A cross-sectional analysis of Malaysian unit trust fund expense ratios

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Abstract   This study examines the determinants of fund expense ratio in a cross-sectional sample of Malaysian unit trust funds. Since fund performance is a key decisive factor for many investors in selecting mutual funds, and given that fund expenses are an important determinant of fund returns, the information on what factors affect fund expense ratio is becoming more relevant than ever for investors when selecting a fund. The results show that larger funds have lower expense ratios than smaller funds, suggesting the presence of economies of scale. There is also evidence of economies of scope in that funds that belong to a large fund family are found to have low expense ratios. The findings further indicate that funds with high returns volatility are associated with low expense ratios and that high portfolio turnover leads to high expense ratio. There is no evidence that fund objective and fund age are related to fund expense ratio.

Introduction

Over the decades, there has been a sharp increase in investors' interest in seeking inexpensive access to professional management of their funds. In the Malaysian context, from 2000 through 2006, the total net asset value (NAV) of mutual funds, more popularly known as unit trust funds, soared by slightly more than 180 per cent (from RM 43.3bn in 2000 to RM 121.78bn in 2006).[1] When selecting funds for investment, investors consider many factors, some of which are highly noticeable, whereas others are hardly discernible. These factors include fund performance, expenses, risk, and fund investment objective, among others. While fund performance represents a bottom–line criterion for many investors, an equally if not more important factor that does not receive similar attention from investors is fund expenses. Since fund performance is a key decisive factor for many investors in selecting mutual funds, and given that fund expenses are an important determinant of fund returns, the information on what factors affect fund expense ratio is becoming more relevant than ever for investors when selecting a fund. This study seeks to examine what factors determine fund expense ratio in a cross–sectional sample of Malaysian unit trust funds.

This study builds on a relatively small literature on the determinants of mutual fund expense ratios. While there are numerous studies on mutual fund expense ratios, extant studies tend to focus on the relation between fund expenses and fund performance.[2] Collectively, these empirical findings indicate

that fund expenses are significant determinants of fund performance. Studies that have documented a negative relation between fund expense ratio and risk-adjusted returns include Sharpe (1966), Malkiel (1995), Gruber (1996), Golec (1996), Carhart (1997), Dahlquist *et al.* (2000), and Otten and Bams (2002), among others. While the purchase decisions of mutual fund investors are often linked to fund performance, academic research points to the fact that past mutual fund returns are poor predictors of future returns in the long run.[3] Furthermore, investment returns represent one of the unpredictable aspects of investing, and, in general, most previous studies with few exceptions have found either negative performance or no performance for average mutual funds.

Sirri and Tufano (1998) document a negative relationship between fund flows and total fund expenses. That is, the flow of new money into mutual funds decreases as total fund expenses increase. Their analysis did not separate the components of fund expenses into front-end load fees and expense ratio, and thus assumes that investors respond similarly to load fees and expense ratio. In a more recent study, Barber *et al.* (2005) argue that while investors weigh various factors when buying mutual funds, they are more sensitive to prominent, attention-grabbing factors such as front-end loads and commissions than to operating expenses. This is because front-end load fees are large one-time fees paid when a fund is purchased, whereas operating expenses are smaller, ongoing fees that are easily 'masked' by the returns volatility of equity mutual funds. As conjectured, Barber *et al.* (2005) find strong evidence that investors treat front-end load fees and operating expenses differently. The authors document a significant negative relation between fund flows and front-end load fees, but no relation between fund flows and operating expenses. Their findings seem to suggest that while costs are an important consideration for investors in choosing a fund, in general, investors often overlook fund-operating expenses when buying mutual funds. An intuitive explanation for this is that since mutual fund returns are reported net of operating expenses, investors have the tendency to focus their attention on the volatility of the return figures *per se* and take no notice of the operating expenses, which represent a continual drain on fund performance. Furthermore, given that the reported returns are net of operating expenses but gross of load charges, it is therefore not surprising that investors are less sensitive to operating expenses than to load charges. Survey evidence by Capon *et al.* (1996) suggests that many consumers are ignorant of the fees that they pay for services rendered and of expenses incurred in operating a mutual fund. And yet, the costs of operating a fund can erode a significant portion of the fund's gross returns. These costs may differ among competitor funds and over time these differences can have a major impact on fund performance. While the expense ratio of a given fund allows investors to make a direct comparison of the costs charged by other competitor funds, factors that could affect fund expense ratio may not be obvious to investors. Given that returns are volatile and hard to predict and that fund expenses are an important determinant of fund returns, investors would be best off paying more attention to fund expenses than to fund performance when selecting mutual funds.

Despite the importance of fund expense ratio, one area that has not received much attention in the academic literature is the study of the determinants of fund expense ratio. The first study to examine how fund expense ratios differ in a cross-sectional sample of funds was conducted by Ferris and Chance (1987). The authors examined the impact of a 12b-1 plan simultaneously with other factors such as fund size, age, objective, and load on fund expense ratios. Their findings show strong evidence of economies of scale and conclude that the 12b-1 plan is a dead-weight cost borne by investors. The

effect of fund age is ambiguous, and fund objective is found to be a significant determinant of fund expense ratio, whereas the load variable is not. The work of McLeod and Malhotra (1994) confirms the findings of Ferris and Chance (1987) that funds with a 12b-1 plan have higher expense ratio than funds without such a plan. The authors also document that larger funds have lower expense ratios than smaller funds due to economies of scale, and that the expense ratios of older funds are lower than those of younger ones. Other studies that report similar findings include Dellva and Olson (1998) and LaPlante (2001), among others. The findings of McLeod and Malhotra (1994) show that both fund objective and load charges are not significantly related to expense ratio. Dellva and Olson (1998) find that funds that invest internationally have higher expenses than those that invest domestically.

In a comprehensive study on the economies of scale in mutual fund administration, Latzko (1999) documents a reduction in the average costs for the full range of fund assets, but the rapid average cost decrease is exhausted by about $3.5bn in fund assets. The author also suggests that funds that belong to a fund family may enjoy greater economies of scale than can be explained solely by fund size, due to the sharing of fund expenses within the same fund family. In addition to economies of scale, other studies that document evidence of economies of scope include Malhotra and McLeod (1997), Berkowitz and Kotowitz (2002), and Dowen and Mann (2004), among others. These studies find a negative relation between the expense ratio and the size of a fund family. That is, as the size of the fund family increases, the average expenses per fund within the fund family decrease, as many of the fund expenses can be spread over a greater number of funds under management.

The work of Malhotra and McLeod (1997) focuses specifically on analysing the several key determinants of fund expense ratios. The authors argue that since fund expenses are more stable and more predictable than fund returns, investors should use fund expenses as a selection criterion when buying a mutual fund. They conclude that investors should pay attention to fund size, age, fund complex, turnover ratio, cash ratio, and the presence of a 12b-1 fees before investing. Their findings show that larger and more mature funds have lower expense ratio. On average, load funds and 12b-1 funds have higher expense ratios than no-load and non-12b-1 funds. Additionally, funds that belong to a large fund family have lower expense ratios due to economies of scope and funds with higher portfolio turnover are associated with higher expense ratios. The authors find no evidence that a fund's expense ratio is related to the fund's risk level and investment objective. In a related study, Berkowitz and Kotowitz (2002) examine the relation between fees charged by mutual funds and fund performance. Interestingly, the authors find that while there is a positive relation between fees and performance for high-quality managers, a negative relation exists for low-quality managers. Consistent with earlier studies, fund size and the number of funds within the management group are found to be negatively related to fund expense ratio, indicating the presence of both economies of scale and economies of scope in the sample of funds studied. The results also show that conservative funds have lower expense ratios compared to those with more aggressive objectives and that funds that have high portfolio turnover have higher expense ratios than those with low turnover. Additionally, fund age is found to be unrelated to fund expense ratio. Most recently, in a more broad-based study by Khorana *et al.* (2006), the authors find that fees differ considerably from country to country and that larger funds and fund complexes have lower fees, as do older funds and funds that sell cross-nationally. In addition, fees also vary across funds with different investment objectives and are lower in countries with stronger investor protection. The cross-country differences persist even after

controlling for the aforesaid variables and other country-specific factors.

In the context of Malaysia, while there are numerous studies on unit trust funds, prior research focused largely on the issue of fund performance and so far no research has attempted to analyse factors that affect the expense ratios of unit trust funds. Given that fund expense ratio is an important determinant of fund performance and that these ongoing expenses constitute a continual drain on fund performance, it is becoming more relevant than ever for investors to know the factors that affect a fund's expense ratio. The objective of the present study is to provide such empirical evidence and the study proceeds as follows. The next section presents the data and methodology employed in the study. The subsequent section discusses the findings, and concluding remarks are offered in last section.

Data and methodology

The sample of funds in this study consists of 65 unit trust funds with complete relevant data as on December 2004. The data used include management expense ratio of the fund, investment objective, fund size, age, portfolio turnover ratio, the number of funds under management, and the beta of the fund, which is estimated using monthly return data from January 2000 through December 2004. The data were sourced from fund prospectuses and annual reports of the fund management companies. The return on each fund was calculated using monthly NAVs.

The regression model in this study analyses several factors that could affect the management expense ratio of a fund and is given in Equation (1):

$$\begin{aligned} \text{MER} = {} & b_0 + b_1 \, \text{LN SIZE} + b_2 \, \text{FUND FAMILY} \\ & + b_3 \, \text{PORTFOLIO TURNOVER} \\ & + b_4 \, \text{BETA} + b_5 \, \text{LN AGE} \\ & + b_6 \, \text{FUND OBJECTIVE} + \in \end{aligned}$$

(1)

where MER is the fund's management expenses ratio, which is the ratio of the total expenses and fees incurred in operating a fund to the fund's average net asset. The management expenses include manager's fees, trustee and custody costs, audit fees, and other administrative charges involved in running a fund. All these expenses and fees are paid out of the fund's asset; LN SIZE is the natural logarithm of the fund's end-of-the-year total NAV; following Berkowitz and Kotowitz (2002), FUND FAMILY is the natural logarithm of the number of funds within the fund family; PORTFOLIO TURNOVER is the portfolio turnover ratio measured by the average total acquisition and disposal of securities for the year as a percentage of the average NAV of the fund. The turnover ratio captures the frequency of trade and it indicates whether fund managers buy and sell securities frequently or take a longer term approach to investing; BETA represents fund's risk level; LN AGE is the natural logarithm of the fund's age from inception until December 2004; FUND OBJECTIVE is a dummy variable equals to 1 for aggressive funds and 0 otherwise. The two groups of funds are constructed by combining several finer classifications. The aggressive group includes funds with the objectives of growth and high growth. The remaining funds are funds with the objectives of income and income and growth; $\in$ is the residual term.

The inclusion of a dummy variable for fund objective aims to capture any differences in the fund expense ratio that might be related to a fund's investment objectives. Funds with more aggressive investment objectives may incur a higher level of fund expenses, due to a more active approach in research and investment activities. Beta, a risk proxy for fund, is included to determine if the risk-taking behaviour of a fund manager has any impact on fund expense ratio. Another factor that could potentially influence fund expense ratio is the size of the fund family, that is, the

number of funds managed by the same fund management company. As the size of the fund family increases, fund expenses can be spread over more funds, which decreases the average expenses per fund within the same fund family. This line of reasoning illustrates the presence of economies of scope in unit trust funds. Additionally, fund size is included to test for the presence of economies of scale through the reduction of the average fund expenses as the asset base of mutual fund increases. The fund age variable is included in the model to control for the effect of fund age on expense ratio. As noted by Ferris and Chance (1987), older funds are able to operate more efficiently due to the learning curve effect, and thus have lower expense ratios than younger funds. The frequency of trade is also likely to affect a fund's operating expenses. Although brokerage fees are not part of the components of MER, funds that have higher turnover rates are likely to incur more research expenses compared to those funds that do not turn over their portfolios frequently.

Empirical results and discussion

Table 1 presents pairwise correlations for variables employed in the study.[4] The management expense ratio and portfolio turnover has a high significant positive correlation of 0.594, suggesting that frequent portfolio turnover leads to high expense ratio. Large funds tend to trade less frequently, as shown by the negative correlation between portfolio turnover and fund size. The management expense ratio is negatively and significantly correlated with fund size, fund family, beta, and fund objective. The correlation coefficients for fund size and fund family are -0.48 and -0.405, respectively. Such correlations suggest that larger funds and funds with large fund–family size have low expense ratios, indicating the presence of both economies of scale and economies of scope. The expense ratio has a modest correlation of -0.266 with beta, suggesting that funds with high returns volatility tend to have low management expense ratio. The correlation coefficient of -0.325 between fund objective and expense ratio suggests that aggressive funds have lower expense ratios than conservative funds. This finding is not surprising because aggressive funds tend to be large funds, as shown by the positive correlation between fund objective and fund size, and as reported earlier, large funds have low expense ratios due to the presence of economies of scale. Fund age has negative correlations with fund size, fund objective dummy, and portfolio turnover, suggesting

Table 1 Pairwise correlation coefficients of variables

	1	2	3	4	5	6	7
1. MER	1.00	−0.48**	−0.41**	0.59**	−0.27*	−0.01	−0.33**
2. LN SIZE		1.00	0.16	−0.34**	−0.23	−0.49**	0.46**
3. FUND FAMILY			1.00	−0.23	0.15	0.11	0.20
4. PORTFOLIO TURNOVER				1.00	0.07	−0.28*	−0.16
5. BETA					1.00	0.21	0.15
6. LN AGE						1.00	−0.37**
7. FUND OBJECTIVE							1.00

Notes: * and ** denote statistical significance at the 0.05 and 0.01 levels.
This table reports pairwise correlation coefficients of variables employed in the study: management expense ratio, in percentage (MER); fund size, measured as the natural logarithm of the fund's total net asset value (LN SIZE); fund family, measured as the natural logarithm of the number of funds within the fund family (FUND FAMILY); portfolio turnover ratio in percentage (PORTFOLIO TURNOVER); fund's riskiness (BETA); fund age, measured in logarithmic term (LN AGE); fund objective is a dummy variable that equals 1 if fund has the objectives of growth and high growth, and 0 otherwise (FUND OBJECTIVE).

that older funds are smaller in size, have less trading activities, and are more conservative than younger funds.

Table 2 presents the regression results of the determinants of fund management expense ratios.[5] As shown, the explanatory variables explain almost 60 per cent of the variations in the fund expense ratios. In contrast to Ferris and Chance (1987) but consistent with the findings reported by McLeod and Malhotra (1994) and Malhotra and McLeod (1997), this study finds no statistically significant relation between fund objective and expense ratio. Additionally, fund age is also found to be unrelated to fund expense ratio. As expected, the coefficient of portfolio turnover is positive and highly significant, suggesting that frequent trading activities lead to high expense ratios. Although brokerage fees are not reflected in the fund expense ratios, frequent trading activities would require high research expenditures and thus, incur more operating expenses. Unlike Malhotra and McLeod (1997), who find no relation between beta and expense ratio, this study finds that funds with high returns volatility are associated with low expense ratios. A plausible explanation for such a finding is that, in an attempt to avoid unnecessary fluctuation in

fund returns, managers of funds with high returns volatility may trade only when favourable market conditions prevail. Hence, fewer trading activities contribute to lowering the fund expense ratio. While trading costs are not directly reflected in the fund expense ratio, trading activities involve several other administrative and operating expenses, which are included in the calculation of the overall fund expense ratio.

As shown in Table 2, fund size is negatively and significantly related to fund expense ratio, that is, larger funds have lower expense ratios than smaller funds. This result suggests the presence of economies of scale and is consistent with the findings of previous studies mentioned earlier. As the asset base of a fund management company increases, fund expenses can be spread over a larger asset base, hence reducing the fund expense ratio. Additionally, this study finds that the number of funds managed under a fund management company is an important factor in explaining the fund expense ratio. Funds with large fund family are found to have lower expense ratios than those with small fund family. As the number of funds within a fund management company increases, fund expenses can be spread over more funds and this contributes to reducing

Table 2 Cross-sectional regression results for unit trust funds

Variable	Coefficient	*t*-Statistic	Pr>|*T*|	VIF
Constant	2.369	9.75	0.0001	0.000
LN SIZE	−0.030	−2.96**	0.0044	2.196
FUND FAMILY	−0.0.34	−2.29*	0.0254	1.147
PORTFOLIO TURNOVER	0.113	4.52**	0.0001	1.688
BETA	−0.267	−4.10**	0.0001	1.227
LN AGE	0.014	0.55	0.5851	2.139
FUND OBJECTIVE	0.009	0.35	0.7242	1.529

F value=15.76,   Prob>*F*=0.0001,   Adjusted R^2=0.5805,   *n*=65

White's (1980) test of first and second moment specification: DF=26, χ^2=18.25, Prob>χ^2=0.8663.
Notes: * and ** denote statistical significance at the 0.05 and 0.01 levels, respectively.
This table reports the results of a cross-sectional regression of the determinants of management expense ratios for a sample of 65 funds. The dependent variable is management expense ratio in percentage (MER). Explanatory variables include: fund size, measured as the natural logarithm of the fund's total net asset value (LN SIZE); fund family, measured as the natural logarithm of the number of funds within the fund family (FUND FAMILY); portfolio turnover ratio in percentage (PORTFOLIO TURNOVER); fund's riskiness (BETA); fund age, measured in logarithmic term (LN AGE); fund objective is a dummy variable that equals 1 if fund has the objectives of growth and high growth, and 0 otherwise (FUND OBJECTIVE).

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the average cost per fund within the fund family. Such findings provide support for the argument of economies of scope in the mutual fund industry as reported in earlier studies. In short, the results of this study suggest that when selecting unit trust funds, investors should pay attention to fund size, returns volatility, portfolio turnover, and the number of funds managed within the same fund management company.

Conclusion

This study examines the determinants of fund expense ratio based on a sample of 65 Malaysian unit trust funds. Given that fund expenses are important determinants of fund returns and that these expenses constitute a continual drain on fund performance, it is becoming more relevant than ever for investors to know the factors that could influence fund expense ratio. The data used include management expense ratio of the fund, investment objective, fund size, age, portfolio turnover ratio, the number of funds under management, and the beta of the fund. The results show that larger funds have lower expense ratios than smaller funds due to economies of scale. Additionally, this study finds that the number of funds managed under the same fund management company is negatively related to fund expense ratio. That is, funds that belong to a large fund family are found to have low expense ratios, indicating the presence of economies of scope. Fund objective and fund age are not related to fund expense ratio. The findings further indicate that funds with high returns volatility are associated with low expense ratios and that high portfolio turnover leads to high expense ratio.

Notes

1. *Source*: Federation of Malaysian Unit Trust Managers.
2. Some other studies focus on the relationships between various expense components and total fund expenses. That is, whether these expense components have a net effect of reducing the funds' overall expense ratios. For example, Dellva and Olson (1998) examine the effects of different types of fees, namely front-end load charges, deferred sales charges, redemption fees, and 12b-1 fees on total fund expense and risk-adjusted performance. For other related studies on fund expenses, see Chance and Ferris (1991), McLeod and Malhotra (1994), Hooks (1996), and Livingston and O'Neal (1998), among others.
3. For a good review of studies on returns persistence of mutual funds, see Droms (2006).
4. Since several pairs of independent variables have correlation coefficients that range from 0.33 to 0.59, a diagnostic measure for collinearity using the variance inflation factor (VIF) is employed to check for the presence of multicollinearity. As reported in Table 2, the diagnostic results show that none of the VIFs for any variables specified in the model has a value greater than 10. Therefore, it is concluded that multicollinearity is not a problem in the regression model.
5. White's (1980) test is used to test for potential problems of heteroscedasticity and misspecification of the model's functional form. In White's test, the null hypothesis is a joint hypothesis, testing whether the model's specification of the first and second moment of the dependent variable is correct. The null hypothesis contends that the residuals are homoscedastic, independent of the explanatory variables, and that the model is correctly specified. As reported at the bottom of Table 2, the insignificance of the test result indicates that the regression model specified in the study shows no problem of heteroscedasticity and that its functional form is correctly specified.

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