Turnover ratio and the performance of mutual funds

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ABSTRACT

Investors commonly use the expense ratio in evaluating the cost of mutual funds. Morningstar defines the expense ratio as the annual fee that all funds or exchange-traded funds charge their shareholders. It expresses the percentage of assets deducted each fiscal year for fund expenses. The problem with the expense ratio is that it only represents the fraction of the total cost of a fund since portfolio transaction fees, or brokerage costs, as well as initial or deferred sales charges, are not included in the expense ratio. Haslem (2004) indicates that these costs are not disclosed to fund shareholders. Yet, these charges would decrease the net asset value of the fund. According to Morningstar, the turnover ratio is a measure of the fund's trading activity, which is computed by taking the lesser of purchases or sales (excluding all securities with maturities of less than one year) and dividing by the average monthly net assets. The standard expense ratio excludes turnover costs as well. This article explores whether including the turnover costs affects the return of the portfolio for load funds. The results suggest that the turnover does affect the funds' overall performance only during financial stress periods, and the turnover ratio should be included in the expenses, thus decreasing the return reported by mutual funds to the investor.

Key Words: turnover ratio, load funds, transactional Fees, Mutual Funds and multi-factor CAPM model.

INTRODUCTION

Mutual funds are regulated under the Securities and Exchange Act of 1934. They must be registered with the SEC and must provide investors with a prospectus that addresses the expense a shareholder will have to pay as well as the performance of the fund as of a specific date. In essence, this kind of entity solicits monies from a large number of investors and, in return, sells those investors shares in itself. Mutual Funds may be sold by brokers and are referred to as load funds or sold directly by the mutual fund itself and are referred to as no-load funds. This article shall only deal with the load funds. The mutual funds provide a more viable way for many individuals to invest in the market. That is mutual funds offer investors who may be unable to enter the markets on their own, due to lack of expertise or minimal investment capital, the ability to do so through mutual funds. However, since this type of investor usually lacks investment skills, they will depend more on brokers who sell the load funds for suggestions on which fund to purchase.

Performance of the fund reported to investors is affected by the expenses the fund incurs. Investors typically use the expense ratio in deciding how expensive mutual funds are. Based on Morningstar investing glossary's definition, "The expense ratio is the annual fee that all funds or exchange-traded funds charge their shareholders. It expresses the percentage of assets deducted each fiscal year for fund expenses, including 12b-1 fees, management fees, administrative fees, operating costs and all other asset-based costs." However, according to Fan (2018), the expense ratio is not comprehensive enough to include all the expenses the fund incurs. He sees this as a problem, especially for non-sophisticated investors who are not able to evaluate the fund's average net asset value. Haslem (2006) indicates that this is also true for the Vanguard 500 Index Fund as well. According to him "… the expense ratio does not include initial or deferred sales charges, nor does it include portfolio transaction fees or brokerage costs…..This exclusion has led researchers to study fund expenses that are not included in the expense ratio, such as the so-called fund 'turnover costs."

The turnover cost and initial or deferred sales charges are costs that would decrease the net asset value of the fund, which are not revealed or used in calculating a fund's return. The turnover ratio "… is a measure of the fund's trading activity, which is computed by taking the lesser of purchases or sales (excluding all securities with maturities of less than one year) and dividing by average monthly net assets." (Morningstar Investment Glossary) Therefore, the standard expense ratio is not comprehensive because it excludes costs like these. The purpose of this article is to explore whether the turnover costs, which measures the amount of trading occurring in the portfolio, decreases the NAV of the fund and ultimately the *actual* annual return which is being ultimately passed on to the investor who earns less than the *reported* annual return from his or her investment.

BACKGROUND

Funds sold by brokers, load funds, are notorious for high brokerage fees and numerous transactional costs. Since the *Investment Act of 1940* does not necessitate these costs to be disclosed, mutual funds do not include these fees in their expense ratios. According to Haslem, (2006), even today, these costs remain concealed. The exclusion of such fees results in the increase of the NAV of the fund. Because of this omission, reported annual fund operating

expenses are seen by many as misleading and incomplete. (Kjetsaa and Kieff, 2016) Further, "increases of one-standard deviation in fund volatility and turnover are associated with increases in total ownership cost of 1.99 and 4.79 basis points," thus decreasing the profitability of the fund but not reported to the investor. (Gil-Bazo and Ruiz-Verdu', 2009)

The turnover ratio has been examined over several decades with mixed results. Kacperczyk, Sialm, and Zheng (2005), and Edelen, Evans, and Kadlec (2007) find no significant relation.   There are also studies addressing the relation between portfolio turnover and fund performance that reach opposite conclusions. Dahlquist, Engström, and Söderlind (2000), Chen, Jagadeesh, and Wermers (2000), and Pastor, Stambaugh and Taylor (2016) find a positive relation. Wermers (2000) found somewhat mixed results. The author concluded "…that actively managed funds beat the Vanguard Index 500 fund on a net return basis, but only before adjusting for the higher average returns accruing to the characteristics of active fund stock holdings." However, many researchers such as Carhart (1997), Elton, Gruber, Das and Hlavka (1993), Edelen, Roger, Evans and Kadlec (2013), and Chow et al. (2011), among others, have shown that the turnover ratio has a negative effect on the fund's results. Unfortunately, it is the investor in mutual funds who ultimately pays for these *undisclosed fees* in terms of actual lower returns on their investments.   These research efforts have attempted to address the actual effect of the turnover ratio, and concomitantly, the effect of the commissions paid by the fund for the purchase and sale of fund investment assets, on the overall annual return of load mutual funds.Therefore, the literature's findings on the impact of fund trading on future performance are inconclusive.

Because the Investment Act of 1940 assigns specific responsibilities to the fund's independent directors to ensure that funds are operated in the best interests of their shareholders, investors have become more confident about owning shares of mutual funds. The Act mandates that fund managers act in accordance with the objective of the fund, whether it is capital appreciation, income, etc. In load mutual funds, individuals invest at either a front-load or back-load fee, with the expectation that the fund will "outperform the market", and thus provide a competitive return on the money they have invested. In addition, there is a fee, oftentimes, referred to as the management fee and may cost, on average, up to 1.5% of the asset value of the fund per year (Morningstar). Although investors trust the security selections of the load mutual fund managers, it is often debated whether these mutual fund managers add any value to the portfolio return. According to Clash and Maiello (2005), "a study by the Zero Alpha Group, an investment advisory outfit, found that the average domestic stock fund is running up 58 cents per $100 annually in commissions plus execution costs."

Security selection is important for the success of a mutual fund. Continually selecting the most profitable marketable appropriate security for the fund should greatly enhances both the profitability and reputation of that mutual fund. But one needs to appreciate the fact that mutual funds incur a transaction cost for every purchase or sale of its assets which may affect its turnover ratio and ultimately its cost, which is not disclosed.   Some managers also emphasize the importance of selling assets in the portfolio (increasing a fund's turnover) in order to purchase more speculative securities that may be more profitable. In practice, most load mutual funds are actively traded. Many investors who pay to have their money professionally overseen by portfolio managers expect a return to be at least as high, if not higher, than the general return of a market index. Although there is some disagreement in the literature on active verses passive traded stock portfolios, most research studies to date indicate that actively managed funds do not perform as well as their passively managed counterparts (Index funds). (Chen, Jagadeesh, &

Wermers, 2000). Which raises the question of why they do not perform as well as their passively managed counterparts. Is their poorer perform due to higher turnovers of their portfolio?

In 2017, Champagne , et al. argued that there may be two ways to look at portfolio turnover. The first approach is to look at the aggregated monetary values of trades. The second approach is to look at the changes in the portfolio weights. Using the second method, they found that portfolio turnover had a significant influence for a period up to five years. As the modified turnover goes up, fund flows declined. This suggests that investors prefer lower modified turnover rates. This observation lends credence to a weak belief among fund investors in the value of active management of the funds." (Champagne, Karoui, and Patel, 2017)

Commission and trading associated costs are usually larger than a fund's regulatory expense ratio. Moreover, these costs are not disclosed to fund shareholders. Therefore, the question arises does high turnover ratios on load mutual funds (funds sold by brokerage companies) affect (increase or decrease) their annual return. The purpose of this article is to explore whether the turnover costs, which measures the amount of trading occurring in the portfolio, affects the return of the portfolio for load funds.

METHODOLOGY

Mutual funds classify their shares based on their fees and expenditures. The shares are typically divided into three groups- Class A, B, and C. While Class A shares charge a front load fee, Class B shares do not charge this fee. Class B share investors are known to pay a selling fee, which is frequently waived if the investor holds the shares long enough. Finally, Class C funds charge an upfront fee, and this fee is invested in shares. Class C funds has a level-load structure. Level-load shares come with annual charges, set at a fixed percentage, and submitted by the investor throughout the year. A level load pays for fund marketing, distribution, and servicing. In comparison, a front-end load carries charges paid when the shares are bought and a back-end load assesses charges when the investor sells shares[1].

DATA

Data were gathered from the National Bureau of Economic Data, Yahoo Finance, and Morningstar Software. The National Bureau of Economic Data was the source for the return on 3-month Treasuries. Yahoo Finance was used to gather the S&P 500 values (GSPC) from January 2004 through December 2013. Morningstar was the source for the list of the United

States load mutual funds in the U.S. Class A, B, and C equity funds from the years 2004-2013.

The load funds were selected and included with the name of the mutual fund, ticker symbol, categorical group, share class, annual turnover ratio, annual return, and beta. Share Class Type "A", "B", and "C" were chosen since this was the class type most utilized by brokers who sell mutual funds. No-Load funds were omitted from this regression. The data of each class for each year was sorted in Excel by the turnover ratio from lowest to highest. (Morningstar.com, 2014).

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[1] For the detailed description of share class types, see
https://morningstardirect.morningstar.com/clientcomm/Share_Class_Types.pdf

Model

The performance was measured relative to the multi-factor CAPM model.

$$(R_j - R_f) = \alpha_j + \beta_1 (Beta_j (r_m - r_f)) + \beta_2(TOB) + \beta_3(TOC) + \beta_4(TOD) + \beta_5(TOE) + \beta_6(TOF) + \beta_7(TOG) \tag{1}$$

Where:

R_j= the annual return of the load mutual fund (j) for the year

R_f = the annual average of the 3-month risk free rate for the year

R_m= annual average rate of return of market portfolio using an index fund that tracks

S&P 500 return for the year

Dummy variables for mutual funds that had turnover ratios in the year:

TOB = 25.01-50,

TOC = 50.01-75,

TOD = 75.01-100,

TOE = 100.01-150,

TOF = 150.01-300, and

TOG = $\geq$ 300.01.

Funds that had a turnover ratio between 0 and 25 were omitted from a dummy variable because that fund group was the comparison group for the regression.

REGRESSION RESULTS

Equation (1) is estimated for Class "A", "B" and "C" equities for 2005 to 2012 periods annually. Each column in the tables represents the results for a different year. The results are presented in Table 1, 2 and 3 (Appendix) respectively. The tables show that BETAs are highly significant in all three tables for all of the years covered in the regressions. Interestingly, the coefficient values increase substantially during the crisis period indicating that as the market increases (or decreases), the securities increase (or decreases) in time with the market.

The results also show that the coefficients of turnover ratios evolved through time for all three classes of equities. In the pre-crisis period, only moderate levels of turnover ratios seem to be significant. While TODN is the only significant ratio for 2005, as the crisis period approached moderate to high level turnover ratios became significant. That is to say, Class "A", "B" and "C" load funds create excess return by utilizing frequent trading in the pre-crisis period for moderate to high turnover ratios. In 2007, all turnover ratios that are greater than 75 become significant with positive signs suggesting that, investors were rewarded more for higher turnover ratios. The relationship between excess returns and turnover ratios changed significantly once again in 2009 and 2010. Frequent trading paid off at all levels of turnover ratios in this period including very low and very high ratios. Highest turnover ratio, TOGN, became significant again with very high coefficient values for both Class "A" and "C" only in 2009 and 2010 and turns insignificant in 2011 and 2012. Class "B" shares behave similarly in this period. The positive coefficients of the turnover ratios in the 2009 and 2010 suggest that high turnovers paid off in this period.

These results indicate that the mutual fund managers for Class "A", "B" and "C" load funds do not persistently create excess return by utilizing frequent trading. In fact, only two

years showed a positive significance of all turnover ratios while ratios became insignificant after the turbulent period was over.

CONCLUSION AND DISCUSSION

Mutual fund managers are not able to predict with certainty the future value of stocks and therefore are not always accurate when making stock selections. However, in this highly competitive industry, some load mutual fund managers claim to possess a stock selection skill. This claim leads to incurring unnecessary or an increased number of fees paid on stock trades, and therefore a lower net asset value of the fund. Furthermore, this excessive trading becomes problematic to investors who rely on their mutual funds. If fund managers are not adequately serving their clients, and merely trading stocks to show active management, this may put the NAV of the fund and the reputation of the mutual fund company at risk.

Mutual fund managers should not just purchase and sell securities to confirm active management; portfolio fund management should be taken with the utmost respect towards a client's financial well-being. Although some funds tend to outperform others based on sheer luck, it is important to consider the consequences of either holding onto a stock too long or purchasing one too early. A fund with a lower turnover ratio may perform poorly compared to a mutual fund with a higher turnover ratio because the assets in the fund with the higher turnover represent companies that had recent breakthroughs or even a lucky year. However, equity Index funds, which have a very low turnover, usually outperform the load equity funds. Many mutual fund managers want to appear as if they are doing their job but fail to realize that mutual fund management is composed of many tasks and that it is just as much of an effort to evaluate a portfolio fund as replacing an existing stock share.

In this paper, the adjusted annual returns of Class "A", "B" and "C" securities are analyzed based upon the yearly turnover ratio. The coefficients in the regression showed that a turnover ratio affected the annual return of the fund only during the crisis period. During the eight years the paper analyzes, the paper finds that the high turnover ratio that exceeds 300 is significant with positive coefficient only in two years. It is also interesting to note that in 2009 and 2010 turnover ratios were significant at almost all levels, but in 2012 they became insignificant again.

The results suggest that the turnover does have an effect upon the funds' overall return only during financial stress periods and the turnover ratio should be included in the information provided by mutual funds for the investor. Further work needs to be done to compare the no-load funds and the load funds turnover and performance.

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APPENDIX: REGRESSION RESULTS

Table 1: Regression Results for Class-A Equity

	2005	2006	2007	2008	2009	2010	2011	2012
BETA	2.132***	-3.957***	-1.388	-19.39***	8.052***	22.56***	-10.15***	3.178***
	(4.12)	(-8.27)	(-0.66)	(-21.90)	(4.45)	(13.53)	(-16.41)	(4.41)
TOBN	-0.422	0.583	1.178	0.204	3.062*	0.876	-1.222**	0.217
	(-0.83)	(0.89)	(1.18)	(0.35)	(2.30)	(1.33)	(-2.88)	(0.57)
TOCN	0.729	-0.902	1.948	-0.0247	3.375*	2.130**	-1.357**	-0.275
	(1.31)	(-1.31)	(1.86)	(-0.04)	(2.55)	(3.11)	(-3.04)	(-0.68)
TODN	1.618**	-1.438*	3.972***	-0.328	3.383*	1.630*	-1.663***	-0.0560
	(2.58)	(-1.99)	(3.58)	(-0.52)	(2.32)	(2.07)	(-3.37)	(-0.12)
TOEN	0.480	-1.863*	5.486***	-0.903	1.443	1.300	-1.116*	-0.455
	(0.87)	(-2.48)	(4.73)	(-1.48)	(1.06)	(1.75)	(-2.21)	(-0.93)
TOFN	0.382	-0.742	8.095***	-2.809***	2.572	0.430	-1.862**	-0.562
	(0.58)	(-0.88)	(6.09)	(-4.14)	(1.75)	(0.46)	(-2.91)	(-0.93)
TOGN	-1.013	0.0630	3.412*	-1.454	7.038***	2.968*	-0.965	0.630
	(-1.22)	(0.07)	(2.10)	(-1.62)	(3.32)	(2.14)	(-0.96)	(0.71)
CONS	1.769*	14.72***	1.863	-17.00***	22.52***	-5.625**	11.05***	11.71***
	(2.57)	(20.26)	(0.85)	(-16.16)	(10.71)	(-3.22)	(14.59)	(15.34)
N	740	780	813	839	861	879	903	949
adj. R-sq.	0.041	0.122	0.057	0.385	0.035	0.197	0.252	0.019

Table 2: Regression Results for Class-B Equity

	2005	2006	2007	2008	2009	2010	2011	2012
BETA	2.427***	-4.172***	-1.076	-19.29***	5.423*	22.72***	-11.38***	2.394*
	(3.51)	(-6.80)	(-0.34)	(-15.92)	(2.01)	(9.48)	(-12.92)	(2.52)
TOBN	-0.172	1.395	1.456	-0.0367	2.088	1.936*	-0.297	0.229
	(-0.25)	(1.67)	(1.06)	(-0.05)	(1.11)	(2.08)	(-0.51)	(0.46)
TOCN	1.174	-0.191	2.570	-0.252	4.253*	2.253*	-0.756	-0.0481
	(1.59)	(-0.21)	(1.77)	(-0.32)	(2.27)	(2.31)	(-1.24)	(-0.09)
TODN	1.704*	-1.330	4.709**	-0.628	4.675*	2.173*	-0.895	-0.317
	(2.15)	(-1.43)	(3.21)	(-0.76)	(2.29)	(2.05)	(-1.36)	(-0.52)
TOEN	0.361	-1.929*	5.244**	-1.364	3.343	2.621*	0.0976	-0.889
	(0.48)	(-1.97)	(3.31)	(-1.69)	(1.78)	(2.54)	(0.14)	(-1.35)
TOFN	-1.135	-0.673	8.247***	-2.512**	4.216*	1.007	-2.431**	-1.260
	(-1.23)	(-0.62)	(4.58)	(-2.70)	(2.07)	(0.77)	(-2.83)	(-1.42)
TOGN	-0.0597	-0.698	5.910*	-2.781	0.989	6.043*	8.595**	-0.460
	(-0.05)	(-0.60)	(2.09)	(-1.87)	(0.26)	(2.14)	(3.09)	(-0.38)
CONS	0.988	14.04***	0.901	-17.43***	23.46***	-7.544**	11.00***	11.7***
	(1.10)	(15.37)	(0.28)	(-12.33)	(7.64)	(-3.02)	(10.22)	(11.61)
N	398	408	413	417	419	424	426	428
adj. R-sq.	0.057	0.171	0.056	0.405	0.011	0.207	0.315	0.011

Table 3: Regression Results for Class-C Equity

	2005	2006	2007	2008	2009	2010	2011	2012
BETA	2.125***	-4.094***	-2.769	-19.27***	9.171***	21.94***	-10.52***	3.755***
	(3.83)	(-8.02)	(-1.16)	(-20.24)	(4.88)	(12.53)	(-15.41)	(4.96)
TOBN	-0.303	0.738	0.252	0.176	2.770	0.704	-1.260**	0.381
	(-0.56)	(1.07)	(0.23)	(0.28)	(1.94)	(1.00)	(-2.63)	(0.94)
TOCN	0.857	-0.630	1.479	-0.179	4.299**	1.847*	-1.314**	-0.164
	(1.46)	(-0.87)	(1.32)	(-0.28)	(3.03)	(2.52)	(-2.67)	(-0.38)
TODN	1.383*	-1.301	3.192**	-0.359	3.838*	1.694*	-1.777**	0.331
	(2.07)	(-1.73)	(2.71)	(-0.53)	(2.48)	(2.02)	(-3.24)	(0.68)
TOEN	0.579	-1.452	4.862***	-0.872	3.181*	0.984	-0.989	-0.117
	(0.98)	(-1.83)	(3.96)	(-1.35)	(2.19)	(1.25)	(-1.78)	(-0.23)
TOFN	0.312	-0.587	7.925***	-3.070***	3.980*	0.555	-1.857**	-0.413
	(0.46)	(-0.66)	(5.63)	(-4.26)	(2.58)	(0.56)	(-2.67)	(-0.68)
TOGN	-0.931	-0.0189	3.264	-1.494	7.469***	3.094*	-0.922	1.009
	(-1.02)	(-0.02)	(1.79)	(-1.55)	(3.38)	(2.06)	(-0.88)	(1.12)
CONS	1.089	13.92***	3.061	-17.53***	19.80***	-5.730**	10.64***	10.11***
	(1.47)	(18.02)	(1.24)	(-15.46)	(9.02)	(-3.14)	(12.74)	(12.69)
N	652	686	712	732	747	762	782	815
adj. R-sq.	0.036	0.123	0.057	0.386	0.044	0.195	0.253	0.031