Modern Fool's Gold: *Alpha in Recessions*

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Active portfolio management involves the selection of securities and market timing in an attempt to provide value to fund investors. It has been suggested that periods of falling securities prices provide opportunities for expert managers to locate underpriced investments. The notion that active managers are better able to earn their management fees during recessions is cited in the literature (Moskowitz [2000], Kosowski [2006], and Glode [2011]) as a justification for holding actively managed funds within a portfolio. This assertion has been subject to little scrutiny. In this article, we estimate the performance of active equity portfolio management across business cycles.

Our study attempts to answer two simple questions: Is active portfolio management performance superior in recessions relative to passive investing, and to what extent is performance persistent across business cycles? Our findings suggest that active portfolio management is not superior to a passive investment strategy in either expansions or recessions. We also find that persistence is weak across business cycles. Collectively, the findings support a low-cost passive investment strategy for retail investors across all business cycles.

Our work is closely related to Moskowitz [2000] and Kosowski [2006]. We expand on prior work in this area by examining portfolio performance and the degree of persis-

tence across business cycles. Our empirical findings are clear: Active portfolio management costs investors roughly 1% a year during expansions and across time from July 1990 to March 2010.[1] However, the results indicate that active portfolio managers, as a group, provide enough value to investors in recessions to cover the higher expenses they impose on investors.

We also estimate the degree of persistence across business cycles. The persistence results associated with the probability of repeat performance for individual funds in subsequent business cycles suggest that there is over 80% turnover in performance rankings across business cycles. In other words, fewer than 20% of the prior business cycle "winners" are shown to repeat prior performance levels in subsequent business cycles. Similarly, fewer than 20% of prior business cycle "losers" are shown to repeat prior poor performance across business cycles. Persistence pertaining to decile portfolios ranked on prior business cycle performance is also weak. In short, our findings suggest that active mutual fund performance fails to cover higher fees except in recessionary environments and that consistent performance across business cycles is unlikely. More importantly, our results suggest that active portfolio management, in aggregate, fails to provide positive alpha in any economic environment.

COSTS AND PERFORMANCE OF ACTIVE PORTFOLIO MANAGEMENT

The debate over investment manager selection hinges on whether active portfolio management can provide sufficient returns to offset the additional expenses and risks that it imposes on investors' portfolios. The average expense ratio for active mutual funds currently stands near 1.4% (Blanchett [2010]), which is significantly higher than the cost of passive investments. Recognition of the failure of active portfolio managers, as a group, to offset higher fees, has led to the recommendation that most investors should select low-cost index funds (Bogle [2008]). The value added or subtracted by active portfolio management must consider expenses and performance of the fund. Studies suggest the cost of active portfolio management to be near 1% per year (Wermers [2000] and Fama and French [2010]) after fees are considered. In some cases, the estimates for the cost of portfolio management are understated due to a failure to account for all of the brokerage commissions, market makers, and other trading costs (Haslem [2006]).

The higher costs and the inability of active portfolio managers to provide superior results, in aggregate, can have a significant impact on investor welfare over time. Jensen [1968] finds average underperformance as measured by net returns for active managers to be roughly 9% over a ten-year investment horizon. Subsequent studies provide similar conclusions (Carhart [1997] and Fama and French [2010]).

If alpha exists, the investor must still be concerned with the performance risk, style drift, and variation in tax efficiency of the portfolio. These aspects of the portfolio may change significantly with or without a manager change (Gallo and Lockwood [1999]). While much of the literature touts the cost of active management, some researchers have noted that tax strategies, rebalancing, and research capabilities can boost the value of active portfolio management (Hortog and Gordon [2003]). The risk is whether any value added can overcome the expense that these strategies generate.

PERSISTENCE OF RETURNS

In addition to the costs and potential rewards of active management, an investor is also concerned with the consistency of alpha. Many authors have estimated the persistence of performance for active fund managers. Some researchers conclude that persistence is short lived (Carhart [1997] and Bollen and Busse [2004]). Carhart [1997] finds that persistence is prominent among the worst performers and short-lived for the top performers. The author also suggests that persistence is more a function of luck than stock-picking skill. Weak persistence is also suggested by studies using different benchmarks to assess performance. For example, Daniel et al. [1997] use benchmarks based on market capitalization, value, and momentum characteristics of funds and find weak evidence of persistence in mutual fund performance. Other studies look at style and expense categories and find that persistence is not always confined to shorter periods. Evaluating no-load, growth-oriented funds, Hendricks, Patel, and Zeckhauser [1993] find that persistence can be seen for up to two years.

PERFORMANCE ACROSS BUSINESS CYCLES

Another dimension of alpha is whether active managers tend to add value during bad times. Investors may be willing to accept underperformance across time in exchange for better fund performance in recessions (Glode [2011]). Recent studies suggest that aggregate active portfolio management performance is best in recessions. Moskowitz [2000], using National Bureau of Economic Research (NBER) classifications of recessionary environments, finds that active management is able to generate an additional 1% (after fees) a year in recessions versus expansions. Similar studies find that actively managed portfolios, after fees, tend to outperform benchmarks when the economy is going into or pulling out of a recession (Fortin and Michelson [2002]). Kosowski [2006] estimates net alpha from active portfolio management to be roughly 4 % per year in recessions. These studies suggest active investment strategies perform better in recessions than in expansions and in some cases provide positive risk-adjusted performance in recessions.

However, other work highlights the risk associated with active portfolio management performance across business cycles. Philips and Ambrosio [2008] report that the market outperformed active managers in half of the recessions since 1970. In addition, the authors fail to identify any consistent outperformance by active portfolio managers. Similar results can be seen in Standard & Poor's Index Versus Active Funds Scorecard, which

shows substantial underperformance in the last decade of active funds relative to S&P Indices (Srikant [2010]). This strand of research draws attention to the difficulty of actively managed portfolios overcoming higher fees in any economic environment.

SAMPLE AND METHODOLOGY

Equity mutual fund data was collected from Morningstar Direct. We excluded institutional share classes and index funds in an attempt to focus on results applicable to retail investors invested with active portfolio managers. Monthly fund-level returns were calculated by weighting share class returns by the proportion of total net assets for each share class for a given fund.

Exhibit 1 provides the NBER business cycle start and end dates. Business cycle duration includes both start and end date. Business cycle labels in Exhibit 5 through Exhibit 8 consist of the business cycle followed by the year-end date for the respective business cycle. Monthly mutual fund data, inclusive of the start and end date, extends from August 1990 through March 2010. The starting date represents the beginning of the 1990 NBER recession. Our data contains nine months of the most recent expansion that began in July 2009.

Exhibit 2 summarizes mutual fund attributes across the sample. Our sample, on average, includes 1,511 mutual funds per month. The average annual mutual fund return stands near 7%, and the average expense ratio is 1.4%, with an average holding period just over one year. Total net assets are shown in millions of dollars.

Exhibit 3 shows the CAPM, three-factor, and four-factor alpha estimates. Fama and French [1993] and Carhart [1997] provide details on three- and four-factor regressions. For Exhibit 4 through Exhibit 8, we use the four-factor alphas. The four-factor regression form typically has higher explanatory power. Alphas in Exhibit 3 are estimated as follows:

$$r_{mvw,t} = \alpha_t + \beta_1 * MKTRF_t + \beta_2 * SMB_t + \beta_3 * HML_t + \beta_4 * UMD_t \tag{1}$$

where:

$r_{mvw,t}$ = net monthly excess return on market value-weighted active portfolio

α_t = net monthly CAPM, three-factor, or four-factor alpha

$MKTRF_t$ = monthly excess return on Center for Research in Security Prices Value-Weighted Index

SMB_t, HML_t, and UMD_t = size, value, and momentum factors

Equation (1) shows the four-factor regression. CAPM regressions exclude the size (SMB), value (HML), and momentum (UMD) factors while the three-factor regression only excludes the momentum factor (UMD). For each month, we create a market value-weighted portfolio return (MVW) for all actively managed funds. The weights are determined by monthly total net assets. Excess returns are based on the one-month U.S. Treasury bill rate. Data for explanatory variables in Equation (1) is collected from the Center for Research in Security Prices (CRSP). The CRSP Value-Weighted Index consists of all NYSE, AMEX, and NASDAQ stocks. For Exhibit 4 through Exhibit 7, we use the individual monthly excess fund returns ($r_{i,t}$) in place of the monthly

E X H I B I T   1
National Bureau of Economic Research Business Cycles

Business Cycle	Start Date	End Date	Duration
Recession	August 1990	March 1991	8 months
Expansion	April 1991	March 2001	120 months
Recession	April 2001	November 2001	8 months
Expansion	December 2001	December 2007	73 months
Recession	January 2008	June 2009	18 months
Expansion	July 2009	–	–

E X H I B I T   2
Mutual Fund Attributes: August 1990–March 2010

Fund Attribute	Mean	Std. Dev.	Q1	Median	Q3
Monthly Return	0.60%	5.60%	–2.10%	1.00%	3.80%
Expense Ratio	1.40%	0.50%	1.00%	1.30%	1.70%
Annual Turnover	89.60%	89.70%	34.80%	66.00%	115.00%
Total Net Assets	1,006.80	4,243.70	40.10	149.30	569.90

Exhibit 3
Market Value-Weighted Active Portfolio Regressions

Regression Form	Net Alpha	Beta	Size	Value	Momentum	R²
Panel A: Full Sample						
August 1, 1990 thru March 31, 2010						
CAPM	−0.79**	0.98***				0.988
3-Factor	−0.78**	0.96***	0.06***	−0.020**		0.991
4-Factor	−0.97***	0.97***	0.06***	−0.013	0.018***	0.992
Panel B: Recessions						
CAPM	−0.30	1.00***				0.994
3-Factor	−0.50	1.00***	0.015	−0.081***		0.996
4-Factor	−0.43	1.00***	0.017	−0.081***	0.003	0.996
Panel C: Expansions						
CAPM	−0.73*	0.97***				0.985
3-Factor	−0.66*	0.96***	0.070***	−0.011		0.989
4-Factor	−1.03***	0.96***	0.064***	−0.002	0.030***	0.991

Notes: Fund returns are net of expenses. Net alpha is the monthly alpha estimate multiplied by 12. ***, **, * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Exhibit 4
Monthly Alpha Distribution by Business Cycle

Decile Portfolio	Full Sample	Recessions	Expansions	Exp–Rec
1 (Worst)	−1.08%	−1.88%	−1.25%	0.64%***
2	−0.38%	−0.70%	−0.38%	0.31%***
3	−0.26%	−0.45%	−0.26%	0.19%***
4	−0.18%	−0.30%	−0.18%	0.12%***
5	−0.13%	−0.17%	−0.12%	0.05%***
6	−0.07%	−0.05%	−0.06%	−0.01%***
7	−0.02%	0.08%	0.00%	−0.08%***
8	0.05%	0.26%	0.07%	−0.19%***
9	0.15%	0.54%	0.19%	−0.35%***
10 (Best)	0.79%	2.71%	0.64%	−2.07%***
Top decile–bottom decile	1.86%***	4.59%***	1.89%***	–

Note: *** indicates statistical significance at the 0.01 level.

excess market value-weighted portfolio returns ($r_{mvw,t}$). This substitution sheds light on the distribution of alpha across business cycles and allows for persistence tests.

Results

Exhibit 3 contains the net annualized alpha estimates for the MVW portfolio regressions. Alphas from the MVW fund return regressions shed light on whether aggregate wealth invested in actively managed mutual funds benefits from investment skill of fund managers.

The full sample results in Panel A suggest that the annual return on aggregate wealth invested in actively managed mutual funds is roughly 1% less than that of wealth invested in a low-cost, well-diversified index. Panel B contains annual alpha estimates for recessions, where the results indicate that active fund managers, as a group, tend to perform better in recessions than they do in expansions. However, alpha in recessions is indistinguishable from zero, which suggests active managers in aggregate may have sufficient skill during recessions to overcome the higher fees imposed on investors. Additional explanations independent of skill are also possible (Kosowski [2006]). Panel C shows alpha estimates for expansions. The annual alpha estimates in expansions range from 0.73% to 1.03% less than the market value-weighted return on the market index. The alpha estimates pertaining to expansions are very close to the full sample alphas. This suggests that active fund managers, collectively, underperform passive investment strategies in expansions and over longer investment horizons including both expansions and recessions.

Exhibit 3 provides insight on the impact of actively managed funds for a typical investor, whereas the remaining analysis sheds light on persistence and the variation in performance across funds in recessions and expansions. In Exhibit 4, we rank mutual funds into decile portfolios based on net monthly alphas across the sample and for recessions and expansions. For each decile of fund performance within a business cycle we calculate the mean monthly four-factor alpha. The far right column (Exp–Rec) shows the difference in mean monthly alpha between decile portfolios in expansions and recessions. The best performers, as a group, in recessions appear to outperform the top decile of performance in expansions by roughly 2% monthly. However, the worst performers in recessions seem to underperform the worst performers in expansions by 0.64% a month. The bottom row (Top

Decile–Bottom Decile) shows the difference in mean monthly alpha between the top and bottom decile of performance within each business cycle.

Recessions appear to have the greatest variability in performance with a difference of 4.6% a month between the extreme four-factor alpha deciles. Collectively, these results show that there is more risk (i.e., variability and downside exposure) in performance across recessions and that risk-adjusted alpha for the worst performers in recessions is significantly more negative than that for the worst performers in expansions. Differences in mean four-factor alphas across business cycles and between top and bottom performers within each business cycle are all significant at the 1% level.

Exhibit 5 is the first table pertaining to performance persistence across business cycles. For each decile portfolio of performance within a business cycle, we estimate the mean monthly four-factor alpha. Columns labeled "Unconditional" represent the mean monthly alpha estimate for each recession for respective deciles of performance. The column to the right of each unconditional estimate contains the mean monthly alpha in the respective business cycle based on rankings in the prior business cycle. We exclude the 1991 recession from persistence analysis due to limited monthly total net asset data.[2]

The performance within the 2007 expansion is based on 2001 recession rankings and is consistently negative. The alpha estimates in the 2007 expansion range from −0.19% per month for the worst performers in 2001 Recession to −0.07% per month for the best performers in the 2001 recession. Performance is poor in the 2007 expansion irrespective of performance in the 2001 recession. We next look at persistence in performance across recessions by examining the distribution of alpha for the 2009 recession. The persistence results remain weak, and only the top performers (decile 10) from the 2001 recession maintain a positive alpha. However, the monthly alpha for these top performers diminishes to 0.02% per month. The results for the final column pertain to the first nine months of the 2010 expansion, where actively managed funds as a group fare better than all past business cycles. The Spearman rank coefficient tests the correlation between fund rankings across business cycles and is less than 10% in all instances, which suggests weak persistence. In short, Exhibit 5 shows that persistence is weak whether the investor is concerned with repeat performance from recession to expansion or from recession to recession.

Similar to Carhart [1997], Exhibit 6 tests the consistency in individual mutual fund rankings across the two most recent NBER recessions. The decile rankings are based on the four-factor alpha. Decile 1 represents poor performance and decile 10 represents top performance in each business cycle. The percentages represent the probability of an individual mutual fund attaining

E X H I B I T 5
Portfolio Performance Formed on Prior Business Cycle

Decile Portfolio	Unconditional Recession 2001	Expansion 2007	Unconditional Recession 2001	Expansion 2009	Unconditional Recession 2009	Expansion 2010
1 (Worst)	−1.69%	−0.19%	−1.69%	−0.26%	−1.25%	−0.15%
2	−0.79%	−0.11%	−0.79%	−0.22%	−0.68%	0.01%
3	−0.50%	−0.14%	−0.50%	−0.12%	−0.47%	0.02%
4	−0.31%	−0.11%	−0.31%	−0.18%	−0.32%	0.09%
5	−0.14%	−0.14%	−0.14%	−0.16%	−0.21%	0.08%
6	0.02%	−0.15%	0.02%	−0.14%	−0.09%	0.05%
7	0.21%	−0.16%	0.21%	−0.22%	0.02%	0.15%
8	0.44%	−0.14%	0.44%	−0.04%	0.16%	0.02%
9	0.76%	−0.07%	0.76%	−0.01%	0.37%	0.22%
10 (Best)	1.77%	−0.07%	1.77%	0.02%	1.12%	−0.20%
Top Decile-Bottom Decile		0.12***		0.28***		−0.05***
Spearman Rank Coefficient		0.10***		0.09***		0.06***

Note: *** indicates statistical significance at the 0.01 level.

E X H I B I T 6
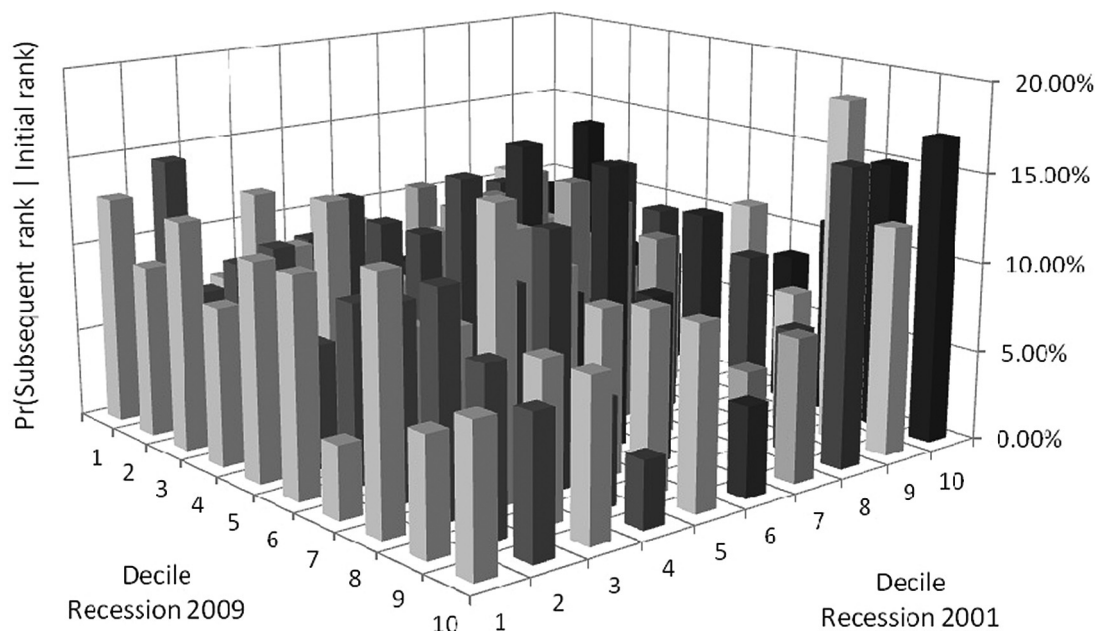**Probability of Individual Fund Repeat Performance**

E X H I B I T 7
Repeat Performance Regressions

	Prior Alpha	Expense	Turnover	Load	Size	Flow	Tenure	R²
Panel A: 2007 Expansion Performance								
	0.0188							0.0305
	0.0070	−0.0836***	−0.0001***	−0.0029	−0.0001***			0.031
	−0.0050	−0.0680***	−0.0002***	−0.0007	−0.0001	0.0411***	0.0001***	0.042
Panel B: 2009 Recession Performance								
	0.0036							0.025
	−0.0245	−0.1160***	−0.0002	0.0040	−0.0001			0.027
	−0.0250	−0.0985***	−0.0003*	0.0061*	−0.0000	0.0220***	0.0001	0.028
Panel C: 2010 Expansion Performance								
	−0.0046							0.029
	0.0147	−0.0528	−0.0001	−0.0002	−0.0000			0.031
	−0.0018	−0.0499	−0.0001	0.0021	−0.0000	0.0251***	0.0001***	0.036

Note: *** indicates statistical significance at the 0.01 level.

the respective decile ranking in the 2009 recession based on the decile ranking attained in the 2001 recession. While prior winners are somewhat more likely to remain winners, the turnover in rankings across business cycles is consistently greater than 80%. In other words, fewer than 20% of the 2001 recession "winners" are shown to retain the same ranking in the 2009 recession. We document similar findings, as seen in Exhibit 6,

pertaining to the remaining conditional business cycle rankings outlined in Exhibit 5.

Exhibit 7 complements the results in Exhibits 5 and 6 by providing regression results pertaining to the degree of persistence in performance across business cycles. We attempt to explain the variation in business cycle performance by altering the model for alpha devel-

oped by Carhart [1997]. The degree of persistence in performance in Exhibit 7 is estimated as follows:

$$\alpha_{i,t} = \alpha_0 + \beta_1 * \alpha_{i,t-1} + \beta_2 * Exp_{i,t} + \beta_3 * Turn_{i,t} + \beta_4 * Load_{i,t} + \beta_5 * Size_{i,t} + \beta_6 * Flow_{i,t} + \beta_6 * Tenure_{i,t} \qquad (2)$$

The parameters in Equation (2), where i represents each fund and t represents a month in the business cycle associated with the dependent variable, are defined as follows: $\alpha_{i,t}$, the four-factor alpha in the business cycle as defined in the panel headings in Exhibit 7; $\alpha_{i,t-1}$, the four-factor alpha in the 2001 recession for Panels A and B whereas prior alpha in Panel C is estimated in the 2009 recession; $Exp_{i,t}$, the annual expense ratio; $Turn_{i,t}$, the annual turnover ratio; $Load_{i,t}$, the maximum front-end load; $Size_{i,t}$, the natural logarithm of monthly total net assets; $Flow_{i,t}$, the monthly fund flow as a percentage of prior month total net assets; and $Tenure_{i,t}$, the tenure of the manager that has been with the fund the longest.

Each panel in Exhibit 7 contains three unique regression specifications. The results associated with the insignificant prior alpha coefficient are a signal that prior performance is not a reliable indication of future performance. The insignificance is consistent across model specifications and various business cycles. Similar to the results in Exhibits 5 and 6, Exhibit 7 suggests that repeat performance is weak from recession to expansion or recession to recession.

Exhibit 8 sheds light on persistence in performance from a different angle than that seen in Exhibits 5 and 6 by showing the performance of the decile portfolios from the 2001 recession rankings across all subsequent business cycles. At the end of the 2001 recession, we sort mutual funds into decile portfolios based on four-factor alphas, where 10 indicates the decile of top performing mutual funds, 9 indicates the next best decile of mutual funds ranked by the four-factor alpha, and so on. Finally, 1 indicates the decile portfolio of worst per-

Exhibit 8

Performance Persistence of Decile Portfolios Formed in 2001 Recession
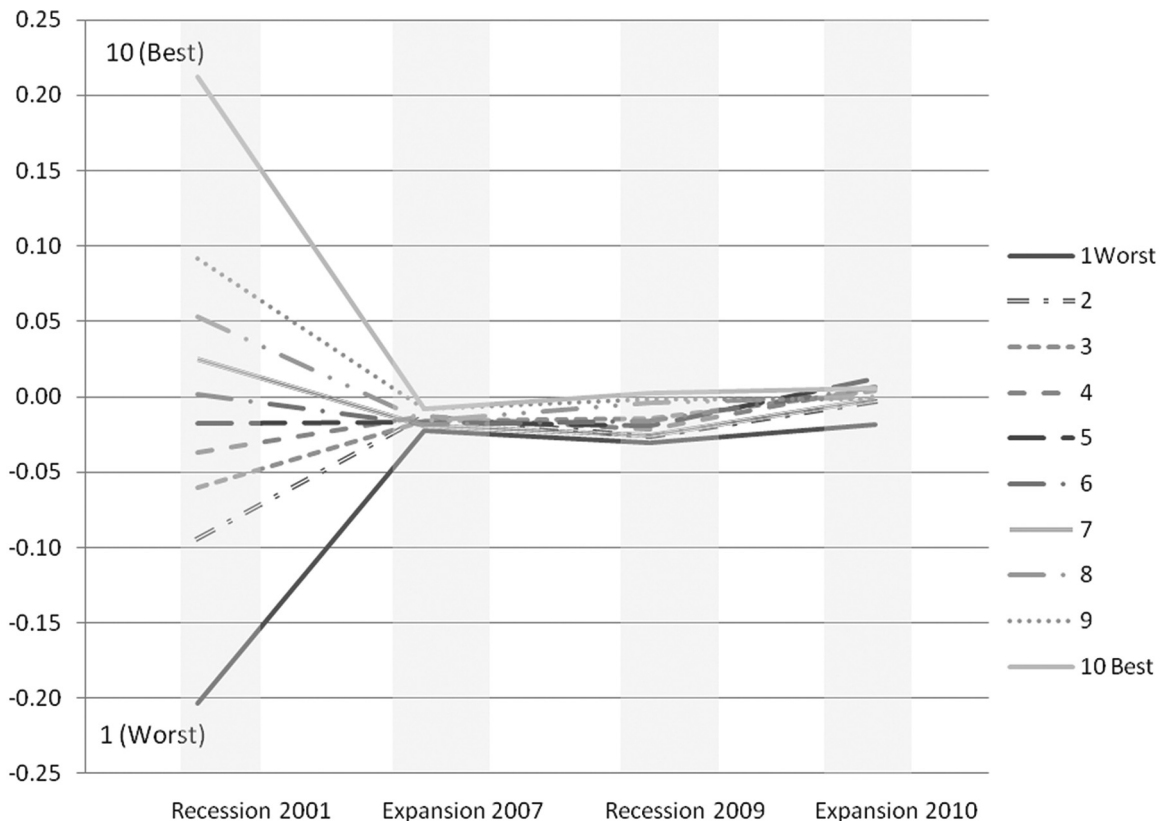
forming mutual funds. Next, we calculate performance for those decile portfolios across time. The results show some persistence for poor performers; however, mean reversion to roughly a negative 1% annual four-factor alpha is seen for all decile portfolios in the 2007 expansion and 2009 recession. Alpha, irrespective of 2001 recession rankings, is roughly 0% in the 2010 expansion. Collectively, this exhibit illustrates the dominance of mean reversion rather than persistence in decile portfolio performance across business cycles.

SUMMARY AND CONCLUSIONS

Using 20 years of monthly mutual fund data, we find active portfolio management fails to add value above the higher costs it imposes on investors. These findings are relevant to both expansions and recessions. However, the empirical results suggest that active portfolio managers, on average, do exhibit enough skill to offset fees in recessions. In other words, the after-expense average returns to active managers in recessions appear to be on an even footing with an index strategy when considering performance alone.

We also find weak persistence in performance across business cycles. Our empirical results suggest weak persistence as seen with the performance rank correlations in Exhibit 5, the contingency table in Exhibit 6, the regression results in Exhibit 7, and the performance of decile portfolios in Exhibit 8. Specifically, the correlation between performance ranks across business cycles is less than 10% in all scenarios examined. The contingency table in Exhibit 6 shows greater than 80% turnover across rank deciles from the 2001 recession to the 2009 recession. Further, Exhibit 7 shows that prior business cycle performance is not a reliable indication of future business cycle performance.

Weak persistence is also explored through the examination of subsequent business cycle performance conditioned upon decile portfolio formation in the 2001 recession. The takeaway from this analysis is that mean reversion appears to dominate persistence effects for each of the decile portfolios. With the exception of the recent expansion that began in July 2009, the four-factor alphas for each decile portfolio tend to cluster around a −1% mean annual alpha. This is consistent with our estimate of market value–weighted alpha across the full sample seen in Exhibit 3. Since the empirical results do not rule out persistence across business cycles, we suggest that

future research might explore which fund characteristics, if any, are significantly related to repeat winners and losers across business cycles. In addition, our aggregate findings on mutual fund performance leave the door open to research pertaining to specific active fund family performance across business cycles.

Our empirical results question the pursuit of alpha in both expansions and recessions based on an aggregate inability of active managers to overcome the higher fees imposed on investors. The persistence findings also suggest that a high degree of risk is associated with sustaining performance across different economic conditions.

In sum, the lack of aggregate active portfolio management performance across business cycles and the risk associated with repeat performance should be considered when determining whether a passive or active fund manager is appropriate for the investor.

ENDNOTES

[1]Sample includes start and end month.
[2]Conditional performance rankings of the 2001 expansion on the performance rankings in the 1991 recession would be based on only 22 funds compared to the average monthly fund count of 1,511 across the sample.

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