that the winner-loser effect cannot be attributed to changes in risk as measured by CAPM betas. They also find that the winner-loser effect is not primarily a size effect; there is no small firm effect in our study since Dow stocks are typically among the largest firms.

There remains the possibility that the Dow Dividend Strategy, and even the entire market overreaction literature, reflects nothing more than data mining. According to Fischer Black, "most of the so-called anomalies that have plagued the literature on investments seem likely to be the result of data mining" (Black, 1993, p. 9). Fama (1998) observes that some anomalies are overreactions while others are underreactions, and the approximately equal split between the two is consistent with market efficiency. Furthermore, Fama claims that both types of anomalies usually vanish when different methodologies are adopted. In light of

these concerns, the best investment strategy may be the simplest—buy and hold a well-diversified portfolio.

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