An Examination of Trading Expenses for Mutual Funds

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ABSTRACT:
After doing a direct estimation of the yearly trading costs for a selection of equities mutual funds, we have discovered that these costs are high and display a significant amount of variance between cross-sections. Each year, trading expenses account for an average of 0.78% of the fund's assets and have a range of 0.59% between the two quartiles. In the same way that expense ratios are adversely associated to fund returns, trading costs are also negatively connected to fund returns. Furthermore, we find no evidence that trading costs are recovered in better gross fund returns on average. It has come to our attention that our direct estimates of trading expenses contribute far more to the explanation of fund returns than turnover does. As a last point of discussion, investing goals are connected to trading expenses. On the other hand, the variance in trading costs within investment goals is far higher than the variation that exists within strategies.
KEYWORDS: *Trading, Mutual Fund, Direct Estimation, Trading Expenses.*

I. INTRODUCTION

According to research by Jensen (1968), Elton et al. (1993), Malkiel (1995), and Carhart (1997), among others, mutual fund results are significantly correlated with fund cost ratios. Trading fees are another potentially significant cost to mutual funds, but less obvious than expense ratios. Since at least Jensen (1968), trading expenses and their probable impact on fund returns have been mentioned often in the literature. However, there hasn't been a direct examination of fund trading expenses and how they relate to fund results. One Instead, fund turnover has been utilized as a stand-in for fund trading expenses in the majority of studies. We calculate the equities trading expenses of mutual funds and the correlation between fund performance and those expenses. Brokerage charges and spread costs are the trading expenses that we concentrate on. A transaction-based estimate of the cost of each trade is combined with a fund-by-fund, quarter-by-quarter analysis of traded equities to calculate spread costs. The Securities and Exchange Commission's (SEC) N-SAR filing contains information on brokerage commissions. To give a thorough assessment of fund expenses and their relationship to fund returns, we combine our research of fund trading costs with an analysis of fund expense ratios, which do not include trading costs. Analyzing the value of active portfolio management requires a thorough understanding of mutual fund charges. According to Grossman and Stiglitz (1980), knowledgeable investors should only make transactions when the anticipated value of their personal data outweighs the expenses of obtaining it and carrying it out. Fund trading expenses may be seen as the cost of putting an investing plan into action, while fund expense ratios can be understood as the cost of obtaining information. Our findings support the findings of indirect analyses of the relationship between fund trading costs and fund returns (see, for example, Grinblatt and Titman (1989), Elton et al. (1993), Carhart (1997), and Edelen (1999)) and validate the negative relationship between expense ratios and fund returns.

Trading expenses are directly quantified by our study. We discover that mutual funds have high trading expenses. Brokerage commissions average.30% yearly, while spread charges average.47% as a percentage of assets under management. More significantly, these expenses differ significantly amongst funds. For instance, there is a 59 basis point difference in trading expenses between funds in the 25th and 75th percentiles. This exceeds the 48 basis point variation in the same range's spending ratios. We break down trading costs into three parts: fund managers' sensitivity to trading costs, average spread of fund holdings, and turnover. Turnover is a frequent stand-in for trading expenses and a measure of trading frequency. About 55% of the volatility in trade expenses may be explained by turnover. A measure of a fund's average cost per transaction, the average spread of fund holdings accounts for 30% of the variance in trading expenses. Lastly, the degree to which fund managers execute transactions that are more or less costly than the average stock in the portfolio is measured by their sensitivity to trading costs. Five percent of the volatility in trading expenses is captured by trading sensitivity.

Our research clarifies the importance of active fund management. We look at the relationship between fund performance, trading expenses, and expense ratios. We discover that trading expenses and expenditure ratios have a substantial negative correlation with fund returns (as evaluated by raw returns, CAPM-adjusted returns, or Carhart four factor-adjusted returns). We detect a negative relationship between turnover and fund returns, which is in line with indirect analysis of trading costs and fund returns (Elton et al., 1993; Carhart, 1997).

Nevertheless, our direct estimates of trading expenses and fund returns have a stronger relationship than turnover and fund returns. Regressions using our direct estimates of trading costs actually suggest that trading costs are a more powerful explanation of fund performance than expense ratios. There is no proof that increased gross fund returns cover trading expenses.

Lastly, considering that fund investment goals are often used to categorize fund types, we examine the relationship between trading costs and investment objectives. We find that, generally speaking, investment goals and fund expenses are correlated as one would anticipate; aggressive growth funds, for example, have higher average costs than growth and income funds. But we also discover that there is a lot more variance within investment goals than there is between them. Therefore, the influence of trading expenses extends beyond the conventional categorization of funds' investing goals. This is how the rest of the paper is structured. We start by outlining our sample and the techniques we use to calculate trading expenses. After that, we provide brief explanations of how trading costs vary by fund size and discuss the relationship between trading costs and returns using panel data and regressions in the Fama MacBeth (1973) manner. We break down trading expenses and evaluate the relationship between each element and returns. In order to ascertain the degree to which a fund's investment aim informs investors about the magnitude of trading expenses, we lastly examine the relationship between investment objective and trading costs.

II.   DATA

2.1. Sample selection and data sources

In accordance with Edelen (1999), 165 funds are selected at random from Morningstar's Sourcebook's 1987 summer volume. Due to the lack of data on portfolio holdings, twenty-nine funds are deleted. Since fewer than half of the funds' assets were in equity for the whole study period (1984–1991), four funds were eliminated. Since our trading cost data is restricted to equity securities, we need at least 50% of assets to be in equity. A range of investing goals are represented by the sample of 132 funds. Our sample is composed of 25% aggressive growth funds, 39% growth funds, 28% growth and income funds, and 8% income funds based on CRSP mutual fund investment goal classifications.

Table 1 contrasts our sample funds with the 341 mutual funds that had at least 50% equity in 1987 and were included in the CRSP database. Our sample size is limited to 92 funds in 1987 due to the 50% equity requirement. Regarding style categorization, age, total assets, expense ratio, turnover, average performance, and survival, our sample is typical of the funds in the CRSP mutual fund database. We infer trading choices for funds based on holdings data. Each fund's stock holdings are gathered by hand from Spectrum II volumes, which are published by CDA Investment Technologies, Inc. Spectrum II, which is widely utilized by Wermers (1998) and Grinblatt and Titman (1989), offers quarterly snapshots of funds' stock holdings. Data on holdings is gathered between January 1984 and December 1991. On average, each fund has 18 time-series observations of its holdings data. 10% of the holdings are monitored semi-annually, whereas 90% of the sample has quarterly holdings data available. The distribution of holdings data for our sample funds across time and investment purpose is shown in Figure 1. After correcting for stock splits other CDA reporting adjustments, we use this holdings data to infer trading activity from changes in the position of each stock owned by each fund. Purchases and sales of international equities are discontinued as our data sources do not provide information for determining trading expenses of foreign stocks. Given that fewer than.4% of the sample funds' holdings are international equities, these omissions are probably small. Furthermore, our proxy for the trading activity of funds is limited by the snapshot character of the portfolio-holdings data. For instance, we wouldn't record a transaction if a stock was purchased and sold between disclosure dates. Lastly, the CDA data does not allow us to record transactions in bonds and other fixed-income products. We have data from the SEC's N-SAR filings that reveal fund total purchases and sells activities on a semi-annual basis for 1,700 of our 2,315 fund quarters of holdings data. We evaluate the degree to which trading activity is captured by the CDA portfolio-changes using these data. Typically, 87% of the trade reported in the N-SAR report is captured by our proxy. The Center for Research in Security Prices (CRSP) mutual fund database provides us with information on cost ratios, turnover, and fund performance. The SEC's N-SAR report provides information on fund brokerage fees, customer movements, and total purchases and sells. The CRSP daily returns files provide us with information on stock returns, prices, and shares outstanding; Compustat's industrial research and tertiary file provides us with information on book value of equity. Lastly, the Institute for the Study of Securities Markets (ISSM) transaction files include information on bid-ask quotations, transaction prices, and transaction volumes.

Table 1. Comparison of sample funds to the CRSP mutual-fund database

Fund objective	CRSP	Our Sample	Year of inception	CRSP	Our Sample
Maximum Capital Gains	16%	21%	Before 1980	47%	52%
Growth	46%	35%	1980 to 1985	32%	27%
Growth & income	24%	29%	1985	6%	8%
Income	8%	10%	1986	5%	5%
I-G	6%	5%	1987	10%	8%
Other characteristics			Dead funds		
Ratio of equity to assets	84%	83%	No	89%	89%
Turnover	87%	86%	Yes	11%	11%
Expenses	.99%	0.92%			
Returns	7.85%	7.14%			
Assets (millions)	490	513			

Fig. 1. Distribution of fund observations
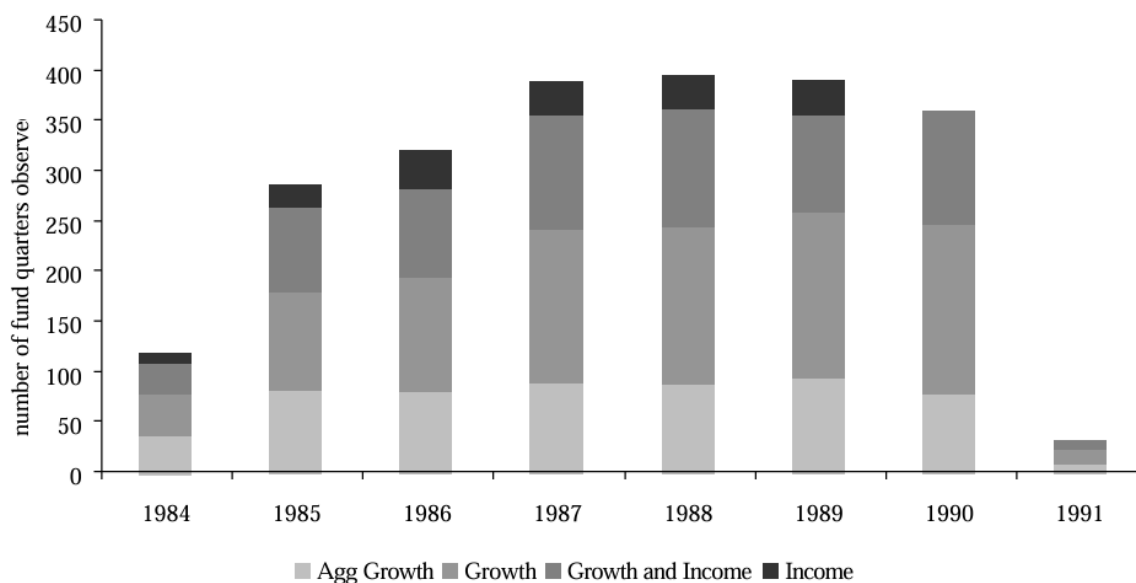The number of fund quarters observed in each year distinguished by the investment objective of the fund.

Fig 1. Distribution of fund observations

2.2. Estimating trading costs

Brokerage charges and spread expenses, which we refer to as direct costs of trading, are taken into account in our study of mutual fund trading expenses. We also take into account tax expenses resulting from capital gains realization, which we refer to as indirect expenses since they affect investor returns but not mutual fund returns. We go over these expenses one by one.

2.3 Brokerage commissions

For 99 out of the 132 funds from N-SAR filings submitted to the SEC, brokerage commissions are available. In particular, for 42% of all fund-quarter observations, we have brokerage commission information. We divide funds into quintiles based on turnover and expenditure ratios in order to estimate brokerage charges for the missing fund-quarter data. For every missing data, we estimate the brokerage charge using the median brokerage cost for the quintile with the matching turnover-expense ratio. The R-square for the regression of brokerage commissions on turnover rank and expense ratio rank, which serves as a measure of the in-sample dependability of these estimates.

III. FUND COSTS

In this section we report our estimates of annual fund costs and examine the relation between fund costs and fund size.

3.1. Fund costs and fund size

The relationship between fund expenses and fund size is examined in this section. Fund expense ratios often decrease with fund assets, according to studies by Collins and Mack (1997) and Tufano and Sevick (1997). This suggests that there is a significant fixed-cost component to expense ratios. We discover a reduced correlation between fund size and trading expenses. The amount of different fund expenses across fund-size quartiles is shown in Figure 2. Using the average assets under management for each fund during the course of the study period, we allocate funds to size quartiles. The average brokerage fee, spread cost, and expense ratio are shown in bar graphs for each size quartile in panel A of Figure 2. The bar graphs show that the expenditure ratios of smaller funds are greater than those of bigger funds. Spread costs and brokerage fees are comparatively stable percentages of assets handled throughout size quartiles 1-3, in contrast to expense ratios. The biggest funds do, however, seem to have less brokerage charges and spread expenses. In particular, we determine the cross-sectional correlation between the total assets of the fund and each of the cost factors for the year. The correlation coefficients are shown in the bottom row after being averaged over time. Expense ratios and fund size have a -0.56 connection, spread costs and fund size have a -0.32 correlation, and brokerage commissions and fund size have a -.30 correlation. According to our interpretation of the data in Fig. 2, trading costs do not gain as much from scale economies as expenditure ratios, which have characteristics more akin to fixed costs.
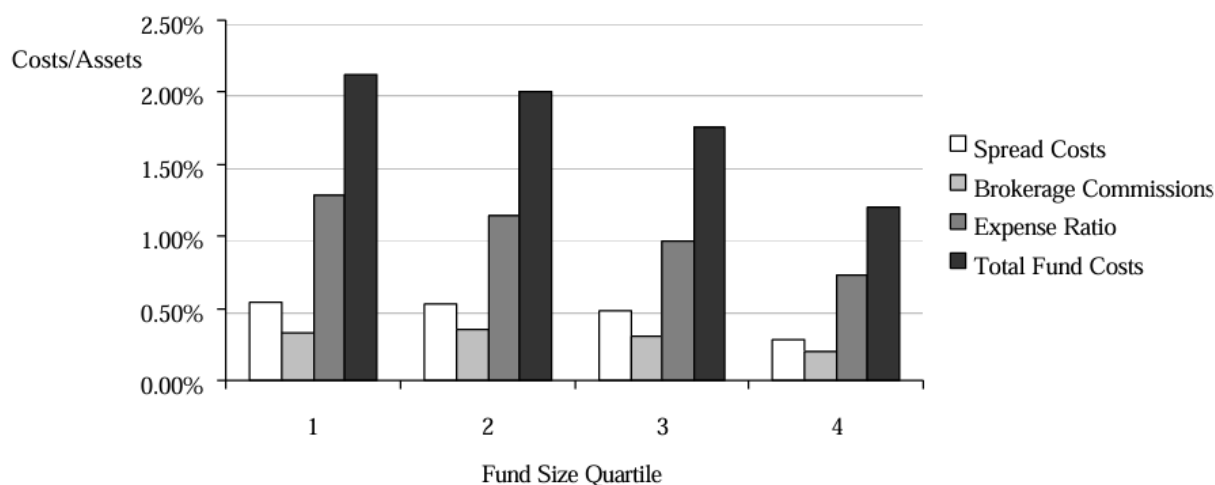

Fig 2. Fund costs and fund size

IV. FUND COSTS AND FUND RETURNS

According to Grossman and Stiglitz's (1980) theory, traders who possess better knowledge in a competitive market get anomalous profits that simply balance out their implementation and opportunity costs. In the context of delegated portfolio management, this means that the investment manager's fees and trading expenses should, on average, be balanced by the portfolio return. This section looks at the relationship between trading expenses, expense ratios, and fund returns. It is well known that expenditure ratios have a negative correlation with fund returns (see, for example, Jensen (1968), Elton et al. (1993), Malkiel (1995), and Carhart (1997)). The relationship between fund trading expenses and fund returns hasn't been directly examined, however. Instead, an inherently shaky link between trading expenses and fund turnover has been established. (For instance, see Carhart (1997), Metrick and Gompers (1998), and Bogle (1994), p. 202-205.) Trading expenses are probably correlated with fund turnover, but fund holdings and trade discretion also probably have a significant impact. Examining the relationship between fund returns, fund expense ratios, and our direct measurements of fund trading costs is thus of interest.

V. INVESTMENT OBJECTIVES AND FUND COSTS

Classifications of fund investment objectives are a crucial way to describe mutual funds. But they are subjective by nature. By analyzing mutual fund returns and grouping them according to their return characteristics, Brown and Goetzman (1997) challenge the subjective nature of the categorization system and contend that these metrics provide a much more objective way to group funds. It seems to us that the expense

ratios and trading charges that funds impose on investors provide helpful metrics by which funds may be described, especially considering the significant explanatory power for performance. In light of this, we provide information about the degree to which current investment-objective classifications account for cross-sectional volatility in total fund expenses, expenditure ratios, and trading costs. The fund parameters, particularly the expense ratio and trading fees, are shown in Panel A. The overall expenses of investments vary somewhat depending on the goal, especially when it comes to growth and maximum financial gains. However, it is clear from comparing this range of explained variance to Table 3 that the majority of the cross-sectional variation in costs occurs inside goals rather than between objectives, and that the current objective classifications have minimal correlation with costs. To illustrate this point, the 25th and 75th percentile ranges for total fund expenses (which are not included in Table 8) are 105 to 178 for Growth and Income funds, 149 to 231 bp for Growth funds, and 159 to 254 bp for Maximum Capital Gain funds. The idea that categorization based on trading expenses offers useful information beyond that supplied by the investment aim is supported by the wide diversity within the investment objective.

Table 3. Average fund returns by cost quintiles, Panel A

	Total Fund Cost Quintile					t-statistic	Trading Cost Quintile					t-statistic
	1	2	3	4	5	(Q1-Q5)	1	2	3	4	5	(Q1-Q5)
Expense Ratio	0.65%	0.86%	1.03%	1.15%	1.40%	-60.00**	0.76%	0.95%	1.04%	1.11%	1.24%	-36.73**
Spread Cost	0.16%	0.33%	0.45%	0.66%	1.18%	-63.51**	0.13%	0.29%	0.45%	0.67%	1.23%	-72.93**
Brokerage commissions	0.09%	0.17%	0.26%	0.37%	0.55%	-64.34**	0.08%	0.16%	0.25%	0.38%	0.56%	-68.73**
Total Costs	0.90%	1.36%	1.74%	2.18%	3.12%	-112.94**	0.97%	1.40%	1.74%	2.16%	3.03%	-94.71**
Carhart Adjusted Returns	-0.77%	-0.87%	-1.04%	-1.73%	-4.38%	4.34**	-0.25%	-0.94%	-0.87%	-3.09%	-3.62%	4.06**
CAPM Adjusted Returns	-0.41%	-1.75%	-1.52%	-2.32%	-6.26%	6.24**	0.06%	-1.68%	-1.68%	-3.68%	-5.25%	5.64**
Returns	14.52%	13.42%	13.93%	12.66%	9.76%	1.95*	14.14%	13.89%	14.06%	11.88%	10.31%	1.60

	Expense Ratio quintiles					t-statistic	Turnover Quintiles					t-statistic
	1	2	3	4	5	(Q1-Q5)	1	2	3	4	5	(Q1-Q5)
Expense Ratio	0.59%	0.81%	0.99%	1.15%	1.55%	-91.18**	0.81%	0.91%	1.01%	1.15%	1.18%	-27.71**
Spread Cost	0.35%	0.42%	0.52%	0.73%	0.76%	-24.02**	0.24%	0.38%	0.53%	0.66%	0.96%	-47.34**
Brokerage commissions	0.16%	0.22%	0.28%	0.33%	0.44%	-32.36**	0.11%	0.17%	0.28%	0.35%	0.51%	-53.59**
Total Costs	1.10%	1.45%	1.79%	2.21%	2.74%	-64.75**	1.16%	1.47%	1.82%	2.15%	2.65%	-58.59**

VI. CONCLUSIONS

We calculate the yearly expenses incurred by fund managers in their trades and discover a significant inverse relationship between these expenses and return performance. The findings presented in our research may be interpreted in a variety of intriguing scenarios. According to Grossman and Stiglitz (1980), a knowledgeable trader will not purchase stocks if the anticipated value of the information is less than the expenses associated with making the deal. Our findings suggests that mutual fund managers do not adhere to this regulation. On the other hand, it's possible that a large portion of the trading expenses we see are connected to liquidity supply, as covered by Edelen (1999). The negative correlation between fund returns and trading expenses implies that, to the extent that this trading cannot be avoided, it is beneficial to have fund managers who reduce the cost of these transactions. Lastly, a reasonable but improbable explanation for our findings is that low returns lead to increased trading expenses when investors withdraw money with low returns, which leads in more trading expenses. This seems improbable to us since inflows also result in liquidity costs, and according to Sirri and Tufano (1998) and Del Guercio and Tkac (1999), inflows often follow strong performance, but fund withdrawals are comparatively unaffected by fund returns. Our study raises a practical problem: obtaining exact estimates of the trading costs of funds is expensive. A cheap stand-in for trading expenses might be useful given their significance in describing fund performance. According to our data, a really discriminating proxy must be more than turnover. Regretfully, it is difficult to observe the weighted-average spread and trading cost sensitivity, the other two aspects of trading costs. Therefore, there would be substantial practical benefit to looking for a cheap stand-in for these elements.

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