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Mutual Fund Performance: An Empirical Decomposition into Stock-Picking Talent, Style, Transactions Costs, and Expenses: Discussion

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Discussion

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The current paper by Wermers is perhaps the most comprehensive and detailed study of mutual fund performance to date. The empirical literature on active management ability has found somewhat disparate results. Studies by Jensen (1968), Malkiel (1995), Gruber (1996), and Carhart (1997), for instance, find that active managers fail to outperform passive benchmark portfolios and in many cases underperform passive indices, even before expenses. Taking into account expenses and transactions costs incurred from active management, these results indicate that active managers actually de-

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stroy value, suggesting that investors are better off holding broad market indices. Another strand of the literature, however, finds that active managers do exhibit some stock-picking talent. For instance, Grinblatt and Titman (1989, 1993), Grinblatt, Titman, and Wermers (1995), Daniel et al. (1997), and Wermers (1997) find that mutual funds tend to select stocks that outperform a broad market index and outperform passive benchmarks of stocks with similar characteristics. The difference between these two sets of papers is that the first group examines the *net* returns of funds (i.e., after transactions costs and expenses) and analyzes the *entire* fund portfolio return (i.e., all equities, bonds, and cash held). The second set of studies examines the individual equity holdings of funds, creating a “hypothetical” portfolio for each fund that contains only stocks¹ and does not account for transactions costs or expenses.

The current paper attempts to reconcile these two strands of the literature by examining both the equity holdings of mutual funds (*gross* returns) and their *net* returns to investors. Merging two large databases, the equity holdings data from *CDA Investment Technologies* with net fund returns from the CRSP database, Wermers is able to decompose mutual fund returns into stock-picking talent, characteristic selectivity and timing of the stocks held, trading costs, and expenses. The main finding in the paper is that there is a 2.3 percent annual return difference between gross and net returns for the average fund. Gross returns from equity holdings appear to outperform a broad market index by 1.3 percent per year, whereas net fund returns underperform the same index by 1.0 percent per year. Of this 2.3 percent difference, about 1.6 percent is split evenly between fund expenses and transactions costs. The remainder is attributed to bond and cash holdings of the fund that underperformed stocks over the sample period. In addition, of the 1.3 percent gross outperformance of stocks held by mutual funds over a broad market index, only 60 basis points can be attributed to the characteristics of these stocks. In other words, even if you wish to penalize fund performance because fund managers might choose certain types of stocks (i.e., large, growth, high momentum stocks) that performed well over the sample period, either because you believe these characteristics are associated with an unknown source of systematic risk or because you do not wish to credit managers for following passive strategies that anyone should be able to replicate (and hence that do not require stock-picking talent), the average manager still outperforms benchmarks of similar characteristics² by over 70 basis points per year. This added value, however, appears to be offset by larger expenses and trading costs being incurred. This is further illustrated by the performance of funds with the highest and lowest amount of trading activity.

¹ In fact, when analyzing adjusted returns and performance measures these studies also have an additional requirement that the stock exist on CRSP and COMPUSTAT over some prior period. Hence, some equity positions may also be omitted from the analysis.

² In this case, these benchmarks are well-diversified portfolios of stocks of similar firm size, book-to-market equity ratio, and momentum (past 12-month return).

Funds in the top turnover decile exhibit the greatest stock-picking ability (1.25 percent per year) but incur large estimated trading costs of 3.3 percent and fund expenses of 1 percent. The lowest turnover decile of funds exhibit no stock-picking talent and only incur 28 basis points from their annual trades and 68 basis points from expenses.

The evidence appears to be generally consistent with information efficiency, where active management does reap higher average returns (and managers do exhibit some stock-picking ability) but only enough to cover expenses and transactions costs. This paper greatly improves our understanding of the mutual fund industry and its added value and helps reconcile a large and important debate in the performance literature. However, I have some concerns about some of the analysis and the conclusions reached, and have several suggestions for further study.

I. Some Comments and Suggestions

Wermers attributes much of the disparity between gross and net fund returns to cash and bond holdings that do not appear in the stock holdings database. However, there may be other explanations driving these results. Before mentioning other potential explanations, it is instructive to briefly explain how the gross returns are calculated. Computing gross fund returns from stock holdings entails creating hypothetical portfolios from quarterly stock positions. The quarterly position statements reflect fund equity holdings as of a specific date. Wermers uses the lagged or beginning of quarter positions of the funds and reweights the stocks held by the fund so that they sum to one, essentially treating the fund as holding 100 percent of its assets in equities. Because gross fund returns are derived from quarterly position statements, although net fund returns are simply monthly changes in net asset value, gross and net fund returns may also differ because the hypothetical equity portfolio may differ from the true equity portfolio. Consider, as one possibility, window dressing. We know fund managers tend to massage their positions just prior to reporting their holdings by buying recent good performers and selling off dismal performers or by changing allocations to certain sectors based on recent sector performance, so that they will look better in the eyes of investors. Such window dressing may distort our view of hypothetical performance when compared with actual performance. Another possibility is that funds pursue active tax trading strategies at the end of the year by selling off stocks that have performed poorly over the year. Wermers attempts to account for these reporting effects by using lagged fund positions to compute his portfolios, which should alleviate these potential effects if returns are distributed independently through time. However, because we know there is persistence in individual stock returns (see Jegadeesh and Titman (1993)) and sectors (see Moskowitz and Grinblatt (1999)) at short horizons, the effect may not be alleviated. Hence, part of the disparity between gross and net fund returns may be driven by fund reporting biases such as window dressing or tax-motivated trading.

To test this conjecture, I recomputed the gross and net returns of funds across each quarter separately.³ Because window dressing and other agency phenomena are more likely to occur at the end of the year (when portfolio positions are more carefully monitored by investors for tax and other reasons) and because first quarter fund gross returns are computed from fourth quarter reported holdings, any continuation from window dressing should be strongest at the beginning of the year. Window dressing and tax trading will affect both gross and net returns at the beginning of the year. However, they may affect gross returns more because the quarterly snapshots of fund positions do not fully capture mutual fund trades (i.e., trading within the quarter). Hence, window dressing may be contributing to the discrepancy between gross and net fund returns. If so, then this discrepancy should be largest in the first quarter of the year and then decline over subsequent quarters. Table I indicates that this is indeed the case, because the difference between gross and net returns is largest in the first quarter (almost 3 percent, annualized) and then declines steadily over the next two quarters. Furthermore, I separate out the months of January and December from the rest of the year by maintaining the quarterly portfolio positions but updating the monthly returns on the equities being held. I find that the difference between gross and net returns is greatest in January and much larger at the turn of the year (January and December) than in other months, consistent with end-of-year reporting biases such as window dressing or tax-motivated trading distorting the hypothetical equity portfolio computation.

Wermers's claim that the difference between gross and net fund returns is driven by cash and bond holdings not accounted for in the gross returns may also be consistent with these seasonal patterns, because bonds underperform stocks significantly more at the beginning of the year. I am merely offering other plausible explanations that are equally consistent with the data. Window dressing and tax trading are just two possible alternatives that might contribute to the discrepancy between gross and net fund returns, and they seem remarkably consistent with the data. In addition to window dressing or tax trading, however, there may be other reasons why the hypothetical equity portfolio might differ from the true equity portion of the fund. For instance, matching stocks with CRSP and COMPUSTAT may induce a selection bias, because the study requires the existence of a past 12-month return history and available book value of equity from the prior fiscal year for each stock. In addition, the delisting bias on the CRSP tapes (see Shumway (1997) and Shumway and Warther (1999)) may also generate higher gross returns than net (actual) fund returns. My guess is that these effects are rather small, but they can be controlled for quite easily following the method proposed in Shumway (1997), and it may be interesting to quantify their effects on performance studies that use reported equity positions.

³ Russ Wermers was kind enough (and courageous enough) to provide me with monthly returns and performance measures for the total asset weighted-average fund in his sample. I have confirmed that the numbers match summary statistics in his tables.

Table I
Annualized Monthly Mutual Fund Returns (1975–1994)

Monthly returns on Wermers's sample of mutual funds are computed over the January 1975 to December 1994 time period. The table reports the average gross stock holdings return, average stock selectivity measure (*CS*), net fund return, characteristic timing measure (*CT*), and average stock style measure (*AS*) across all funds (weighted by total assets under management). The return and performance measures are averaged for each quarter separately, for December, January, and February through November separately, and during recessions and nonrecessionary months (defined by the NBER). All returns are annualized and reported as percentages, with time-series *t*-statistics reported in parentheses.

	Gross	<i>CS</i>	Net	<i>CT</i>	<i>AS</i>
1st quarter	20.14 (2.55)	0.57 (1.03)	17.04 (2.54)	−0.15 (−0.33)	15.37 (2.00)
2nd quarter	18.74 (4.34)	0.82 (1.63)	16.27 (4.29)	−0.01 (−0.04)	14.91 (3.42)
3rd quarter	6.58 (0.87)	0.19 (0.27)	5.97 (0.93)	0.02 (0.10)	8.16 (1.22)
4th quarter	14.27 (1.86)	1.02 (1.90)	12.54 (1.89)	0.17 (0.58)	11.81 (1.62)
Dec.	28.08 (2.80)	3.56 (2.76)	24.42 (2.83)	0.89 (1.72)	24.14 (2.54)
Jan.	36.13 (2.07)	0.33 (0.23)	30.80 (2.11)	0.32 (0.34)	27.31 (1.73)
Feb.–Nov.	13.11 (3.28)	0.47 (1.26)	11.43 (3.33)	−0.11 (−0.58)	11.24 (3.06)
Recession	21.28 (1.76)	1.55 (1.34)	19.10 (1.89)	0.87 (1.31)	11.49 (1.06)
Nonrecession	15.39 (3.99)	0.57 (1.57)	13.25 (4.00)	−0.14 (−0.80)	14.03 (3.96)

Most likely it is a combination of all of these effects that contributes to gross and net fund return differences, but it would be interesting to quantify the importance of each.

Finally, if the discrepancy between gross and net returns is due to cash and bond holdings, then why not simply adjust the gross returns for the percentage each fund holds in equities? Because the data contain information about total asset value, rather than compute hypothetical portfolio weights, simply use the actual portfolio weights the fund applies to each security. This will allow for a more direct comparison to net fund returns and will enable the amount of bond and cash performance contributing to the observed difference between gross and net fund returns to be quantified.⁴

⁴ One could assign the average bond and cash return from a bond and cash index to all funds as a plug. Because dispersion in bond and cash instrument selectivity and performance is probably very small across (predominantly equity) fund managers, this is not an unreasonable assumption.

The second issue I want to raise has to do with the paper's results for stock selection ability (the *CS* measure in Table I). Wermers finds that the average fund earns an additional 65 basis points per year (statistically significant) above passive benchmark portfolios of similar size, book-to-market equity, and momentum. The use of matching benchmark portfolios also helps adjust fund returns for reporting biases such as window dressing. If funds choose stocks with particular characteristics, such as recent good performance, then subtracting the return on a portfolio of similar type stocks should net out the potential return continuation (momentum) effect. However, it is critical here that the right benchmark be used for the adjustment. The paper employs the methodology of Daniel et al. (1997), which uses value-weighted benchmarks of similar size, book-to-market, and past 12-month return. However, the portfolio weights derived from quarterly equity positions are hypothetical and could deviate from value weights. More important, certain stocks contained in the benchmarks may be neglected by the mutual fund industry as a whole (i.e., there may be a missing characteristic that all funds avoid). For example, funds tend to avoid extremely small, illiquid, risky firms. Over the sample period (1975 to 1994) such firms did not fare well. Hence, to the extent the benchmarks contain such firms whereas fund portfolios do not, manager stock selection ability may be overstated. Wermers mitigates this sample selection issue and potential mismatch of the benchmark portfolios by value weighting stocks within the benchmark portfolios and value weighting fund returns by their total asset value, thereby minimizing the weight on small stocks. Another possibility, however, would be to recompute the benchmarks using only those stocks held by at least one fund. This would not only address a potential small stock bias but would also account for possible selection issues arising from other types of stocks neglected by funds.

Employing the proper benchmark is also vital for controlling for possible reporting biases induced by window dressing or tax trading that could overstate fund manager stock selection ability. Examining Table I, it is apparent that whatever stock selection ability appears to exist occurs exclusively in December. The (annualized) return in December is an impressive 3.5 percent with a *t*-statistic of 2.76, which is an order of magnitude greater than the average performance across other months. Moreover, there is no significant performance in any other month of the year.⁵ This suggests to me that the stock selection results may be spurious and, given that they only appear in December, are likely due to window dressing, tax trading, or other agency

⁵ The second largest monthly performance measure is in November and is 1.68 percent with a *t*-statistic of 1.51, which is not significantly different from zero, especially considering the multiple comparisons being made. Furthermore, November returns may also be tainted by end-of-year window dressing or tax trading that the *CS* measure fails to account for. The fact that the strongest performance occurs at the end of the year strongly supports the window dressing and tax trading hypotheses.

phenomena that are not being properly accounted for. In a recent independent study, Carhart et al. (2000) confirm the strong end-of-year performance of fund managers and attribute these findings to agency issues.

Finally, because the goal of the paper is to assess active mutual fund performance, it seems appropriate that the analysis should focus only on those funds in a position to make active decisions. The current study includes index funds in its examination, which merely adds noise to the analysis. Where this becomes particularly problematic is in the examination of high versus low turnover funds. The lowest two deciles of turnover funds are likely to be dominated by passive index funds. Thus, comparing the top decile against the bottom is not a fair comparison and overstates the turnover results. Looking at Table VI in the paper, the characteristics of funds in the bottom two turnover deciles look very similar to those for the Vanguard Index 500 Fund (Table V) (e.g., turnover percentage, expense ratio, and transactions costs). A more accurate comparison might be the top turnover quintile versus the third turnover quintile. The higher performance and higher trading costs for higher turnover funds are still apparent from this comparison, but the results are certainly less striking (see Table VI in Wermers's paper).

II. Some Final Thoughts for Further Study

The focus of this paper and, to a certain extent, of the literature on the value of active management has largely been on return performance. However, active managers may add (or subtract) value in other ways. For instance, in addition to examining raw or risk-adjusted returns, it may be interesting to examine the after-tax returns on funds. Active mutual fund managers may add value by limiting capital gains exposure through their trades, or they may subtract substantial value by imposing large tax consequences on clients from their trades.⁶

In addition to focusing on mean returns, it may also be useful to examine the volatility of the manager's portfolio. Perhaps the correct statistic is the Sharpe ratio. Do actively managed funds produce higher Sharpe ratios than passive indices?⁷ I doubt it, but certainly looking at the second moment of fund returns could be interesting. Take the results in this paper, for example; it may be that net fund returns are much less volatile than gross returns, because the net returns have a smaller exposure to equities than the hypothetical portfolios. Therefore, although the average net performance deviates from gross performance, their Sharpe ratios may be identical.

⁶ Evidence in Barclay, Pearson, and Weisbach (1998), however, indicates that the latter is more common.

⁷ In some sense adjusting returns for benchmarks as Carhart (1997) or Daniel et al. (1997) do partially addresses the Sharpe ratio question. However, these methods attempt to control for "factors" either in a systematic risk or style sense. I am more interested in residual volatility, which is a gauge for how well diversified the fund is.

Even if we limit the analysis to average return performance, it may be that mutual funds add or subtract value when we care about performance the most. Consider times when investor wealth or income is low (i.e., during recessions). Do funds provide a partial hedge against these undesirable states? Or do they simply make matters worse by performing poorly when investors care about performance the most? Using the NBER classifications of recessionary and nonrecessionary periods, I recomputed the performance measures for funds over these two subsamples. As Table I shows, active mutual funds appear to generate an additional 6 percent per year during recessions, even though the return on the market (CRSP value-weighted index) during recessions is -1.5 percent per month and almost 1 percent per month during nonrecessionary periods. Note, too, that the 6 percent increase in performance is true for *both* gross and net returns and therefore is not being driven by computational or other agency reporting phenomena previously discussed. More interestingly, adjusting fund returns for size, book-to-market equity, and momentum premia, the CS measure indicates that funds earn an additional 1 percent per year during recessions than otherwise. This evidence seems to suggest that active managers deliver returns when investors need them the most. Hence, examining their unconditional performance may understate their abilities. This fairly crude and weak piece of evidence raises some interesting questions about the mutual fund industry. Does this evidence imply that managers can successfully time the market? Or are they better able to identify opportunities during these times? Although neither hypothesis seems particularly credible to me, these results are intriguing, keeping in mind, of course, that the paucity of recessionary periods over the 20-year sample period cautions that these findings may be nothing more than pure chance. However, as a discussant, I am allowed to leave these issues for further study.

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