

**The ABCs of Mutual Funds:
A Natural Experiment on Fund Flows and Performance**

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Abstract

In the 1990s, many funds with front-end loads introduced additional share classes that allowed investors to pay annual fees and/or back-end charges instead of front-end loads. The transition to a multiple-class structure provides a natural experiment with regard to investor clienteles and fund performance. We examine (a) whether the new fee structures increase fund cash flows by attracting new investor clienteles; (b) whether changes induced in fund flow characteristics by the new investor clienteles affect fund performance – despite little change in fund management and investment objectives. We find that investors in the new classes tend to have a shorter investment horizon and greater sensitivity to fund performance than investors in the front-end load class. Introducing the new classes attracts significantly more new money in the first three years, controlling for performance and fund attributes. The downside, however, is that about two years after introducing the new classes, funds experience a significant drop in performance – a drop that is expected to substantially erode the cash flow growth induced by the new classes.

1 Introduction

Broker-intermediated mutual funds have traditionally been distributed with a front-end load, where the load represents the sales charge paid to brokers. In the 1990s, a large majority of funds with front-end loads introduced additional share classes. By allowing investors to replace front-end loads with higher annual fees and/or back-end charges, the new classes were intended to appeal to investor clienteles with different investment preferences. In this paper, we examine whether the new fee structures increase fund cash inflows by attracting investor clienteles significantly different from those in the existing share class. We then investigate the impact of introducing multiple share classes on fund performance. The transition to a multiple-class structure provides us with a natural experiment on investor clienteles and fund performance, while keeping fund management and investment objectives virtually unchanged.

Mutual funds are sold to retail investors through various distribution channels. The traditional and still important distribution channel is the so-called ‘advisor’ or ‘broker’ intermediated channel in which financial planners and brokers play a primary role in selling a fund and providing information and other services to investors. The mutual fund marketplace changed dramatically after the 1980s with the arrival and the evident popularity of directly marketed no-load mutual funds. Since the 1990s, some no-load funds have also been offered by discount brokers through fund supermarkets. As we would expect, the channels used to distribute no-load funds are characterized by low selling costs and limited investor services.

As mentioned, a significant and relatively recent development in the broker intermediated channel is the availability of multiple classes on the same underlying fund portfolio. The classes are usually denoted A, B and C. The A class investors pay front-end loads as a sales charge to compensate brokers. Traditionally, this was the only type of fee structure available to a retail investor. In the 1990s, brokered funds expanded their menu and began to offer classes with different fee structures. The B class charges an annual 12b-1 fee of about 1 percent and a contingent deferred sales load (CDSL) up to 5 percent upon exit.

This back-end charge typically declines with the investment periods. The C class charges a lower contingent deferred sales load than the B class and a similar 1 percent annual 12b-1 fee. An advantage of the class B shares, however, is that they are converted into class A shares after six to eight years, thereby lowering the annual 12b-1 fee.

We begin our analysis by examining whether a switch from an A class fund to a multiple-class fund increases the overall cash inflow. Controlling for performance and various fund characteristics, we find that funds with multiple share classes attract more money than funds with only single classes, primarily during the second year and third year after the introduction of new share classes. The cash flow differences between multiple-class and single-class funds cannot be attributed to differences in cash flow prior to the introduction of new share classes. The increase in cash inflow in the second and third years after adopting a multiple-class structure, controlling for factors such as performance, expenses, and fund size, is estimated to be about 6 percent in each of the two years or about 12 percent overall. Given the median fund size in 2002, this is of the order of 8 million dollars per fund each year or about 16 million dollars overall. The new money growth slows down and is no longer significant in about the fourth year following the switch to a multiple-class structure.

To understand the nature of investor clienteles, we first examine whether introducing the new classes has negative cash flow consequences for the existing A class. The notion is that if there is such cannibalization, some existing investors in class A would have preferred one of the new classes – had it been available to them. However, controlling for past performance and other fund attributes, we find no evidence of a decrease in cash inflow to the A class after the introduction of additional fund classes. The finding suggests that the investor clienteles attracted to the new share classes were not previously served by the A class.

Since the three classes on a fund obtain the same NAV return – prior to expenses and sales charges – this allows us to compare the cash flow responses to different fee structures in a controlled setting. Given the structure of the sales charges associated with the fund classes, it is apparent that investors with relatively long investment horizons would prefer the A class with its up-front load and lower annual charges, while those with more uncertain and shorter horizons would prefer the B or C class. The importance of investment horizon is

frequently discussed in the popular press and fund prospectuses. Investors may have a specific time by which they need their investment dollars. However, investor preferences may also be determined by the value an investor places on having flexibility to move between investments. Hence, an investor who believes that she might identify good investment opportunities in the future or has some concern about the quality of a fund would prefer class C to the other two classes. The empirical prediction that follows from the above discussion, therefore, is that the cash flow response to fund performance and the overall cash flow volatility should be highest for the C class. Empirical results confirm the above prediction, supporting the notion of different investor clienteles.

The introduction of new classes may also have an impact on fund performance, as it changes the overall volatility and the level of fund cash flow. It has been argued in the literature that higher cash flow volatility and level would tend to have an adverse effect on a fund's performance on account of liquidity costs and decreasing returns to scale (see e.g., Edelen (1999), Nanda, Narayanan and Warther (2000), Chen et al. (2002), Rakowski (2002), Stein (2003), Berk and Green (2004), and Johnson (2004)). The argument plays an important role in explaining the empirical finding that performance persistence and smart money effect (see Gruber (1996) and Zheng (1999)) are short lived. As investors chase past performance, the increase in the volatility and level of fund cash flow would tend to equalize the expected abnormal returns across funds. Hence, even if performance reflects superior investment skills, we would not expect the performance and the smart money effect to persist in equilibrium. By focusing on the change in performance upon the adoption of a multiple-class structure, we are able to investigate the extent to which performance is adversely affected by the change in cash flow characteristics, while holding managerial ability and investment objectives virtually unchanged.

Our results indicate that, in the second and subsequent years following the introduction of new share classes, funds experience a significant drop in performance. The four-factor adjusted performance is found to decline by about 1.2 to 1.7 percent on an annual basis, both before and after controlling for expenses. The estimated impact of fund performance on cash flow suggests that the new money growth decreases by about 2 to 3 percent on an

annual basis due to the performance drop. On the basis of this figure, we estimate that four years after the switch to a multiple-class structure, over half of the 12 percent or so of the additional growth induced by the new classes is eroded.

We also investigate whether economies of scale and decrease in fund expenses affect a fund family's decision to introduce new share classes. An obviously important consideration here is the cost of introducing new classes and how the cost burden can be shared. The fact that there may be economies of scale in introducing new classes is suggested by the observation that, when fund families introduce new classes, they tend to do so for many of their funds at the same time. If economies of scale are important, then larger fund families would be in a better position to bear the costs and, hence, be more likely to introduce new classes. Consistent with this notion, we find that larger fund families are significantly more likely to introduce new share classes than smaller families. Another interesting finding is that fund families have a significantly higher probability of switching to a multiple-class structure when they experience a period of unusually good performance – suggesting some market timing behavior on the part of fund families. In terms of operating expenses, we find that compared to single A class funds, funds that introduce new share classes tend to charge lower operating expenses (non 12b-1 fee) before the switch. However, there is only marginal evidence that these funds further reduce the charge for operating expenses after the switch.

The rest of the paper is organized as follows. Section 2 reviews the relevant literature. Section 3 provides institutional details about the multiple-class and single-class funds. Section 4 describes data and summary statistics. Section 5 presents methodology and empirical results. We conclude in Section 6.

2 Literature Review

The existing research indicates that mutual fund flows are affected by past fund performance, load and expense charges, and fund advertising. Numerous studies, for example, Gruber (1996), Chevalier and Ellison (1997), Goetzmann and Peles (1997), Sirri and Tufano (1998), Del Guercio and Tkac (2002), and Nanda, Wang and Zheng (2004) have demonstrated that

mutual fund flows chase past fund performance, especially stellar performance. Sirri and Tufano (1998) show that fund flows are negatively related to total fund expenses. Wilcox (2003) and Barber, Odean and Zheng (2004) find evidence that mutual fund investors pay more attention to load charges than expense ratios. Jian and Wu (2000) document that advertised funds attract significantly more new money in comparison to a group of control funds.

There is evidence that the mutual fund industry exploits the patterns in fund flows to maximize total assets under management. Brown, Harlow and Starks (1996) and Chevalier and Ellison (1997) find evidence that fund managers alter the riskiness of their portfolios at the end of the year to take advantage of the nonlinear shape of the performance-flow relation. Nanda, Wang and Zheng (2004) indicate that some fund families adopt strategies to increase the likelihood of creating a star fund in order to maximize their overall cash flows.

Despite the fact that mutual funds and complexes want to maximize their assets under management and thus profits, high cash flow volatility and large fund size may hurt fund performance due to liquidity costs and the difficulty of finding additional attractive investment opportunities. Nanda, Narayanan and Warther (2000) develop an equilibrium model of mutual fund size and structure, where fund performance can decline with the increase of fund size. Based on their model, funds attracting shorter horizon investors will be associated with greater cash flow volatility and worse performance. In a rational investor model, Berk and Green (2004) argue that new information on managerial ability will affect the cash flow. However, the increase in cash flow may have a negative impact on performance due to decreasing returns to scale. Edelen (1999) and Rakowski (2002) provide empirical evidence on the negative relationship between cash flow volatility and fund performance. Stein (2003) investigates the importance of liquidity costs on the choice of an open-end or closed-end structure. Using simulations, Johnson (2004) shows that short-term investors impose greater liquidity costs on a fund than long-term investors. Chen et al. (2002) document that fund size adversely affects performance after controlling for other fund attributes.

A number of papers have studied the decisions of mutual fund families to start new funds and new share classes, for example, Khorana and Servaes (1999) and Zhao (2002). Recently

researchers have begun to examine the multiple share class structure of mutual funds. In an Investment Company Institute (ICI) study, Reid and Rea (2003) provide a comprehensive summary of mutual fund distribution channels and distribution costs for the past 25 years. Livingston and O’Neal (1998) compare the effect on investors of distribution fees for mutual funds with different types of sales arrangements. Lesseig, Long and Smythe (2002) document that multiple share class funds have lower administrative fees but higher management fees than single-class funds.

Most investment and management decisions are made at the fund level rather than at the share class level. As many funds introduced multiple share classes in the 1990s, it becomes important to analyze fund-level cash flow, performance, and other characteristics by aggregating across different share classes of the same asset portfolio. A number of recent papers, for example, Chen et al. (2002) and Reuter (2002), control for share classes. In this paper, we construct a unique data set of fund-level information adjusting for the multiple-class structure.

3 Multiple-Class and Single-Class Funds

Multiple share classes of the same fund obtain returns from the same investment portfolio but differ in fees, expenses, and sales charges. We use the criteria outlined by the ICI to identify share classes. In our study, a fund is defined as a multiple-class fund if it offers either A, B, and C shares or A and B shares.¹ A fund is defined as a single-class fund if it only offers an A class or no-load class.² Among the 1,731 diversified equity funds in our sample at the end of 2002, 48 percent are multiple-class funds and 52 percent are single-class funds. In this section, we provide some institutional details about various share classes based on

¹Many multiple-class funds offer other class types as well. For example, some share classes are specially designed for institutional investors or retirement plans. However, unlike A, B, and C classes, these share classes do not have an industry-wide standard regarding load and fee structures. Moreover, the naming of these share classes is often at the discretion of fund management, making classifications extremely difficult. For these reasons, we focus exclusively on the A, B, and C classes of multiple-class funds, which are offered to individual retail investors. Most multiple-class funds offer either A, B, and C three share classes or A and B shares. Very few funds offer the combination of A and C or B and C. We hence exclude them from our analysis.

²Funds that only offer a single B or C class are rarely observed.

the ICI study by Reid and Rea (2003). In particular, we focus on alternative load and fee structures. We also discuss the empirical implications with respect to investors' selection of share classes.

3.1 Basics of Share Classes

Class A shares charge investors an up-front load as a percentage of total investment at the time of purchase. For example, if an investor invests \$1,000 in A shares with a 5 percent front-end load, she would pay a \$50 load charge to the broker and have a net position of only \$950 in the fund. A typical load structure involves a maximum front-end load charged to investments below certain threshold (e.g., \$25,000) and a schedule of load reductions for large investments. For investments above 1 million dollars, the fund typically waives the load charges altogether. Besides the front-end load, class A shares also rely on an annual 12b-1 fee to compensate brokers and financial advisors. Under SEC Rule 12b-1, a fund can use its assets to pay for distribution related services. For class A shares, the annual 12b-1 fee typically ranges from 25 to 35 basis points.

Class B investors are not subject to a front-end sales load at the time of initial investment. Instead, class B investors pay for distribution related services through a combination of an annual 12b-1 fee and a contingent deferred sales load (CDSL). The annual 12b-1 fee is typically set at 100 basis points. The payment of CDSL, also called the back-end sales load, is contingent upon share redemptions and is based on the lesser of the original cost of shares at the time of investment and the current market value of the shares. A typical CDSL structure involves a maximum back-end load (about 5%) charged to investments redeemed during the first year and a schedule of load reductions for investments held longer. The pace of back-end load reductions is typically 1 percent per year. Hence, if an investor holds the class B shares for longer than six or seven years, she would not be charged any back-end load in case of redemption. Moreover, class B shares are typically converted into A shares after six to eight years, resulting in a reduction of the 12b-1 fee from 100 basis points to that of A shares.

Class C shares are sold to investors at net asset value without any front-end load charges. Like class B investors, shareholders of the C class pay for distribution related services through a combination of an annual 12b-1 fee (typically 100 basis points) and a CDSL. However, the load and fee structure of class C differs from that of class B along two dimensions. First, the back-end sales load is set at 1 percent and is triggered only if an investor redeems her shares during the first year of investment. For shares held for more than one year, the CDSL is normally waived. Second, unlike B shares, C shares are not converted into A shares after six to eight years. In other words, class C investors have to pay the 100-basis-point annual 12b-1 fee as long as they hold the C shares.

3.2 Choice between A, B, and C Classes

For any multiple-class fund, all the three share classes are issued on the same underlying asset portfolio and thus have the same return before loads and expenses. Since the three share classes typically have the same non-distribution expense ratio, the difference in net returns (after loads and expenses) is mainly driven by the different payment schedules for distribution costs. Thus, investment horizons play an important role in determining the share class that would maximize an investor's net returns.

Reid and Rea (2003) demonstrate how the net returns of the three share classes depend on the investment horizons. For investors with short investment horizons (one to six years), class C shares deliver the highest net returns. For investors with intermediate investment horizons (seven to eight years), classes B and C perform better than class A. For long term investors with investment horizons over eight years, class A dominates the other two classes. Besides investment horizons, investor preferences may also be affected by the value an investor places on having flexibility to move between investments, without incurring significant penalties.

The empirical prediction that follows from the above discussion, therefore, is that the cash flow response to fund performance and the overall cash flow volatility should be higher for the C class than for the A or B class.

3.3 Single-Class Funds

In recent years, other distribution channels have emerged to compete with the traditional ‘advisor’ or ‘broker’ intermediated channel. Among the most successful ones are the ‘direct’ channel and the ‘supermarket’ channel. The majority of the funds sold through these channels are no-load funds, which usually have a single class. A typical no-load fund has no sales load and an annual 12b-1 fee less than 25 basis points. Hence, compared to the A, B, or C share class in a multiple-class fund, no-load funds have significantly lower distribution costs. To keep distribution costs low, these funds carry out transactions with investors either directly as in the ‘direct’ channel or through discount brokers that offer mutual funds from a large number of fund sponsors. The latter channel is referred to as the ‘supermarket’ channel.

Some load funds have not adopted the multiple-class structure and only offer an A share class. These funds have load and fee structures that are similar to those of the A class of multiple-class funds, and are distributed mostly through the ‘advisor’ or ‘broker’ intermediated channel.

4 Data

4.1 Definition of Variables

Our data sample is based on the mutual fund database compiled by Center for Research in Security Prices (CRSP). This data set provides information on fund complex, monthly fund total net assets (TNA), monthly fund returns, and annual fund characteristics (expense ratio, 12b-1 fee, load, turnover ratio, etc.) for all open-end mutual funds, including defunct funds. For our study we include all diversified U.S. equity funds over the period from January 1993 to December 2002, for which we manually identify fund class information.³ We focus on the post-1992 period during which the majority of multiple share classes emerged.

³To narrow down to a sample of diversified equity funds, we select all open-end equity funds in the CRSP data and then exclude sector funds, international funds, and balanced funds.

The CRSP mutual fund database treats the multiple share classes offered by a fund as different entities. We manually identify the multiple share classes of a fund according to fund names. For most share classes, the recorded names provide us with information about the nature of the classes (A, B, C, or no-load).⁴ To ensure the accuracy of the class coding, we verify the distribution-related costs (sales loads and 12b-1 fees) for each reported share class based on the criteria discussed in Section 3. We construct the fund-level variables by aggregating across the share classes. For our analyses, we use both fund-level and class-level information.

The new money or cash flow of a multiple-class fund is calculated as the sum of new money across all share classes. For each share class, new money is defined to be the dollar change in TNA, net of price appreciation in the class assets. Assuming that new money is invested at the end of each month, the cash flow for class i in month t is given by

$$(\text{Newmoney})_{it} = (\text{TNA})_{it} - (\text{TNA})_{i,t-1} * (1 + R_{it}), \quad (1)$$

where R_{it} is the rate of return of class i in month t . For a multiple-class fund f , the fund-level new money is

$$(\text{Newmoney})_{ft} = \sum_{i=A,B,C} (\text{Newmoney})_{it}. \quad (2)$$

Normalizing the new money by fund-level TNA at the beginning of the month gives a measure for fund-level new money growth:

$$(\text{Newmoneygrowth})_{ft} = \frac{(\text{Newmoney})_{ft}}{\sum_{i=A,B,C} (\text{TNA})_{i,t-1}}. \quad (3)$$

The fund-level expense ratio, 12b-1 fee, non 12b-1 expense (expense ratio net of 12b-1 fee), and total load are calculated as the TNA-weighted average of the corresponding class-level measures.

Finally, we calculate risk-adjusted returns to measure the performance of funds and share classes. Specifically, we calculate the CAPM one-factor, Fama-French (1993) three-factor,

⁴For example, AIM Large Cap Growth Fund/A, AIM Large Cap Growth Fund/B, and AIM Large Cap Growth Fund/C are identified as the A class, B class, and C class of the AIM Large Cap Growth Fund, respectively.

and Carhart (1997) four-factor adjusted returns at both the class and fund levels. For a multiple-class fund, the fund abnormal return is the TNA-weighted average of its class returns. We use the following OLS regressions to estimate factor loadings and α measures:

$$R_{it} - RF_t = \alpha_i + \beta_{iRMRF}RMRF_t + e_{it}, \quad (4)$$

$$R_{it} - RF_t = \alpha_i + \beta_{iRMRF}RMRF_t + \beta_{iSMB}SMB_t + \beta_{iHML}HML_t + e_{it}, \quad (5)$$

$$R_{it} - RF_t = \alpha_i + \beta_{iRMRF}RMRF_t + \beta_{iSMB}SMB_t + \beta_{iHML}HML_t + \beta_{iMOM}MOM_t + e_{it}, \quad (6)$$

where R_i is the rate of return of class i , RF is the one month T-bill rate, R_m is the rate of return of the market, $RMRF \equiv R_m - RF$ is the excess market return, SMB is the rate of return on the mimicking portfolio for the size factor in stock returns, HML is the rate of return on the mimicking portfolio for the book-to-market factor in stock returns, MOM is the rate of return on the mimicking portfolio for the momentum factor in stock returns, α is the excess return of the corresponding factor model, and β s are the factor loadings of the corresponding factors. Using the estimated factor loadings (β s) and excess return α , we define the risk-adjusted return (α_{it}) as

$$\alpha_{it} \equiv \alpha_i + e_{it}. \quad (7)$$

4.2 Summary Statistics

Table 1 reports summary statistics for multiple-class funds and single-class funds. The number of multiple-class funds in the sample increases dramatically from 40 in 1993 to 838 in 2002. In contrast, the number of single-class funds only increases from 634 to 893 during the same period. As shown in Figure 1, the difference reflects the industry trend that many funds switched to a multiple-class structure by adding B and C classes to the existing A class during the sample period. Despite the decrease in the number of single A class funds, we do not observe a drop in the total number of single-class funds due to the rapid growth of no-load funds. Multiple-class funds in general have higher TNAs than single-class funds: In 2002, the median TNA of multiple-class funds is 135 million while the median TNA of single-class funds is 73 million. The mean of fund TNAs is much larger than the median,

indicating that the distribution of fund size is highly skewed to the right. The multiple- and single-class funds exhibit a significant difference in expense ratios. The median expense ratio for multiple-class funds ranges from 1.54 percent to 1.78 percent, about 40 basis points higher than that for single-class funds. The difference in expense ratios is mainly driven by the annual 12b-1 fee. Multiple-class funds have a median annual 12b-1 fee of 50 basis points, compared to 0 basis point for single-class funds. On the other hand, the median non 12b-1 expense for single-class funds is similar to that for multiple-class funds. The median sales load for multiple-class funds appears quite stable (about 5.00 percent) over the time period. However, for single-class funds, the median sales load is zero over most of our sample period, due to the rapid growth of no-load funds in the industry.

In Table 2, we document summary statistics for the sample of multiple-class funds with all three share classes. The A class is the largest in terms of TNA, followed by classes B and C. In 2002, the median TNA for the A class is about 70 million dollars, in comparison to 40 million dollars for the B class and 13 million dollars for the C class. The A class has a median expense ratio of 1.34 percent, which is lower than the median expense ratio of about 2 percent for class B or C. Much of the difference in expense ratios can be attributed to the annual 12b-1 fee. The median annual 12b-1 fee for the A class is around 25 basis points, while the median fee for the B or C class is around 100 basis points. On the other hand, the non 12b-1 expenses are very similar (around 1.10 percent) for the three share classes. As expected, among the three share classes, class A has the highest front-end load (more than 5 percent) and class B has the highest back-end load (5 percent). The difference in load and fee structures among share classes reflects the alternative payment arrangements for the distribution-related services.

Finally, we report in Table 3 the summary statistics for single-class funds. The number of funds that offer a single A class decreases from 313 in 1993 to 125 in 2002. Meanwhile, the number of no-load funds increases from 321 to 768 over the same period. The trend is consistent with the following facts: Many load funds have converted into multiple-class funds, and the single-class funds have become mostly dominated by no-load funds. Compared to funds with a single A class, no-load funds on average have much lower expense ratios, annual

12b-1 fees, non 12b-1 expenses, and sales loads.

5 Methodology and Empirical Findings

In this section, we first examine whether switching from a single-class to a multiple-class structure increases new money flows to the fund, after controlling for past performance and other fund attributes. We then investigate whether different share classes attract substantially different investor clienteles in terms of investment horizon and response to fund performance. We next study the effect of introducing multiple share classes on fund performance. Finally, we explore whether economies of scale and market timing affect a fund family’s decision to introduce new share classes.

5.1 The Impact of the Multiple-Class Structure on Fund Cash Flow

We begin our analysis by examining how a switch from a single A class fund to a multiple-class fund affects the fund cashflows, controlling for past performance and other fund attributes. Specifically, we use fund-level information (hence, aggregating across the share classes for the multiple-class funds) to estimate the following pooled regression with panel-corrected standard errors (PCSE):

$$\begin{aligned}
 \text{Newmoneygrowth}_{ft} = & \alpha + \beta_1(\text{Mulbef})_{ft} + \beta_2(\text{Mulaft}_{yr0})_{ft} + \\
 & \beta_3(\text{Mulaft}_{yr1})_{ft} + \beta_4(\text{Mulaft}_{yr2})_{ft} + \beta_5(\text{Mulaft}_{yr3})_{ft} + \\
 & \beta_6(\text{Mulaft}_{yr4})_{ft} + \beta_7(\text{Mulaft}_{yr5})_{ft} + \beta_8(\text{SingleA})_{ft} + \\
 & \beta_9(\text{Past Perf})_{f,[t-12,t-1]} + \beta_{10}(\text{Past Perf})_{f,[t-24,t-13]} + \\
 & \beta_{11}(\text{Past Perf})_{f,[t-36,t-25]} + \beta_{12}(\text{Past Perf})_{f,[t-48,t-37]} + \\
 & \beta_{13}(\text{Past Perf})_{f,[t-60,t-49]} + \beta_{14}(\text{Past Perf})_{f,[t-12,t-1]}^2 + \\
 & \beta_{15}(\text{Log Fund TNA})_{f,t-1} + \beta_{16}(\text{Log Family TNA})_{t-1} + \\
 & \beta_{17}(\text{Log Fund Age})_{f,t-1} + \beta_{18}(\text{Expense})_{f,t-1} + \\
 & \beta_{19}(\text{Turnover})_{f,t-1} + (\text{Time-fixed Effects}) + \epsilon_{it}.
 \end{aligned} \tag{8}$$

Here, f is the index for fund and t is the index for month. The variable (Newmoneygrowth) is given by equation (3). To capture the impact of multiple-class structure on new money growth over time, we rely on several indicator variables. There are reasons why the impact may not be constant over time. For instance, it may take time for the new classes to be marketed successfully and to attract new money. Moreover, after a period of rapid growth, the cash flow growth of the new classes may slow down. The indicator variable, (Mulbef), equals one if a fund has a single A class in the current period but subsequently switches to a multiple-class structure and zero otherwise. The indicator variable, (Mulaft_[yrN,(N=0to4)]), equals one in the Nth year after a fund introduces multiple share classes and zero otherwise. The indicator variable, (Mulaft_{yr5}), equals one in the 5th and later years after a fund introduces multiple share classes and is zero otherwise. The indicator variable, (SingleA), equals one if a fund has only the A share class throughout our sample period and zero otherwise.

The variable (Past Perf.) measures past fund performance by calculating the average monthly one-factor, three-factor, and four-factor adjusted alphas during the corresponding 12-month interval. In addition to past performance, we control for the potential impact of fund size, fund family size, fund age and expense ratio on fund cash flow. Family size may have an impact on cash flow due to the search costs as documented in Sirri and Tufano (1998). We measure fund size (Log Fund TNA) by the logarithm of fund-level TNA and measure family size (Log Family TNA) by the logarithm of family-level TNA. The family-level TNA is the sum of the TNAs across all member funds. We measure the fund age (Log Fund Age) by the logarithm of the age for the oldest share class in the fund. We also control for fund-level expense ratio (Expense) and turnover ratio (Turnover).

We estimate the regressions with panel-corrected standard errors (PCSE). The PCSE specification adjusts for the heteroskedasticity among fund returns as well as for the autocorrelation within each fund's returns (Beck and Katz, 1995). We include time fixed-effects for each month to control for time trends in mutual fund flows.

We present the estimation results for regression equation (8) in Table 4. The coefficient estimates for (Mulaft_[yrN,(N=0to4)]) are generally positive, indicating that multiple-class funds tend to attract more new money than single-class funds. The coefficient estimates for

(Mulaft_{yr2}) and (Mulaft_{yr3}) are largest in magnitude (0.5 percent each month) and statistically significant. Thus, the cash inflow of multiple-class funds in year 2 and year 3 after the introduction of multiple classes is about 6 percent higher than that of single-class funds on an annual basis after accounting for factors such as past performance, expenses, fund size, and fund family size. The growth of new money slows down in year 4 and onward after the introduction of new share classes. Note, that since we are controlling for various factors such as fund performance and size, the net effect of introducing new classes will depend on whether there are significant offsetting changes in performance, expenses, and size.

It is possible that mutual funds introduce multiple share classes in response to additional fund flows. In this case, we would expect multiple-class funds to have higher new money growth before and immediately after introducing new share classes. However, we find no evidence that multiple-class funds attract more money before they bring in the new share classes, as indicated by the insignificant coefficient on (Multbef). The coefficients on (Mulaft_{yr0}) and (Mulaft_{yr1}) are not significant, suggesting that it takes a couple of years for the multiple-class funds to fully realize the benefits of attracting new investor clienteles and new money. The coefficient on (SingleA) is negative and significant at the 5 percent level, indicating that single A funds that never introduce multiple classes attract less money than no-load funds and multiple-class funds.

The coefficient estimates on the control variables are generally consistent with previous findings in the literature. The regression results confirm a positive and significant relationship between past performance and new money growth. The responsiveness of cash inflow to past fund performance declines in magnitude and statistical significance as the time lag increases, indicating that mutual fund investors respond more to the recent performance. We also find that new money growth is inversely related to fund size. Consistent with Sirri and Tufano (1998), funds belonging to larger fund families have significantly higher cash inflow, possibly due to the search costs of investors and the effect of brand names attached to larger fund families. Consistent with Barber, Odean and Zheng (2004), cash inflow is positively and significantly related to fund expense ratio in the regression based on the one-factor model. The coefficients based on other models are positive but not statistically significant.

In summary, empirical evidence suggests that, compared to a single-class fund, a multiple-class structure attracts more cash inflows in years 2 and 3 after the introduction of new share classes, controlling for other factors. As we will see, the increase in new money is, however, partially offset by a significant drop in fund performance and the consequent negative impact on fund flows.

5.2 New Share Classes and Investor Clienteles

In this section, we investigate whether the new share classes attract substantially different investor clienteles. We begin by examining the impact on cash flows to the A classes of multiple-class funds before and after the introduction of new share classes. If some investors that invested in the A class in the past would have preferred alternative payment arrangements for the sales charges, then the cash flows for the existing A class will decline after the introduction of new share classes. We explore the possibility of such cannibalization by regressing new money growth for the A class in multiple-class funds on the indicator variables as in regression (8), controlling for other factors that may affect the cash inflow. Unlike in Table 4 where we examine cash flows at the fund-level, this regression is estimated using class-level information.

We report the coefficient estimates in Table 5. As we observe, the coefficient estimates for (Mulbef) and (Mulaft_[yr,N,(N=0to5)]) are negative but statistically insignificant.⁵ Compared to no-load funds, the A class of multiple-class funds was not attracting more new money prior to the introduction of new share classes. Moreover, after controlling for past performance and other fund attributes, there is no clear evidence of cannibalization of the A class by other share classes when the fund becomes a multiple-class fund. These findings suggest that there may have been a significant fraction of the retail market that was not being served prior to the introduction of the new classes.

Next, we examine whether the new share classes cater to different investor clienteles,

⁵Note however that, despite the above finding, a drop in fund performance following the introduction of new classes may adversely affect the net flow to the A class. This is because the results presented in Tables 4 & 5 control for the impact of performance.

as claimed by the mutual fund industry. An empirical implication from this claim is that investors in these different share classes may have different investment horizons and preferences and thus would display different patterns of cash flow behavior. As discussed, the cash flow response to fund performance and the overall cash flow volatility are expected to be relatively higher for the C class.

In Table 6, we compare the average new money growth and cash flow volatility between different share classes. As we observe, the average new money growth is significantly higher for class C than for classes A and B. Next, for each month in the sample period we measure the cash flow volatility for the A (B or C) class as the standard deviation of new money growth across all the A (B or C) classes. Given the three time series of volatility measures (one for each class), we report the mean volatility for each share class and the results of paired t-tests. As reported, the C class clearly has the highest cash flow volatility. The paired t-statistics suggest that the differences in the mean volatility are statistically significant at the 1 percent level for class A versus class C and class B versus class C.

To investigate the flow-performance relation for different share classes, we focus on the multiple-class funds with all three share classes and estimate the following pooled regression with PCSE using class-level information with time fixed-effects:

$$\begin{aligned}
\text{Newmoneygrowth}_{it} = & \alpha + \beta_1(\text{Past Perf})_{i,[t-12,t-1]} * (\text{Class B Indicator})_i + \\
& \beta_2(\text{Past Perf})_{i,[t-12,t-1]} * (\text{Class C Indicator})_i + \\
& \beta_3(\text{Past Perf})_{i,[t-12,t-1]} + \beta_4(\text{Past Perf})_{i,[t-12,t-1]}^2 + \\
& \beta_5(\text{Past Perf})_{i,[t-24,t-13]} + \beta_6(\text{Past Perf})_{i,[t-36,t-25]} + \\
& \beta_7(\text{Past Perf})_{i,[t-48,t-37]} + \beta_8(\text{Past Perf})_{i,[t-60,t-49]} + \\
& \beta_9(\text{Log Class TNA})_{i,t-1} + \beta_{10}(\text{Log Family TNA})_{i,t-1} + \\
& \beta_{11}(\text{Log Class Age})_{i,t-1} + \beta_{12}(\text{Expense})_{i,t-1} + \\
& \beta_{13}(\text{Turnover})_{f,t-1} + (\text{Time-fixed Effects}) + \epsilon_{it}.
\end{aligned} \tag{9}$$

Except for family size (Log Family TNA), all other variables in the above regression are class-level measures. The first two regressors are the interaction terms between performance

in the past 12 months and class indicator variables. The indicator variables (Class B Indicator and Class C Indicator) equal to one if the share class is B or C, respectively, or zero otherwise. The coefficient estimates on these interaction terms capture the differences in the cash flow response to past performance for the B and C classes relative to the A class.

Table 7 presents the coefficient estimates for regression (9). The coefficient estimates for the interaction of the C class indicator and fund performance are positive and significant at the 1 percent level. The coefficient estimates for the interaction of the B class indicator and fund performance are positive and significant as well, but are smaller in magnitude than those of the C class. The results suggest that, compared to the A class, the cash flows of the B and C classes are more responsive to past performance, with C class being the most responsive. For a one percent increase in the monthly four-factor alpha, the cash flow responses for classes B and C are about 0.25 and 0.60 percent larger than that for the A class, respectively. The above results support the notion of different investor clienteles, i.e., the new share classes attract investors with different preferences than those in the A class.

5.3 Multiple-Class Structure and Fund Performance

Given the finding that a multiple-class structure affects the level and volatility of a fund's cash flows, we will now examine the impact of introducing multiple share classes on fund performance. As we have noted, a significant advantage to analyzing performance impact in this setting is that though there are substantial changes in cash flow characteristics – there is virtually no change in the management or investment objectives of the fund. Edelen (1999), Nanda, Narayanan and Warther (2000), Rakowski (2002), and Johnson (2004) point out that cash flow turnover can decrease fund performance due to liquidity costs. Chen et al.(2002) and Berk and Green (2004) indicate that large fund size can hurt performance due to decreasing returns to scale.

To identify the impact of switching to a multiple-class structure on fund performance, we compare the risk-adjusted returns of the A shares of multiple-class funds to that of single-class funds before and after the switch by estimating the following pooled regression with

PCSE:

$$\begin{aligned}
(\text{Risk-Adjusted Return})_{ft} = & \alpha + \beta_1(\text{Mulbef})_{ft} + \beta_2(\text{Mulaft}_{yr0})_{ft} + \\
& \beta_3(\text{Mulaft}_{yr1})_{ft} + \beta_4(\text{Mulaft}_{yr2})_{ft} + \\
& \beta_5(\text{Mulaft}_{yr3})_{ft} + \beta_6(\text{Mulaft}_{yr4})_{ft} + \\
& \beta_7(\text{Mulaft}_{yr5})_{ft} + \beta_8(\text{SingleA})_{ft} + \\
& \beta_9(\text{Log Fund TNA})_{f,t-1} + \beta_{10}(\text{Log Family TNA})_{f,t-1} + \\
& \beta_{11}(\text{Log Fund Age})_{f,t-1} + \beta_{12}(\text{Expense})_{f,t-1} + \\
& \beta_{13}(\text{Turnover})_{f,t-1} + (\text{Time-fixed Effects}) + \epsilon_{it}. \tag{10}
\end{aligned}$$

All variables are defined as in Section 5.1 and in regression (8). For funds that switched to a multiple-class structure, β_1 to β_7 capture the performance differences relative to the single-class funds before and after the switch, respectively. We focus on the performance of the A classes of multiple-class funds so that the observed performance change is not driven by the change in expenses after introducing new share classes. Note that the after-expense returns for classes B and C are lower than the after-expense returns for class A of the same fund due to the fact that classes B and C charge higher 12b-1 fees.

The regression results are presented in Table 8. Before switching to a multiple-class structure, the single A class funds on average have a similar or slightly better performance relative to the single-class funds before or after controlling for expenses. However, starting from the second year after introducing new share classes, multiple-class funds underperform their single-class counterparts by about 1.2 to 1.7 percent on an annual basis using the Carhart four-factor model. The effect is similar before and after controlling for fund expenses. The under-performance is generally significant at the 1 percent level in these years. Based on our earlier results in Table 4, note that the drop in performance coincides roughly with the stage at which funds tend to experience a net increase in fund cash inflows on account of the new classes. Hence, the evidence suggests that the introduction of multiple classes decreases the performance of a fund. Based on the estimated impact of fund performance on cash flow in regression (8), we infer that the new money growth decreases by about 2 to 3 percent on an annual basis due to the performance drop.

As a robustness check, we also compare the performance of the A class of multiple-class funds to that of the single-class funds using a portfolio approach. In each month, we form a portfolio of the A-class of multiple-class funds and another portfolio of the single A class and no-load funds. We compute the TNA-weighted monthly returns for these two portfolios and calculate the monthly difference between the two portfolio returns. We then regress the return differences on the risk/style factors (the market, size, book to market, and momentum factors). In Table 9, we report the average abnormal return difference between the A class of multiple class funds and single-class funds. The multiple-class fund portfolio includes funds that have had new share classes for at least three years. The single-class fund portfolio includes no-load funds and single A funds that never introduced new share classes during our sample period. The results indicate that the A class of multiple-class funds underperform the single-class funds by 1.8 percent per year using the Carhart four-factor model. The portfolio result thus confirms the earlier evidence that the A classes of multiple-class funds perform significantly worse than single-class funds after introducing new share classes.

5.4 Economies of Scale and Timing Motives in Introducing New Classes

The decision to introduce additional fund classes is primarily a decision made at the fund family level, rather than at the level of the fund itself. As noted earlier, fund families usually introduce additional share classes on most of their funds at the same time, suggesting underlying economies of scale in this process. Since a multiple-class structure appears to attract more cash inflows, at least for a period of time, this raises the question of why some fund families seem to have waited for years before adopting the multiple-class structure – while other families benefited by switching to the multiple-class structure in the mid-1990s. In this section, we investigate whether a fund family’s decision to switch to a multiple-class structure can be explained, at least partly, by factors such as economies of scale and timing motives of the fund family.

We estimate a proportional hazard model (Cox and Oakes 1984) to explore the relevant family characteristics that affect the timing of switching to a multiple-class structure. The

hazard function $h(t)$, that captures the conditional probability of a fund family to introduce multiple share classes at event time t , is specified as follows:

$$h(t, X_{\tilde{f}t}; \beta, h_0) = \exp(X_{\tilde{f}t}'\beta)h_0(t), \quad (11)$$

where t is measured in calendar year, \tilde{f} is the index for fund family, X is a vector of family characteristics, and $h_0(t)$ is the baseline hazard function. For our study, we hypothesize that

$$\begin{aligned} X_{\tilde{f}t}'\beta \equiv & \beta_1(\text{Perf})_{\tilde{f}t} + \beta_2(\text{Perf})_{\tilde{f}t-1} + \beta_3(\text{Perf})_{\tilde{f}t-2} + \\ & \beta_4(\text{Log Family TNA})_{\tilde{f}t-1} + \beta_5(\text{Log Family Age})_{\tilde{f}t-1}. \end{aligned} \quad (12)$$

Here, (Perf) measures the average monthly family-level risk adjusted return in years t , $t - 1$, and $t - 2$, (Log Family TNA) is the logarithm of the family-level TNA at the end of year $t - 1$, and (Log Family Age) is the logarithm of the age for the oldest fund in the family at the end of year $t - 1$.

As shown in Table 10, there is significant evidence suggesting that fund families are more likely to switch to the multiple-class structure when they are performing well. The coefficient estimates for $(\text{Perf})_{\tilde{f}t}$ are positive and statistically significant for all performance measures. This is indicative of market timing behavior on part of the fund families in the sense of opening the new classes when the family's funds are more likely to attract cashflows, with brokers in a better position to market the new classes to clients. There is no evidence that performance in the previous two years has a significant impact. The regression results support the notion of economies of scale, given the significant positive relation between family TNA and the likelihood of adopting a multiple-class structure.

Since a multiple-class structure increases fund size, we now examine whether the benefits of economies of scale further reduce a fund's operating expenses. To better understand the change in expenses before and after introducing new share classes, we compare the non 12b-1 expenses (defined as total expense minus 12b-1 fee) and 12b-1 fees of multiple-class funds to

those of single-class funds. Specifically, we estimate the following pooled regression:

$$\begin{aligned}
(\text{Expense})_{ft} = & \alpha + \beta_1(\text{Mulbef})_{ft} + \beta_2(\text{Mulaft}_{yr0})_{ft} + \beta_3(\text{Mulaft}_{yr1})_{ft} + \\
& \beta_4(\text{Mulaft}_{yr2})_{ft} + \beta_5(\text{Mulaft}_{yr3})_{ft} + \beta_6(\text{Mulaft}_{yr4})_{ft} + \\
& \beta_7(\text{Mulaft}_{yr5})_{ft} + \beta_8(\text{SingleA})_{ft} + \beta_9(\text{Log Fund TNA})_{f,t-1} + \\
& \beta_{10}(\text{Log Family TNA})_{f,t-1} + \beta_{11}(\text{Log Fund Age})_{f,t-1} + \\
& \beta_{12}(\text{Turnover})_{f,t-1} + (\text{Time-fixed Effects}) + \epsilon_{it},
\end{aligned} \tag{13}$$

where the dependent variable (Expense) is either the non 12b-1 expenses or the 12b-1 fees. Note that the non 12b-1 expenses mainly reflect the operating and administrative expenses, while 12b-1 fees are mainly distributional expenses paid to brokers.

Table 11 documents the coefficient estimates for regression (13). First consider the results without controlling for fund size, age, and family size. Consistent with the finding that larger fund families are more likely to introduce new share classes, we find that multiple-class funds charge lower non 12b-1 fees before the switch, possibly due to economies of scale. However, despite the increase in fund size due to the new share classes, there is only marginal evidence that investors benefit from additional economies of scale by paying lower operating charges after the switch. On the other hand, the 12b-1 fees for multiple-class funds are on average 21 basis points higher before the switch and 25 basis points higher five years after the switch than single-class funds. This result is due to the alternative fee structures of the B and C classes.

In summary, there is evidence that economies of scale play an important role in a fund family's decision to adopt the multiple-class structure. However, there is no clear evidence of a drop in operating expense charges (non 12b-1 fees) after introducing the new share classes, despite the increase in fund size. It is possible, of course, that savings on operating expenses are realized, but not passed through to investors.

6 Conclusion

Introducing multiple share classes on a fund portfolio has been a major development in the mutual fund industry in the past decade. As a result, the majority of load funds now have multiple-class structures. As many of these multiple-class funds evolved from single-class funds, they provide us with a natural experiment to examine the impact of fee structures on fund cash flows as well as the impact of cash flow volatility and level on fund performance.

Studying a large sample of U.S. equity funds from 1993 to 2002, we report that multiple-class funds attract more new money than single-class funds after introducing new classes, controlling for fund performance and other fund attributes. The growth in new cash flows takes place mainly in the second and third years after the change in fund structure and, overall, is about 12 percent of fund size. The cash flows into the new classes (with annual fees and back-end loads in place of front-end loads) are more volatile and more sensitive to fund performance – consistent with the notion that the new share classes attract different investor clienteles.

We show that the increase in new money growth has a downside: it is accompanied by a significant drop in fund performance after introducing the new classes. The drop in performance is found to be significant in the second and subsequent years after the switch to a multiple-class structure. We estimate that in four years after the structure change, the drop in performance could erode about half of the 12 percent additional new money growth from introducing the new classes. As we have discussed, our findings provide new empirical evidence consistent with the notion that liquidity costs and decreasing returns to scale adversely affect fund performance.

The paper also documents that a fund family is more likely to switch to a multiple-class structure if it is larger, suggesting economies of scale, and if it has recently performed well, indicative of market timing behavior.

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Table 1. Summary Statistics: Multiple-Class Funds vs. Single-Class Funds

The table reports annual summary statistics for multiple-class funds and single-class funds. For each year from 1993 and 2002, we count the number of funds and number of fund families with and without the multiple-class structure. For both multiple-class and single-class funds, we report the median statistics for the following measures: beginning-of-the-year total net assets (TNA), annual expense ratio, annual 12b-1 fee, annual non 12b-1 expense, and total load charges.

Year	Number of Funds	Number of Families	TNA (\$ Mil.)	Expense (%)	12b-1 Fee (%)	Non 12b-1 Expense (%)	Total Load (%)
Panel A: Multiple-Class Funds							
1993	40	10	224.98	1.78	0.67	1.03	5.08
1994	100	28	221.54	1.59	0.44	1.11	5.29
1995	174	49	207.83	1.49	0.41	1.10	4.91
1996	268	64	232.32	1.54	0.47	1.10	4.87
1997	359	71	260.97	1.54	0.49	1.09	4.83
1998	470	76	221.91	1.54	0.53	1.03	4.79
1999	602	86	207.24	1.59	0.57	1.05	4.83
2000	706	103	209.77	1.56	0.57	1.04	4.92
2001	791	107	181.92	1.55	0.55	1.04	4.84
2002	838	109	135.13	1.58	0.54	1.06	4.83
Panel B: Single-Class Funds							
1993	634	256	83.69	1.22	0.00	1.07	1.00
1994	683	252	66.04	1.19	0.00	1.05	0.00
1995	702	236	72.82	1.17	0.00	1.07	0.00
1996	698	224	89.56	1.19	0.00	1.10	0.00
1997	745	234	87.14	1.20	0.00	1.11	0.00
1998	816	248	80.35	1.20	0.00	1.10	0.00
1999	870	263	75.38	1.20	0.00	1.11	0.00
2000	883	288	80.07	1.20	0.00	1.10	0.00
2001	922	277	74.86	1.18	0.00	1.08	0.00
2002	893	261	73.18	1.15	0.00	1.03	0.00

Table 2. Summary Statistics: Multiple Share Classes

The table reports annual summary statistics for the three share classes (A, B, and C) of multiple-class funds. For each year from 1993 to 2002, we count the number of funds and number of families that offer all three share classes. For each share class, we report the median statistics for the following measures: beginning-of-the-year total net assets (TNA), annual expense ratio, annual 12b-1 fee, annual non 12b-1 expense, and total load charges.

Year	Number of Funds	Number of Families	TNA (\$ Mil.)	Expense (%)	12b-1 Fee (%)	Non 12b-1 Expense (%)	Total Load (%)
Panel A: Class A							
1993	5	2	140.67	1.47	0.25	1.17	5.50
1994	34	9	109.31	1.35	0.25	1.15	5.00
1995	68	26	125.29	1.33	0.25	1.14	5.00
1996	118	33	148.35	1.28	0.25	1.10	5.25
1997	167	39	148.80	1.27	0.25	1.04	5.50
1998	272	48	91.05	1.32	0.25	1.09	5.50
1999	385	58	92.89	1.31	0.25	1.06	5.50
2000	535	75	112.73	1.29	0.25	1.04	5.75
2001	638	82	94.41	1.30	0.25	1.05	5.75
2002	686	84	69.71	1.47	0.25	1.17	5.50
Panel B: Class B							
1993	5	2	89.63	2.00	1.00	1.00	5.00
1994	34	9	42.03	2.02	1.00	1.15	5.00
1995	68	26	64.62	2.15	1.00	1.16	5.00
1996	118	33	47.32	2.12	1.00	1.19	5.00
1997	167	39	55.13	2.08	1.00	1.17	5.00
1998	272	48	82.69	2.03	1.00	1.09	5.00
1999	385	58	84.69	2.08	1.00	1.14	5.00
2000	535	75	70.35	2.04	1.00	1.10	5.00
2001	638	82	58.63	2.00	1.00	1.10	5.00
2002	686	84	40.18	2.02	1.00	1.10	5.00

Panel C: Class C							
1993	5	2	22.45	1.95	1.00	1.00	0.00
1994	34	9	4.92	2.06	1.00	1.25	1.00
1995	68	26	5.78	2.08	1.00	1.15	1.00
1996	118	33	7.64	2.10	1.00	1.19	1.00
1997	167	39	11.44	2.08	1.00	1.15	1.00
1998	272	48	12.85	2.04	1.00	1.09	1.00
1999	385	58	14.90	2.08	1.00	1.11	1.00
2000	535	75	18.69	2.04	1.00	1.11	1.00
2001	638	82	16.47	2.04	1.00	1.14	1.00
2002	686	84	13.33	2.04	1.00	1.10	1.00

Table 3. Summary Statistics: Single-Class Funds

The table reports annual summary statistics for single A class funds and no-load funds. For each year from 1993 to 2002, we count the number of funds and number of families within each fund category. For both types of funds, we report the median statistics for the following measures: beginning-of-the-year total net assets (TNA), annual expense ratio, annual 12b-1 fee, annual non 12b-1 expense, and total load charges.

Year	Number of Funds	Number of Families	TNA (\$ Mil.)	Expense (%)	12b-1 Fee (%)	Non 12b-1 Expense (%)	Total Load (%)
Panel A: Single A Class Fund							
1993	313	123	86.10	1.23	0.22	1.05	4.75
1994	308	128	63.02	1.18	0.25	1.01	4.73
1995	279	122	63.49	1.19	0.20	1.03	4.50
1996	227	108	59.96	1.20	0.18	1.08	4.50
1997	201	81	46.69	1.25	0.25	1.09	4.50
1998	200	77	34.51	1.24	0.25	1.10	4.50
1999	187	77	36.56	1.25	0.25	1.10	4.50
2000	163	80	24.35	1.26	0.25	1.10	4.50
2001	152	83	21.19	1.33	0.25	1.11	4.75
2002	125	76	22.67	1.31	0.25	1.12	5.00
Panel B: No-load Funds							
1993	321	142	77.51	1.18	0.00	1.13	0.00
1994	375	154	71.70	1.19	0.00	1.12	0.00
1995	423	165	81.18	1.16	0.00	1.11	0.00
1996	471	171	97.04	1.16	0.00	1.11	0.00
1997	544	183	103.33	1.18	0.00	1.11	0.00
1998	616	203	99.13	1.20	0.00	1.10	0.00
1999	683	217	92.95	1.18	0.00	1.11	0.00
2000	720	230	92.63	1.17	0.00	1.08	0.00
2001	770	254	86.45	1.15	0.00	1.06	0.00
2002	768	259	87.98	1.10	0.00	1.02	0.00

Table 4. New Money Growth: Multiple-Class Funds vs. Single-Class Funds

This table compares the new money growth of multiple-class funds to that of single-class funds using a pooled regression approach. The dependent variable is fund-level new money growth measured as the total amount of new money flowing into all share classes normalized by the previous month-end TNA of the fund. The independent variables include: an indicator variable, (Mulbef), equals to one if a fund has a single A class in the current period but subsequently switches to a multiple-class structure and zero otherwise, indicator variables, ($Mulaft_{yrN, for N=0to4}$), equals to one in the Nth year after a fund introduces multiple share classes and zero otherwise, an indicator variable, ($Mulaft_{yr5}$), equals to one in the 5th year or after upon a fund introduces multiple share classes and zero otherwise, an indicator variable, (SingleA), equals to one if a fund has only the A share class throughout our sample period and zero otherwise, the average monthly risk-adjusted returns over the consecutive 12-month periods in the past 60 months (Past Perf.), the square of the average monthly risk-adjusted returns over the last 12 months (Past Perf. Squared), the logarithm of fund-level TNA (Log Fund TNA), the logarithm of family-level TNA (Log Family TNA), the logarithm of fund age (Log Fund Age), the expense ratio (Expense), and the turnover ratio (Turnover). As a robustness check, we use one-factor, three-factor, and four-factor adjusted returns to measure past performance. We allow the error terms to have heterogeneous variances across funds and to follow a common AR(1) process over time. T-statistics are reported in parentheses. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. All coefficients reported in the table are the actual coefficient estimates multiplied by 100.

	New Money Growth (t)		
	One-factor	Three-factor	Four-factor
Multbef (t)	0.07 (0.31)	0.03 (0.13)	-0.01 (-0.06)
Multaft0 (t)	0.03 (0.13)	0.01 (0.03)	0.01 (0.04)
Multaft1 (t)	0.31 (1.29)	0.35 (1.42)	0.36 (1.48)
Multaft2 (t)	0.53** (1.97)	0.54** (1.96)	0.55** (1.99)
Multaft3 (t)	0.54** (1.95)	0.52* (1.83)	0.57** (2.02)
Multaft4 (t)	0.34 (1.08)	0.28 (0.87)	0.33 (1.05)
Multaft5 (t)	0.01 (0.09)	-0.02 (-0.13)	0.04 (0.25)
SingleA (t)	-0.58** (-2.11)	-0.65** (-2.33)	-0.67** (-2.39)
Past Perf. (t-12, t-1)	123.99*** (22.35)	156.08*** (19.39)	164.07*** (19.22)
Past Perf. (t-24, t-13)	67.84*** (11.69)	71.72*** (9.80)	74.78*** (9.75)
Past Perf. (t-36, t-25)	32.03*** (4.68)	24.92*** (2.74)	33.47*** (3.52)
Past Perf. (t-48, t-37)	36.81*** (4.66)	5.14 (0.57)	7.12 (0.76)
Past Perf. (t-60, t-49)	32.90*** (3.91)	15.60* (1.65)	22.35** (2.25)
Past Perf. (t-12, t-1) Squared	539.82*** (3.16)	829.44*** (2.89)	1033.43*** (3.24)
Log Fund TNA (t-1)	-0.55*** (-7.93)	-0.55*** (-7.65)	-0.56*** (-8.06)
Log Family TNA (t-1)	0.31*** (7.58)	0.29*** (7.07)	0.32*** (7.74)
Log Fund Age (t-1)	-0.10 (-0.85)	-0.20* (-1.72)	-0.17 (-1.48)
Expense (t-1)	20.57*** (3.23)	9.95 (1.59)	10.40* (1.66)
Turnover (t-1)	0.06 (0.43)	-0.08 (-0.55)	0.05 (0.32)
Time Fixed-effects	Included	Included	Included
Number of Observations	66,769	66,769	66,769

Table 5. New Money Growth: Class A of Multiple-Class Funds vs. Single-Class Funds

This table compares the new money growth of the A share class of multiple-class funds to that of the single-class funds. The dependent variable is the new money growth for the A classes in multiple-class funds, the single A class funds, or the no-load funds. The independent variables include: an indicator variable, (Mulbef), equals to one if a fund has a single A class in the current period but subsequently switches to a multiple-class structure and zero otherwise, indicator variables, ($Mulaft_{yrN, for N=0to4}$), equals to one in the Nth year after a fund introduces multiple share classes and zero otherwise, an indicator variable, ($Mulaft_{yr5}$), equals to one in the 5th year or after upon a fund introduces multiple share classes and zero otherwise, an indicator variable, (SingleA), equals to one if a fund has only the A share class throughout our sample period and zero otherwise, the average monthly risk-adjusted returns over the consecutive 12-month periods in the past 60 months (Past Perf.), the square of the average monthly risk-adjusted returns over the last 12 months (Past Perf. Squared), the logarithm of fund-level TNA (Log Fund TNA), the logarithm of family-level TNA (Log Family TNA), the logarithm of fund age (Log Fund Age), the expense ratio (Expense), and the turnover ratio (Turnover). As a robustness check, we use one-factor, three-factor, and four-factor adjusted returns to measure past performance. We allow the error terms to have heterogeneous variances across funds and to follow a common AR(1) process over time. T-statistics are reported in parentheses. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. All coefficients reported in the table are the actual coefficient estimates multiplied by 100.

	New Money Growth (t)		
	One-factor	Three-factor	Four-factor
Multbef (t)	-0.17 (-0.64)	-0.11 (-0.39)	-0.15 (-0.54)
Multaft0 (t)	-0.29 (-1.00)	-0.23 (-0.76)	-0.19 (-0.65)
Multaft1 (t)	-0.34 (-1.09)	-0.21 (-0.67)	-0.18 (-0.56)
Multaft2 (t)	-0.22 (-0.68)	-0.13 (-0.39)	-0.10 (-0.31)
Multaft3 (t)	-0.16 (-0.43)	-0.10 (-0.25)	-0.02 (-0.06)
Multaft4 (t)	-0.31 (-0.76)	-0.29 (-0.69)	-0.21 (-0.50)
Multaft5 (t)	-0.38 (-1.37)	-0.34 (-1.20)	-0.26 (-0.90)
SingleA (t)	-0.87*** (-3.87)	-0.85*** (-3.70)	-0.86*** (-3.78)
Past Perf. (t-12, t-1)	118.07*** (21.03)	150.16*** (18.74)	157.88*** (18.84)
Past Perf. (t-24, t-13)	64.50*** (10.92)	68.16*** (9.09)	70.75*** (8.95)
Past Perf. (t-36, t-25)	30.10*** (4.52)	23.78*** (2.80)	32.64*** (3.54)
Past Perf. (t-48, t-37)	33.96*** (4.20)	3.81 (0.41)	5.57 (0.58)
Past Perf. (t-60, t-49)	33.13*** (3.90)	18.60* (1.88)	24.54** (2.37)
Past Perf. (t-12, t-1) Squared	591.17*** (4.73)	889.92*** (4.46)	1116.29*** (4.94)
Log Fund TNA (t-1)	-0.56*** (-8.46)	-0.56*** (-8.21)	-0.57*** (-8.61)
Log Family TNA (t-1)	0.30*** (7.86)	0.29*** (7.38)	0.32*** (8.14)
Log Fund Age (t-1)	-0.15 (-1.39)	-0.23** (-2.13)	-0.20* (-1.85)
Expense (t-1)	6.77* (1.76)	4.76 (1.22)	4.19 (1.08)
Turnover (t-1)	15.21*** (2.74)	5.14 (0.96)	7.58 (1.38)
Time Fixed-effects	Included	Included	Included
Number of Observations	67,749	67,749	67,749

Table 6. New Money Growth and Cash Flow Volatility for Share Classes A, B and C

This table compares the new money growth and the cash flow volatility between different share classes of multiple-class funds. For each month in the sample period, the A-class new money growth is measured as the total amount of new money flowing into all the A classes normalized by the sum of the previous month-end TNA across all the A classes. The A-class cash flow volatility is measured as the standard deviation of new money growth across all the A classes. The B-class and C-class new money growth and cash flow volatility are defined in a similar manner. Given the time series of new money and volatility measures (one for each class), we calculate the mean statistics for each share class and conduct paired t-tests. T-statistics are reported in parentheses. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively.

	New Money Growth (%)	New Money Growth Volatility (%)
Class A	-0.36 (-1.13)	6.29*** (26.88)
Class B	0.29 (0.99)	6.27*** (39.75)
Class C	1.16*** (4.09)	8.63*** (38.52)
Class C – Class A	1.52*** (4.39)	2.35*** (9.30)
Class C – Class B	0.87*** (3.30)	2.36*** (13.01)
Class B – Class A	0.65 (1.79)	0.02 (0.07)

Table 7. Cash Flow Sensitivity to Past Performance: Classes A, B and C

This table compares the cash flow-performance patterns for different share classes of the multiple-class funds using a pooled regression approach. The dependent variable is the new money growth for class A, B, or C. The independent variables include: the interactions between the average monthly risk-adjusted returns over the last 12 months (Past Perf. (t-12, t-1)) and the class B and class C indicator variables, the average monthly risk-adjusted returns over the consecutive 12-month periods in the past 60 months (Past Perf.), the square of the average monthly risk-adjusted returns over the last 12 months (Past Perf. Squared), the logarithm of class-level TNA (Log Class TNA), the logarithm of family-level TNA (Log Family TNA), the logarithm of class age (Log Class Age), the expense ratio (Expense), and the turnover ratio (Turnover). As a robustness check, we use one-factor, three-factor, and four-factor adjusted returns to measure past performance. We allow the error terms to have heterogeneous variances across funds and to follow a common AR(1) process over time. T-statistics are reported in parentheses. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. All coefficients reported in the table are the actual coefficient estimates multiplied by 100.

	New Money Growth (t)		
	One-factor	Three-factor	Four-factor
Past Perf. (t-12, t-1) *	13.70*	23.36**	25.22**
Class B Dummy (t)	(1.91)	(2.13)	(2.24)
Past Perf. (t-12, t-1) *	57.98***	56.29***	60.49***
Class C Dummy (t)	(5.99)	(3.79)	(4.05)
Past Perf. (t-12, t-1)	107.09***	133.25***	139.69***
	(18.00)	(15.06)	(15.46)
Past Perf. (t-24, t-13)	54.11***	59.08***	66.06***
	(15.43)	(11.38)	(11.81)
Past Perf. (t-36, t-25)	29.77***	32.91***	40.22***
	(8.17)	(6.23)	(6.90)
Past Perf. (t-48, t-37)	26.01***	-10.47	-1.45
	(5.12)	(-1.62)	(-0.22)
Past Perf. (t-60, t-49)	16.60***	-11.70*	-6.98
	(2.96)	(-1.72)	(-1.01)
Past Perf. (t-12, t-1)	126.53	-90.17	1628.82***
Squared	(0.80)	(-0.27)	(4.63)
Log Class TNA (t-1)	-0.21***	-0.24***	-0.21***
	(-5.48)	(-6.05)	(-5.35)
Log Family TNA (t-1)	0.18***	0.22***	0.20***
	(4.83)	(5.76)	(5.07)
Log Class Age (t-1)	-0.48***	-0.58***	-0.57***
	(-7.69)	(-8.89)	(-8.70)
Expense (t-1)	-30.17***	-24.91**	-22.02*
	(-2.70)	(-2.18)	(-1.93)
Turnover (t-1)	0.04	0.06	0.16**
	(0.60)	(0.90)	(2.54)
Time Fixed-effects	Included	Included	Included
Number of Observations	33,120	33,120	33,120

Table 8. Performance: Class A of Multiple-Class Funds vs. Single-Class Funds

This table examines the impact of a multiple-class structure on fund performance using a pooled regression approach. The dependent variable is the risk-adjusted return for Class A of multiple-class funds and single-class funds. The independent variables include: an indicator variable, (Mulbef), equals to one if a fund has a single A class in the current period but subsequently switches to a multiple-class structure and zero otherwise, indicator variables, ($Mulft_{yrN, for N=0to4}$), equals to one in the Nth year after a fund introduces multiple share classes and zero otherwise, an indicator variable, ($Mulft_{yr5}$), equals to one in the 5th year or after upon a fund introduces multiple share classes and zero otherwise, an indicator variable, (SingleA), equals to one if a fund has only the A share class throughout our sample period and zero otherwise, the logarithm of fund TNA (Log Fund TNA), the logarithm of family TNA (Log Family TNA), the logarithm of fund age (Log Fund Age), the expense ratio (Expense), and the turnover ratio (Turnover). As a robustness check, we use one-factor, three-factor, and four-factor adjusted returns to measure risk-adjusted performance. We allow the error terms to have heterogeneous variances across funds and to follow a common AR(1) process over time. T-statistics are reported in parentheses. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. All coefficients reported in the table are the actual coefficient estimates multiplied by 100.

	Performance (t)					
	One-factor	Three-factor	Four-factor	One-factor	Three-factor	Four-factor
Multbef (t)	-0.03 (-0.62)	-0.01 (-0.31)	0.003 (0.10)	-0.03 (-0.69)	-0.01 (-0.41)	0.00 (0.04)
Multaft0 (t)	0.11** (1.97)	0.07* (1.66)	0.05 (1.41)	0.11** (2.07)	0.07* (1.76)	0.06 (1.55)
Multaft1 (t)	0.02 (0.30)	0.04 (1.02)	0.04 (1.03)	0.02 (0.44)	0.05 (1.22)	0.04 (1.27)
Multaft2 (t)	-0.14*** (-2.70)	-0.11*** (-2.93)	-0.11*** (-3.23)	-0.13** (-2.48)	-0.10*** (-2.69)	-0.10*** (-2.93)
Multaft3 (t)	-0.17*** (-3.21)	-0.10*** (-2.60)	-0.11*** (-3.12)	-0.16*** (-3.00)	-0.09** (-2.36)	-0.10*** (-2.83)
Multaft4 (t)	-0.20*** (-3.64)	-0.13*** (-3.28)	-0.14*** (-3.74)	-0.19*** (-3.41)	-0.12*** (-3.04)	-0.13*** (-3.45)
Multaft5 (t)	-0.18*** (-4.60)	-0.13*** (-4.61)	-0.14*** (-5.31)	-0.16*** (-4.14)	-0.12*** (-4.06)	-0.13*** (-4.66)
SingleA (t)	-0.17*** (-4.88)	-0.08*** (-3.13)	-0.07*** (-2.62)	-0.16*** (-4.64)	-0.08*** (-2.90)	-0.06** (-2.32)
Log Fund TNA (t-1)	-0.02*** (-2.99)	0.02*** (3.21)	0.02*** (3.42)	-0.03*** (-3.69)	0.01** (2.20)	0.01** (2.36)
Log Family TNA (t-1)	0.03*** (5.85)	0.02*** (4.54)	0.01*** (2.98)	0.03*** (4.76)	0.02*** (3.35)	0.01* (1.64)
Log Fund Age (t-1)	-0.02 (-1.23)	-0.05*** (-4.03)	-0.05*** (-3.83)	-0.01 (-0.76)	-0.04*** (-3.63)	-0.04*** (-3.37)
Expense (t-1)				-6.71** (-2.10)	-5.74** (-2.11)	-6.05** (-2.24)
Turnover (t-1)	-0.01*** (-2.71)	-0.004 (-1.19)	-0.01** (-2.12)	-0.01** (-2.44)	-0.00 (-0.93)	-0.01* (-1.83)
Time Fixed-effects	Included	Included	Included	Included	Included	Included
Number of Observations	97,938	97,938	97,938	97,481	97,481	97,481

Table 9. Performance: Class A of Multiple-Class Funds vs. Single-Class Funds

This table compares the performance of the A class of multiple-class funds to the performance of single-class funds. In each month, we form a portfolio of the A class of multiple-class funds and another portfolio of single A class and no-load funds. We compute the monthly difference of the TNA-weighted portfolio returns. We then regress the return differences on the risk/style factors (the market, size, book to market, and momentum factors). We report the abnormal return difference between multiple class funds and single-class funds. The multiple-class fund portfolio includes funds that have had new share classes for at least three years. The single-class fund portfolio includes single A funds that never introduced new share classes during our sample period and no-load funds. T-statistics are reported in parentheses. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. All coefficients reported in the table are the actual coefficient estimates multiplied by 100.

	One-factor	Three-factor	Four-factor
Multiple A – Single	-0.12** (-2.30)	-0.11** (-2.25)	-0.15*** (-2.93)

Table 10. Factors Affecting Funds' Choice of the Multiple-Class Structure

The table investigates what factors determine a fund family's choice of the class structure. We estimate a proportional hazard model to explore the relation between the probability of switching to a multiple-class structure in year t and the potentially relevant family characteristics: average monthly risk-adjusted family-level performance in years t ($Perf_t$), $t-1$ ($Perf_{t-1}$), and $t-2$ ($Perf_{t-2}$), the logarithm of family-level TNA (Log Family TNA), and the logarithm of fund family age (Log Family Age). As a robustness check, we use one-factor, three-factor, and four-factor adjusted returns to measure risk-adjusted performance. Chi-square statistics are reported in parentheses. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively.

	One-factor	Three-factor	Four-factor
$Perf_t$	73.39*** (7.10)	21.43*** (8.32)	80.08** (6.46)
$Perf_{t-1}$	-9.49 (0.15)	11.64 (0.13)	3.62 (0.01)
$Perf_{t-2}$	-23.45 (0.76)	-9.01 (0.07)	-16.53 (0.24)
$(\text{Log Family TNA})_{t-1}$	0.25*** (10.74)	0.23*** (9.49)	0.24*** (9.62)
$(\text{Log Family Age})_{t-1}$	0.10 (0.33)	0.12 (0.47)	0.12 (0.42)

Table 11. Expense: Multiple-Class Funds vs. Single-Class Funds

The table investigates the difference in expenses between multiple-class funds and single-class funds using a pooled regression approach. The dependent variables are the annual non 12b-1 expense (Non 12b-1 Expense) and the annual 12b-1 fee (12b-1 Fee). The independent variables include: an indicator variable, (Mulbef), equals to one if a fund has a single A class in the current period but subsequently switches to a multiple-class structure and zero otherwise, indicator variables, ($Mulft_{yrN, for N=0 to 4}$), equals to one in the Nth year after a fund introduces multiple share classes and zero otherwise, an indicator variable, ($Mulft_{yr5}$), equals to one in the 5th year or after upon a fund introduces multiple share classes and zero otherwise, an indicator variable, (SingleA), equals to one if a fund has only the A share class throughout our sample period and zero otherwise, the logarithm of fund TNA (Log Fund TNA), the logarithm of family TNA (Log Family TNA), the logarithm of fund age (Log Fund Age), and turnover ratios (Turnover). We allow the error terms to have heterogeneous variances across funds and to follow a common AR(1) process over time. T-statistics are reported in parentheses. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. All coefficients reported in the table are the actual coefficient estimates multiplied by 100.

	Non 12b-1 Expense (t)		12b-1 Fee (t)	
Multbef (t)	-0.14*** (-6.69)	-0.08*** (-3.23)	0.21*** (23.67)	0.22*** (30.33)
Mulft0 (t)	-0.13*** (-6.33)	-0.09*** (-3.64)	0.21*** (24.86)	0.22*** (31.60)
Mulft1 (t)	-0.12*** (-6.27)	-0.08*** (-3.22)	0.22*** (26.01)	0.23*** (32.63)
Mulft2 (t)	-0.12*** (-6.11)	-0.07*** (-2.89)	0.22*** (25.85)	0.25*** (35.47)
Mulft3 (t)	-0.15*** (-7.82)	-0.10*** (-4.29)	0.23*** (26.99)	0.25*** (36.76)
Mulft4 (t)	-0.17*** (-8.74)	-0.12*** (-5.27)	0.23*** (27.27)	0.26*** (37.17)
Mulft5 (t)	-0.19*** (-9.52)	-0.13*** (-6.02)	0.24*** (28.30)	0.27*** (38.38)
SingleA (t)	0.15*** (3.52)	0.12*** (2.81)	0.12*** (17.78)	0.13*** (21.83)
Log Fund TNA (t-1)		-0.023*** (-6.15)		0.003** (4.28)
Log Family TNA (t-1)		-0.03*** (-15.85)		0.00 (1.20)
Log Fund Age (t-1)		-0.01 (-0.90)		-0.004** (-2.46)
Turnover (t-1)		-0.00 (-0.30)		-0.001*** (-5.97)
Time Fixed-effects	Included	Included	Included	Included
Number of Obs	104,306	97,841	108,794	98,316

Figure 1
Number of Funds by Year: Multiple-class Funds vs. Single-class Funds

