Sustainable Investing

Is 12b-1 fee still relevant?

Sustainability investing or ESG investing is a style of investing encompassing the environmental (E), social (S), and governance (G) factors. The Morningstar Sustainability Rating is a measure of how well the holdings in a portfolio are managing their ESG risks and opportunities relative to their Morningstar Category peers. This paper examines the impact of 12b-1 fees of top 10% of Morningstar rated sustainable mutual funds on funds' shareholders for the period October 2011 through August 2016. Keywords: Sustainability, ESG Investing, Mutual funds, expense ratios, distribution costs.

Sustainable Investing – Is 12b-1 Still Relevant?

Expense Ratios of mutual funds

It is puzzling for any investor to understand exactly how much he is paying in fees to a mutual fund. Since these fees affect overall return, when reviewing mutual funds, low expenses are always a good starting point. Mutual funds charge an Expense Ratio to cover annual operating expenses. Expense ratio is expressed as the percentage of fund's average net assets paid for operating expenses and management fees, including certain kinds of distribution charges (12b-1 fees), administrative fees, shareholder services, compliance costs and all other asset based costs incurred by the fund, except brokerage costs. Fund expenses are reflected in the fund's NAV (Net Asset Value). The expense ratio is useful because it shows the actual amount that a fund takes out of its assets each year to cover its expenses. Expense ratio, most important predictor of future returns, directly reduces the fund's returns to the investors (Kinnel, 2016, Blake, Elton, and Gruber (1993)). Sales charges for initial purchasing or deferred charges for redeeming (sales loads), are not included in the expense ratio. The Total Expense Ratio and transparency of disclosure ideas with similar topics have evolved from Haslem (2004, 2006).

Economies of scale and intense competition are putting downward pressure on expense ratios. According to a research perspective published by the Investment Company Institute (ICI) entitled Trends in the Expenses and Fees of Mutual Funds, May 2017, "On average, expense ratios for long-term mutual funds have declined substantially over the past 20 years. In 1996, equity mutual fund expense ratios averaged 1.04 percent, falling to 0.63 percent in 2016. Bond mutual fund expense ratios averaged 0.84 percent in 1996 compared with 0.51 percent in 2016. Hybrid mutual fund expense ratios averaged 0.95 percent in 1996, falling to 0.74 percent in 2016".

Sustainability Investing

Sustainability investing or ESG investing is a style of investing encompassing the environmental (E), social (S), and governance (G) factors. Nearly 80% of Standard & Poor's 500 companies now issue sustainability reports on their ESG performance. A large number of investors care about the ESG factors, and the amount of money on the planet that is sustainably invested is an eye-popping $21.4 trillion (Norton and Kim (2016)). Kacperczyk et al. (2005) first showed that mutual funds with portfolios concentrated in a few industry sectors tend to outperform. They argued that this cross-sector concentration is an indication of fund managers' self-assurance and ability. This study used ESG 138 funds concentrated in sustainability issues. The Morningstar Sustainability Rating is a measure of how well the holdings in a portfolio are managing their ESG risks and opportunities relative to their Morningstar Category peers. This paper examines the impact of 12b-1 fees of top 138 sustainable mutual funds on funds' shareholders.

12b-1 fee

The existence of a 12b-1 fee - an annual recurring marketing or distribution fee- often pushes the overall expense ratio. 12b-1 fee is included in expense ratio. When it was instituted, it was believed that assets in mutual funds would increase because of marketing and that would give rise to economies of scale resulting ultimately in lowering of expenses.

Although 12b-1 plans are used widely by mutual funds (Sirri and Tufano (1998)), their benefits have been questioned. Original intention of 12b-1 fee was to help grow mutual funds in a way that reduces their operating expense ratios by more than their 12b-1 fees. This is not proved. Critics of the fee are questioning the justification of using 12b-1 fee. 12b-1 fee is not living up to its expectations of bringing down expense ratio as the mutual fund's assets grow. A number of papers (Ferris and Chance, 1987; Trzcinka and Zweig, 1990; McLeod and Malhotra, 1994; Rao, 1996, 2012, 2016;) have found a positive correlation between a fund's 12b-1 fee and its expense ratio, leading some to conclude that 12b-1 fees impose a deadweight loss on mutual fund investors. It is pertinent to mention that most of the growth in mutual funds is occurring in no-load funds which do not have 12b-1 fee.

The important question is as investors increasingly buy their investments direct and as mutual funds with 12b-1 fee grow larger, are expense ratios getting cheaper? A case can be made to eliminate 12b-1 fee altogether. (See https://www.kitces.com/blog/eliminate-12b-1-fee-marketing-distribution-cost-mutual-fund-trails/)

If 12b-1 fees "worked", funds that use a 0.25% 12b-1 fee to grow should eventually see their expense ratios fall by 25bps or more, and overall mutual funds that use 12b-1 fees should end up either being cheaper (as the expense ratio drops by even more than the 0.25% fee as the fund scales its operating expenses), or at least finding other cost efficiencies (e.g., amortizing trading costs over more investor dollars) both of which would help to improve mutual fund returns.

This study answers whether fund shareholders of ESG funds pay the costs of 12b-1 plans but do not benefit in the form of lower operating expenses per share? This study further examines to see if objective of the fund, average manager tenure, 12b-1, size of the assets, redemption fee have an effect on expense ratios.

Determinants Of Expense Ratios

After identifying that expense ratio is negatively correlated with the after-fee risk-adjusted performance, it would be of a particular interest to identify what are the factors that mutual fund management companies take into account when setting a particular fee structure. Additionally, in order for the investors to make best possible decision regarding the allocation of their personal wealth, they ought to be sure what are the characteristics of the funds that charge lowest fees.

Prior attempts by Ferris and Chance (1987), Malhotra and McLeod (1997), Wermers (2000) claimed that age, size, 12b-1 plans and turnover have an impact on the overall

expense ratio. More specifically, Ferris and Chance propose that there is a "learning curve" effect which allows older funds to charge lower fees. Moreover, larger funds may experience economies of scale, allowing them to charge lower fees per person. Wermers (2000) contends that because of the extra costs associated with the funds that turn over their portfolio too often, the coefficient for turnover should be positive and contribute to higher expense ratio.

Size or Net Assets: Economies of Scale or Diseconomies of Scale?

The top funds are widely invested in as they attract additional investors and increase their asset size. But there comes a point when assets become so large as to be unwieldy and cumbersome to manage.

Economies of scale typically result from centralized computer facilities, financial activities, purchasing, marketing and the like. If economies of scale are present in "high sustainability rated" mutual funds, expense ratios should decline as funds increase in size. Since some of fund expenses are fixed, there are potentially large economies of scale in the administration of mutual funds. In fact, several studies find a negative relationship between size of the fund and operating costs (Ferris and Chance, 1987; Baumol et al., 1990; McLeod and Malhotra, 1994; Malhotra and McLeod, 1997; Dellva and Olson, 1998; Latzko, 1999; Rea et al., 1999; LaPlante, 2001). Hence, as the mutual fund industry is a competitive one, investment companies pass cost savings to investors through a reduction in the expense ratios.

Did some mutual funds reach an output level where economies of scale typically no longer hold and expense ratios begin to rise? Increasing expense ratios at large size mutual funds are often attributed to limitations in the ability of management to coordinate an organization after it reaches a very large size. While the existence of such diseconomies of scale is disputed by some researchers, the evidence indicates that diseconomies (Growing Pains?) may be significant in mutual fund industry.

Age of the Fund

Another determinant is the age of the fund. A learning curve effect might enable older funds to achieve greater operating efficiency. Khorana et al. (2009) show that the expense ratio declines as fund age increases.

Objective of the Fund

The objective of the fund may also be an important determinant of expense ratio. For example, an actively traded fund may have a higher expense ratio. Because future fund performance is so difficult to forecast, many investors of mutual funds consider a fund's cost. Investors want to make sure that they get a low-cost fund. Objective

Investors should not only know the objective and the strategy the fund manager uses to achieve that objective, they should also watch for "portfolio drift" when a drift occurs away from the fund's original goals.

Front load, Redemption Fee

If no-load funds incur higher expense ratios relative to load funds, then investors will prefer load funds. There is no need for mutual fund investors to ever have to pay these additional fees, since there are plenty of perfectly good funds to choose from that are "no-load" funds and do not charge any redemption fee or 12b-1 fee.

Average Manager Tenure

The best-performing funds perform well because they are directed by a good, consistent investment strategy by a manager. Longer-tenure managers tend to perform worse, suggesting perhaps that the fund's management work less hard over time because of the entrenchment effect. Golec (1996) reported that Expense ratios are positively related to the manager's age. There may be no significant direct impact of managerial tenure on expense ratio because risk of the fund, of course, depends on the manager's allocation decision.

So, to sum up, it is proposed that size, age, objective, front-load or redemption fee status, manager tenure and existence of 12b-1 plan explain the differences in expense ratios of mutual funds.

THE DATA

For analysis, "high sustainability rated" mutual funds from the Morningstar database were selected. This Morningstar Sustainability Rating is a holdings-based calculation using company-level ESG analytics. Top 10% of sustainability rated funds that have history of monthly returns for the period October 2011 through August 2016 are analyzed. The sample is comprised of 138 actively managed mutual funds (ESG138) after deleting those mutual funds with missing data. Objectives of these funds include Growth, growth and Income, equity-income, Diversified Emerging market, Specialty class such as natural resources or health or communication or technology or real estate and Firms with their objectives stated as World stock, Foreign stock, Multi-asset, and Balanced.

Table 1: Characteristics and summary statistics for ESG138 Funds for the period October 2011 through August 2016

Characteristic	Average of 138 funds
Total Assets $MM	1513.577319
Manager tenure years	7.424275362
Turnover ratio %	75.4257971
Annual Report Net Expense Ratio %	1.404710145
Front load %	5.431159

Redemption Fee % (based on thirteen funds)	1.615385
Max Management Fee %	0.807826
12b-1 fee % (on all except 5 funds)	0.259058

Table 1 provides summary characteristics of sample funds listed in table 7. A typical ESG138 fund has average asset size of $1.5 billion with manager tenure of a little over seven years. A manager change in a mutual fund is generally viewed as an indicator of a potential problem. 12b-1 fee is levied by all funds except five of them. This suggests that smaller funds rely mostly on 12b-1 plans as a way to sell more funds, grow at a fast rate, and increase their fund asset size. Additionally, funds with 12b-1 plans have higher expense ratios, higher load fees, and higher indirect costs (turnover ratio). One factor that an investor can control is the expense ratio of the mutual funds that he invests in. Average net expense ratio for these 138 active funds is 1.4% whereas index funds can be bought with expense ratios as low as 0.03%. Expense ratios include management fee, 12b-1 fee, administrative fee, operating costs, and other costs. Only thirteen funds levy redemption fee with an average fee of 1.6%. All the funds charge front load with an average of 5.4%. Higher turnover levels generally add to the expense ratio. A typical ESG138 fund has 75% turnover, meaning the fund replaces three-fourths of its holdings over a 12-month period. Index funds have turnover no greater than 5%. A low turnover results in low trading costs for the fund and increased returns for shareholders. These trading costs are not included in a fund's expense ratio. A high turnover results in a higher-than-average amount of capital gains and funds with high portfolio-turnover are not tax efficient.

The following are the variables used:

Expense Ratio: (Ratio of expenses to average net assets) These expenses are comprised of the administrative costs of operating the fund, including costs of promotion and compliance, auditors' and legal fees, and the management fee. Brokerage commissions on portfolio transactions are not included in the expense ratio but are deducted before reporting the gross return. Load charges are not included among expenses.
Assets or Size: End of year net assets as reported.
Objective: Growth, growth and Income, equity-income: A dummy variable that equals 1 if classified by Morning Star as having a growth objective and 0 if not. Growth class includes firms with objectives of growth, growth and income, and equity income.
Objective: Diversified Emerging market: A dummy variable that equals 1 if classified by Morning Star as having Diversified Emerging market objective and 0 if not.

Objective: Specialty: A dummy variable that equals 1 if classified by Morning Star as having Specialty objective and 0 if not. Specialty class includes firms with objectives of natural resources or health or communication or technology or real estate.
Objective: Firms with their objectives stated as World stock, Foreign stock, Multi-asset, and Balanced constitute the omitted class. Omitted category becomes the reference category against which the effects of the other categories are assessed. We can interpret the results as the difference between each category and this omitted category.
Age: Number of months since formation of the fund.
Front load: Firms with front-load constitute the omitted class.
Redemption fee: A dummy variable that equals 1 if classified as having redemption fee and 0 if not.
12b-1: Status of 12b-1 plan, where 1 = plan in effect and 0 = plan not in effect
Management Tenure: A long-term fund performance record, preferably of five to 10 years, is a key indicator of a fund manager's investing abilities.
Load Adjusted Return 3 Year (quarter-end): Investor's return after adjusting for investment fees charged to buy and sell shares of mutual funds from investment returns.

Methodology

To test and identify the effects of different types of variables on mutual fund expense ratio, the following two equations are employed:

$$Expense\ Ratio = \alpha + \beta_1 * 12b + \beta_2 * Redemption + \beta_3 * Ln(Assets) + \beta_4 * Mgr.tenure + \sum_{j=5}^{7} \beta_j * Objective + \beta_8 * Ln(Age)$$

$$3 - Yr\ Load\ adj.Return = \alpha + \beta_1 * 12b + \beta_2 * Exp.Ratio + \beta_3 * Ln(assets) + \beta_4 * Mgr.tenure + \sum_{j=5}^{7} \beta_j * Objective + \beta_8 * Ln(Age) + \beta_9 * Turnover$$

Where the fund's expense ratio is expressed as a percentage of total net assets, and other variables as defined in the section of variables.

Results

Table 2: This table shows the results of a multi-factor regression model as shown in equation below for the period October 2011 through August 2016. The dependent variable is expense ratio.

$$Expense\ Ratio = \alpha + \beta_1 * 12b + \beta_2 * Redemption + \beta_3 * Ln(Assets) + \beta_4 * Mgr.tenure + \sum_{j=5}^{7} \beta_j * Objective + \beta_8 * Ln(Age)$$

Panel A: *Regression Statistics*	
Multiple R	0.56
R Square	0.31
Adjusted R Square	0.27
Standard Error	0.50
Observations	138.00
F statistic	7.38

Panel B: Regression Results				
	Coefficients	*Std. Error*	*t Stat*	*P-value*
Intercept	2.52	0.40	6.35	0.00
Redemption Fee	0.02	0.15	0.10	0.92
12b-1 Current	-0.11	0.24	-0.45	0.65
LN(TOTAL ASSETS)	-0.15	0.02	-6.29	0.00
Avg. Mgr. Tenure	0.02	0.01	1.70	0.09
Growth Obj.	0.06	0.10	0.63	0.53
Diversified Obj.	0.34	0.20	1.69	0.09
Specialty Obj.	0.01	0.15	0.04	0.97
Ln (Age)	-0.06	0.07	-0.85	0.40

Table 2 shows that controlling for the effects of other variables, funds with redemption fee add (+0.02) more to expense ratio than those with front-load. The coefficient of(-0.11) can be interpreted as the mean change in expense ratio (dependent) variable when the 12b-1 dummy changes from 0 to 1, holding all other variables constant (i.e. ceteris paribus).

The existence of 12b-1 plan decreased expenses by about 0.11 (t=-.45) percent of net assets without including turnover ratio variable and 0.08 (t=-.32) percent of net assets with turnover ratio variable included among other variables. The coefficient of turnover is negative but not statistically significant.
The coefficient on Ln (Total assets) is negative and statistically significant, telling us we can accept the hypothesis that increasing total assets leads to lower expense ratio due to economies of scale. Specifically, A 1% change in (Total assets) is associated with a negative change in expense ratio of 0.01*(coefficient .15), all else equal.
The coefficient value 0.02 (t=1.7) for manager tenure indicates the direction and number of units of change in the expense ratio due to a one unit change in average manager tenure. There is no significant direct impact of managerial tenure on expense ratio. Risk, of course, depends on the manager's allocation decision.

The coefficient on growth objective is positive, indicating that we can accept the hypothesis that funds with this objective see higher expense ratio than the group of omitted class objectives of (World stock, Foreign stock, Multi asset, and Balanced). Specifically, we expect growth objective funds to have .06 higher expense ratio than funds with omitted objectives, all else equal. The coefficient values for the objective dummies indicate that funds with growth, diversified and specialty objectives are more expensive than the funds with omitted class of objectives. And funds with diversified objectives have expense ratios about .34 (T=1.69) more than those with omitted class, whereas growth objectives have expense ratios about .06 more than the omitted class of objectives. However, the T-test results indicate whether any of the objectives are significantly different from reference group or the omitted class, show that the difference between diversified and omitted class is significant. It is pertinent to mention that because Omitted class objectives is the same reference group for each of the other objective dummies, we can directly compare each of the objective to one another: Growth, for example, has higher expense ratio on average than Specialty (.06 versus .01), but lower expense ratio than Diversified (.06 versus .34).

Though relationships between expense ratio and both manager tenure as well as the diversified objective are somewhat weak, this study's results imply that investors better be careful in choosing relatively new funds and choosing an objective which has a significant cost.

Table 3: This table shows the results of a multi-factor regression model as shown in equation below for the period October 2011 through August 2016. The dependent variable is Load Adj. Ret. 3 Yr. (qtr. end).

$$3-Yr\ Load\ adj.Return = \alpha + \beta_1 * 12b + \beta_2 * Exp.Ratio + \beta_3 * Ln(assets) + \beta_4 * Mgr.tenure + \sum_{j=5}^{7} \beta_j * Objective + \beta_8 * Ln(Age) + \beta_9 * Turnover$$

Panel A: Regression Statistics	
Multiple R	0.52
R Square	0.27
Adjusted R Square	0.22
Standard Error	5.04
Observations	138.00
F statistic	5.29

Panel B: Regression Results				
Regression Results	*Coefficients*	*Standard Error*	*t Stat*	*P-value*

Intercept	-5.13	4.57	-1.12	0.26
Prospectus Net Expense Ratio	-0.56	0.89	-0.64	0.52
12b-1 Current	3.39	2.36	1.44	0.15
LN(TOTAL ASSETS)	0.67	0.29	2.32	0.02
Avg. Mgr. Tenure	0.15	0.09	1.64	0.10
Growth Obj.	3.67	1.01	3.63	0.00
Diversified Obj.	-4.37	2.06	-2.12	0.04
Specialty Obj.	3.32	1.46	2.28	0.02
Turnover Ratio	0.00	0.00	0.00	1.00
Ln (Age)	-0.23	0.75	-0.30	0.76

Table 3 shows that 12b-1 fees payment by shareholders for the growth of mutual fund assets had positive influence on the performance but this relationship is significant (t=1.44) at 15% level only. Higher expenses do not always translate into higher mutual fund returns. Higher expense ratios do often lead to eventual reductions in fund performance. However, this result is not significant. Expense ratios often vary inversely with fund assets, meaning that as a fund's assets increase, its fixed costs likely represent a smaller percentage of its net assets; therefore, its expense ratio can correspondingly decrease. Results show that there are significant economies of scale as assets increased in size resulting in positive performance. 3-year load adjusted return is positively related to the manager tenure (t=1.64), significant at 9% level.

To control for four various groups of investment objectives, three dummy variables that are equal to 1, when a fund's investment objective is in one of these three groups, and 0 otherwise, are included. Objectives of these funds consist of (1) Growth, growth and Income, equity-income, (2) Diversified Emerging market, (3) Specialty class such as natural resources or health or communication or technology or real estate and Firms with their objectives stated as World stock, Foreign stock, Multi-asset, and Balanced. Firms with their fourth group of objectives stated as World stock, foreign stock, Multi-asset, and Balanced constitute the omitted class. The coefficients on growth and specialty objectives is positive, indicating that we can accept the hypothesis that funds with these objectives see higher performance than the group of omitted class objectives; The coefficient on diversified objective is negative meaning funds with this objective see lower performance than the group of omitted class objectives of (World stock, Foreign stock, Multi asset, and Balanced). There was no impact of turnover ratio on the 3-year performance of mutual funds. Regression coefficient of Ln (age), -0.23, can be interpreted as a 1% change in age is associated with a change in 3-year load adjusted return of 0.01* (-0.23).

Conclusion

There is negative relationship between 12b-1 fee and the expense ratio. The existence of 12b-1 plan decreased expenses by about 0.11 (t=-.45) percent of net assets without including turnover ratio variable and 0.08 (t=-.32) percent of net assets with turnover

ratio variable included among other variables. This fact is further confirmed by regressing 3-year performance on 12b-1 and a host of other variables. There is a positive relationship between 12b-1 fees and the performance and negative relationship between expense ratio and the performance.

Increasing total assets leads to lower expense ratio due to economies of scale.
There is no significant direct impact of managerial tenure on expense ratio.
Chance and Ferris (1991) found negative effect of the age on mutual fund distribution fees. In this study, the age variable has negative relationship with both the expense ratio as well as the load adjusted return performance, but the results in both cases were not significant.

Results indicate that funds with growth, diversified and specialty objectives are more expensive than the funds with omitted class of objectives of World stock, Foreign stock, Multi asset, and Balanced. While funds with growth and specialty objectives show higher performance, funds with diversified objective show lower performance than the group of omitted class objectives. It is intuitive that lower fees should help drive superior performance, but low costs alone cannot guarantee success.

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